

Appendix D

Scenario Outline

Form ES-D-1

*NRC FINAL***Facility:** E. I Hatch**Scenario No.:** 8-01**Op-Test No.:** 2013-301

Examiners: _____ **Operators:** _____ **SRO**
 _____ **RO**
 _____ **BOP**

Initial Conditions. Unit 2 is operating at 60% RTP. RFPT '2A' operating at 2100 rpm.

Turnover: Continue startup and place the RFPT '2A' in service, starting at step 7.1.11.2.10 of 34SO-N21-007-2. After RFPT '2A' startup, increase reactor power to 75% RTP IAW 34GO-OPS-005-2.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP)	Continue startup and place the RFPT '2A' in service, starting at step 7.1.11.2.10 of 34SO-N21-007-2.
2		R (ATC)	Increase reactor power via Recirc to 75% RTP.
3	mfP42_71A mfP42_72C loP42-C001AA3 loP42-C001AG1 loP42-C001AR2 ET-53	C (ATC)	RBCCW Pump '2A' (simulate sheared shaft) Standby RBCCW pump fails to start (manually started)
4	mf60111061 aoE21R600B loE21-F004BG1 loE21-F004BR2	C (BOP) TS (SRO)	2B Loop of Core Spray experiences high discharge pressure (valve leakage). When 2E21-F004B is reopened, the valve breaker trips when control switch placed to open.
5	mf60311338	C (ATC)	RFPT '2B' receives Trouble alarm from high vibration but does NOT trip. ATC manually trips RFPT '2B'.
6	mfE41_103	I (BOP) TS (SRO)	HPCI Inadvertent Initiation. (Critical Task)
7	mf65702209 mf65702227 mfG31_242	M (ALL)	Earthquake requiring SCRAM prior to 98" in Torus. A leak in the Drywell requiring Torus Sprays. #1 & #3 Bypass valves fail closed.
8	diE11-F027A diE11-F027B ET-E11-1 ET-E11-2	C (ATC)	RHR 2E11-F027A or B RHR Torus Spray or Test Valve failed closed.
9		M (ALL)	Unisolable Torus leak worsens and Emergency Depress prior to 98" in Torus. (Critical Task)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

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Event Description: Continue startup and place the RFPT '2A' in service, starting at step 7.1.11.2.10 of 34SO-N21-007-2.

Time	Position	Applicant's Actions or Behavior
15 Mins	SRO	Orders Operator to place RFPT '2A' in service, starting at step 7.1.11.2.10 of 34SO-N21-007-2.
	BOP	<ul style="list-style-type: none"> Enters 34SO-N21-007-2 at step 7.1.11.2.10.
		<ul style="list-style-type: none"> Confirms M/A station is tracking actual Speed Setter (RFPT) speed Places the TMR Mode switch to M/A Confirms the M/A Station green light illuminates
		<p>NOTE: 34SO-N21-007-2, NOTE just above 7.1.11.2.13 allows operator to monitor the input signal using the in-service RFP M/A Station with the PF lamp 'OFF' rather than the incoming RFP M/A Station PF lamp.</p>
		<ul style="list-style-type: none"> Slowly changes the RFPT 2A M/A station to match RFP 2A AND the RFP 2B flow match. Matches the input AND output of Pump A M/A Station by performing the following: <ul style="list-style-type: none"> Depresses the PF key AND read the controller output (PF lamp lit) Depresses the PF key so the input to the controller is displayed (PF lamp is off) Adjusts the manual output lever until the input AND output are matched on P603 panel. Monitors RWL, RFPT 2A discharge pressure and RFPT 2A & 2B speed.
		<p><i>RFP C005A DISCH FLOW LOW, (656-039) will clear when RFPT 2A is placed into service. HEATER TROUBLE, (650-135) may come in and clear. This is expected for this plant condition.</i></p>
		<ul style="list-style-type: none"> Places RFP A M/A station in AUTO As required, adjusts RFP A Speed Control Bias Setting to maintain RFPT 2A and 2B speed within 100 RPM. Informs SRO that the 2A RFPT is in service in Automatic control.

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Event Description: Continue startup and place the RFPT '2A' in service, starting at step 7.1.11.2.10 of 34SO-N21-007-2.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none">• Informs ATC to increase power with Recirc to 75% power.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: Raise reactor power to approximately 75%

Time	Position	Applicant's Actions or Behavior
10 min	SRO	<ul style="list-style-type: none"> Directs ATC to increase reactor power to 75% by increasing Recirc flow. Power increases should be made as recommended by the STA/Reactor Engineering at a rate NOT to exceed 10 MWe/min.
	ATC	<ul style="list-style-type: none"> Increases reactor power with Recirc flow IAW 34GO-OPS-005-2 and 34SO-B31-001-2 by depressing either the Master Recirc Flow Control raise pushbuttons or the individual pump Speed Control raise pushbuttons. Monitors power increase by observing APRM and generator output indications.
	ATC	<ul style="list-style-type: none"> Complies with 34SO-B31-001-2 , Limitation 5.2.15, which states: WHEN changing Recirc pumps speed while in Two Loop operation maintain pump speeds to limit recirculation loop jet pump mismatch within the following limits: <ul style="list-style-type: none"> <10% of rated core flow (7.7 E6 lbm/hr) WHEN operating < 70% of rated core flow; AND <5% of rated core flow (3.85 E6 lbm/hr) WHEN operating at > 70% of rated core flow.
		<p><i>May get the (603-202) "RBM Upscale" and (603-238) "Rod Out Block" alarm, if a peripheral control rod is NOT selected. This is expected and the operator may select a peripheral rod at this time.</i></p> <p><i>May also get Alarm 650-135, "Heater Trouble" alarm. This is expected at this power level.</i></p>
		<p><i>Simulator Operator enters the next event after power has been increased by 5% or at the Chief Examiner's request</i></p>

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Event Description: RBCCW Pump '2A' (simulate sheared shaft) Standby RBCCW pump fails to start (manually started)

Time	Position	Applicant's Actions or Behavior
10 Min		<p><i>At the Chief Examiner's direction, Simulator operator, INSTRUCT the BOP operator by phone to stay on the line until told to hang up.</i></p> <p><i>THEN ENTER: (RB-2)</i></p> <ul style="list-style-type: none"> • <i>mfP42_71A</i> • <i>mfP42_72C, loP42_C001AR2 (On), loP42_C001AG1 (Off), loP42_C001AA3 (Off)</i>
	ATC	<ul style="list-style-type: none"> • Responds to RBCCW PUMP DISCH PRESS LOW, (650-239).
	ATC	<ul style="list-style-type: none"> • Acknowledges the alarms and informs the SRO that the RBCCW system pressure is low and that the "2C" RBCCW pump did NOT auto start. (2C RBCCW may be started manually prior to recognizing failure to auto start.) (There is NOT an obvious reason for the pressure being low.)
	ATC	<ul style="list-style-type: none"> • Manually starts the "2C" RBCCW pump per RBCCW PUMP DISCH PRESS LOW, (650-239), 34AB-P42-001-2, "Loss of RBCCW" or 34SO-P42-001-2, RBCCW System. (May NOT pull procedures until after the pump has been started. • Monitors for increasing system pressure (>90psig). • Dispatches SO/Maint to investigate the cause of the RBCCW Low system pressure with 2 pumps running: <ul style="list-style-type: none"> • check valve alignments IAW 34SO-P42-001-2 • check RBCCW loads for leakage • vent system via 2P42-FV005
	SRO	<ul style="list-style-type: none"> • Confirms/sends SO/Maint to investigate RBCCW Low system pressure.

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Event Description: RBCCW Pump '2A' (simulate sheared shaft) Standby RBCCW pump fails to start (manually started)

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator: ENSURE EVENT TRIGGER ET-53 is ACTIVATED, THEN</i></p> <p><i>After 1 minute of being sent to investigate the RBCCW system low pressure AND after the ATC has started 2C RBCCW pump, report that the "2A" RBCCW pump impeller and motor are NOT coupled.</i></p>
	ATC	<ul style="list-style-type: none"> • Reports to SRO that the "2A" RBCCW pump impeller and motor are NOT coupled.
	SRO	<ul style="list-style-type: none"> • Directs the operator to place the RBCCW Pump "2A" pump to PTL "Stop".
	ATC	<ul style="list-style-type: none"> • Places 2P42-C001A control switch to PTL "Stop" position and reports this to the SRO.
		<p><i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i></p>

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Event Description: 2B Loop of Core Spray experiences high discharge pressure (valve leakage). When 2E21-F004B is reopened, the valve breaker trips when control switch placed to open.

Time	Position	Applicant's Actions or Behavior
8 Mins		<i>At the Chief Examiner's direction, Simulator Operator ENTERS (RB-3) malfunction mf601111061 Window 25 Core Spray B Disch Pipe Press High (ON) and aoE21-R600B to 465 psig. ENSURE Event Trigger E21-5 activates when 2E21-F004B is placed to open position.</i>
	BOP	<ul style="list-style-type: none"> Enters CORE SPRAY B DISCH PIPE PRESS HIGH, (601-125) Confirm validity of alarm using Disch Press indicator, 2E21-R600B (~465 psig) Confirm the following valves are CLOSED <ul style="list-style-type: none"> 2E21-F037B, Testable Check Bypass Vlv 2E21-F005B, Inbd Discharge Vlv Closes 2E21-F004B, Outbd Discharge Vlv Opens 2E21-F005B Closes 2E21-F005B, to reseal Places 2E21-F004B to open and, CORE SPRAY SYSTEM II VALVES OVERLOAD, (601-113) is received. Notifies SRO of CORE SPRAY SYSTEM II VALVES OVERLOAD, (601-113) and that the lights for 2E21-F004B are extinguished. May inform SRO of TS 3.5.1 & TS 3.6.1.3
	SRO	<ul style="list-style-type: none"> Directs operator to enter CORE SPRAY SYSTEM II VALVES OVERLOAD, (601-113) Reviews TS 3.5.1 Reviews TS 3.6.1.3
	BOP	<ul style="list-style-type: none"> Enters CORE SPRAY SYSTEM II VALVES OVERLOAD, (601-113) Dispatches SO/Maint. to reset the thermal overload for 2E21-F004B at MCC 2R24-S012, Frame 13B

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Event Description: 2B Loop of Core Spray experiences high discharge pressure (valve leakage). When 2E21-F004B is reopened, the valve breaker trips when control switch placed to open.

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator, wait 2 minutes, then as an SO, report that the breaker for 2E21-F004B will NOT reset.</i></p> <p><i>If asked/directed to manually break 2E21-F004B off the closed seat, report this valve will NOT move with the handwheel.</i></p>
	SRO	<p>Enters TS 3.5.1, ECCS Operating, and determines:</p> <p>TS 3.5.1.A requires the ECCS pump to be restored to operable status in 7 days TS 3.6.1.3.D requires the leakage to be restored within 4 hours. (2E21-F005B is a PCIV and the SRO may enter for exceeding leakage thru this valve)</p>
		NOTE: <i>If addressed, 2E21-F004B is NOT a PCIV and TS 3.6.1.3 for PCIVs is NOT applicable.</i>
		<p><i>Simulator Operator, ENSURE Event Trigger E21-6 activates when 2E21-F015B is placed to open position. This will clear CS B Disch Press High alarm & return 2E21-R600B to normal.</i></p>
	BOP	<ul style="list-style-type: none"> IAW CORE SPRAY B DISCH PIPE PRESS HIGH, (601-125), may perform the following: <ul style="list-style-type: none"> Slightly opens 2E21-F015B to lower CS Discharge pressure Confirms CORE SPRAY B DISCH PIPE PRESS HIGH, (601-125) clears When pressure is approximately 100 psig, closes 2E21-F015B. If 601-114, CORE SPRAY B JOCKEY PUMP SYS WATER LEVEL LOW, (601-114), is received directs an SO to vent the "B" Loop of Core Spray IAW 34SV-SUV-017-2. Monitors Core Spray B Loop pressure for subsequent increases.
		NOTE: <i>If pressure is NOT relieved, then a follow-up question on PCIV leakage TS 3.6.1.3.D may be appropriate.</i>
		NOTE: <i>If pressure IS relieved on Core Spray Loop B, and pressure is NOT monitored, then a follow-up question on a high pressure condition of the inner system piping may be appropriate.</i>
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: RFPT '2B' receives Trouble alarm from high vibration but does NOT trip.
ATC manually trips RFPT '2B'.

Time	Position	Applicant's Actions or Behavior
5 Min.		<i>SIMULATOR OPERATOR: At the direction of the Chief Examiner, ACTIVATE mf60311338 (RB-4) RFPT Controller Trouble (Annunciator On).</i>
	ATC	Receives annunciator, RFPT CONTROLLER TROUBLE, (603-150)
	ATC	Responds to annunciator, RFPT CONTROLLER TROUBLE, (603-150): <ul style="list-style-type: none"> • Dispatches an SO to report local vibration on 2H21-P536, TMR Workstation Mark V Control Panel.
		<i>SIMULATOR OPERATOR: When contacted by the ATC, as the System Engineer, tell the operator you will look into the RFPT vibration and get back to the operator.</i> <i>As the SO, wait 1 minutes after being dispatched and then ONLY report that 2B RFPT vibrations are 8 mils and increasing slowly.</i>
	ATC	Enters 34SO-N21-007-2, subsection 7.3.43, RFPT 2B Vibration Response, for RFPT 2B Vibration Alarm Response. <ul style="list-style-type: none"> • Confirms oil temperature is being maintained at 120°F to 130°F. • Contacts System Engineer for further instructions. <p>With RFPT vibration > 6.0 mils, performs one of the following: (either is acceptable)</p> <ul style="list-style-type: none"> • Trips 2B RFPT and verifies #2 Speed Limiter Runback occurs • Reduces power in an attempt to lessen the plant transient and then trips the 2B RFPT.

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Event Description: RFPT '2B' receives Trouble alarm from high vibration but does NOT trip. ATC manually trips RFPT '2B'.

Time	Position	Applicant's Actions or Behavior
	SRO	<p>With RFPT vibration > 6.0 mils, directs one of the following: (either is acceptable)</p> <ul style="list-style-type: none"> • Directs ATC to trip 2B RFPT and verifies #2 Speed Limiter Runback occurs or • Directs operator to reduce power in an attempt to lessen plant transient and then trip the 2B RFPT. • The SRO may direct resetting the Recirc A & B Flow Limiters:
	ATC	<ul style="list-style-type: none"> • If RECIRC A FLOW LIMIT, (602-134) and RECIRC B FLOW LIMIT, (602-234) are received, • Notifies SRO of Recirc A and B runback • If directed, resets A flow limit by performing the following: <ul style="list-style-type: none"> • Confirms initiating conditions have cleared • Confirms plant conditions are stable • Depresses "Recirc A Runback" Reset pushbutton, P602 • Receives RECIRC MASTER CONTROLLER TROUBLE, (602-129) • Verify Recirc A speed AND flow remain stable • Informs SRO the runback has been reset • When directed, resets B flow limit by performing the following: <ul style="list-style-type: none"> • Confirms initiating conditions have cleared • Confirms plant conditions are stable • Depresses "Recirc B Runback" Reset pushbutton, P602 • 602-129 alarm clears • Verify Recirc B speed AND flow remain stable • Informs SRO the runback has been reset • Informs SRO of >15% power change and to notify Chemistry

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Event Description: RFPT '2B' receives Trouble alarm from high vibration but does NOT trip.
ATC manually trips RFPT '2B'.

Time	Position	Applicant's Actions or Behavior
		<i>SIMULATOR OPERATOR: When the operator trips the 2B RFPT, ENSURE Event Trigger (N21-5) is ACTIVATED:</i> <ul style="list-style-type: none">• <i>DELETES, RFPT CONTROLLER TROUBLE, (603-150), alarm in 10 seconds.</i>
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: HPCI Inadvertent Initiation.

Time	Position	Applicant's Actions or Behavior
15 Mins		<p><i>Simulator Operator</i></p> <p>WAIT UNTIL THE ATC OPERATOR IS AWAY (I.E. AWAY FROM 2H11-P601 PANEL) BEFORE ENTERING THIS MALFUNCTION.</p> <p><i>Simulator Operator, at Chief Examiner's direction, ENTERS (RB-6) malfunction m/E41_103, HPCI auto start.</i></p>
	ALL	Recognize and report HPCI has started from an invalid initiation signal.
	BOP	<ul style="list-style-type: none"> Verifies reactor water level and Drywell Pressure is normal. Enters 34AB-E10-001-2, Inadvertent Initiation of ECCS/RCIC.
	BOP	<ul style="list-style-type: none"> Secures HPCI as follows per Placard or 34SO-E41-001-2: (Critical Task) Either, Places HPCI Controller in Manual and lowers output to prevent injection and then performs the following: OR: Depresses and holds the HPCI Turbine Trip push-button. <ul style="list-style-type: none"> Receives the following: <ul style="list-style-type: none"> HPCI TURBINE TRIP, (601-103) HPCI TURBINE TRIP SOLENOID ENERGIZED, (601-109) HPCI PUMP DISCHARGE FLOW LOW, (601-231) When HPCI turbine has stopped, places the HPCI Aux Oil Pump in Pull To Lock off. <ul style="list-style-type: none"> Receives HPCI TURBINE BRG OIL PRESS LOW, (601-112) When HPCI TURBINE BRG OIL PRESS LOW, (601-112) alarm is received, releases the HPCI Turbine Trip push-button. <ul style="list-style-type: none"> HPCI TURBINE TRIP SOLENOID ENERGIZED, (601-109), clears.

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Event Description: HPCI Inadvertent Initiation.

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	<ul style="list-style-type: none"> IF injection occurs from HPCI, the following alarms occur: <ul style="list-style-type: none"> FEEDWATER CONTROL SYSTEM TROUBLE, (603-132) <ul style="list-style-type: none"> After HPCI is shutdown, returns Feedwater Control Mode select switch to 3-ELEM. APRM UPSCALE, (603-219), ROD OUT BLOCK, (603-238) and REACTOR VESSEL WATER LEVEL HIGH/LOW, (603-141) may come in and then clear
		NOTE: <i>If Recirc Flow limits have NOT been reset, the following will already be active.</i>
	BOP/ATC	<ul style="list-style-type: none"> When injection from HPCI is terminated, the following alarms may be in alarm: <ul style="list-style-type: none"> If RECIRC A FLOW LIMIT, (602-134) and RECIRC B FLOW LIMIT, (602-234) are received, <ul style="list-style-type: none"> Notifies SRO of Recirc A and B runback When directed, resets A flow limit by performing the following: <ul style="list-style-type: none"> Confirms initiating conditions have cleared Confirms plant conditions are stable Depresses "Recirc A Runback" Reset pushbutton, P602 Verify Recirc A speed AND flow remain stable Informs SRO the runback has been reset When directed, resets B flow limit by performing the following: <ul style="list-style-type: none"> Confirms initiating conditions have cleared Confirms plant conditions are stable Depresses "Recirc B Runback" Reset pushbutton, P602 Verify Recirc B speed AND flow remain stable Informs SRO the runback has been reset

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Event Description: HPCI Inadvertent Initiation.

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator - AFTER SRO declares HPCI inop per TS 3.5.1.C, as I & C tech called to resolve the HPCI problem, inform the SRO that the HPCI initiation logic appears to be causing the inadvertent start signal and that you will be investigating the problem further.</i>
	SRO	<ul style="list-style-type: none"> • Reviews TS 3.5.1, ECCS/RCIC • IAW TS 3.5.1 Condition C, <ul style="list-style-type: none"> • Declares HPCI inoperable, • Must verify within one hour that RCIC is operable by administrative means • Must restore HPCI to operable status within 14 days • ALSO since 2B Core Spray is inop, enters Condition D, <ul style="list-style-type: none"> • Requires either HPCI or the ECCS pump to be restored to operable status in 72 hours • Contacts Maintenance (if ATC has NOT done this) to investigate inadvertent HPCI start • If RECIRC A FLOW LIMIT, (602-134) and RECIRC B FLOW LIMIT, (602-234) are received, directs operator to reset IAW 34SO-B31-001-2.
		<i>Simulator operator proceeds to the next event at the Chief Examiner's direction.</i>

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator, at Chief Examiners direction, ACTIVATE (RB-7)</i></p> <p><i>(Earthquake – malfunctions to (ON):</i></p> <p><i>mf65702209 Window 30 SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL & mf65702227 Window 48 SEISMIC INSTRUMENTATION TRIGGERED</i></p>
	All	<p>The following annunciators are received:</p> <ul style="list-style-type: none"> • 2H11-P657 SYSTEM TROUBLE, (650-224) • SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL, (657-030) • SEISMIC INSTRUMENTATION TRIGGERED, (657-048)
	BOP	<ul style="list-style-type: none"> • Acknowledges 650-224, 2H11-P657 System Trouble, alarm on 2H11-P650 panel and informs the SRO of the alarm
	SRO	Dispatches the BOP to Panel 2H11-P657.
		NOTE: <i>Actions for both ARPs are the same, except for checking the power supply.</i>
	BOP	<p>Informs the SRO of the Seismic alarms and enters ARPs: SEISMIC PEAK SHOCK RECORDER HIGH G LEVEL, (657-030) and SEISMIC INSTRUMENTATION TRIGGERED, (657-048) to perform the following actions:</p> <ul style="list-style-type: none"> • Dispatches Unit 1 RO to panel 1H11-P701 to check for further indication of a seismic event by monitoring Peak Shock Annunciator, 1L51-R620, for 12.7 Hz amber lights (> 0.08g, OBE) and 12.7 Hz red lights (> 0.15g, DBE)

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
		<i>SIMULATOR OPERATOR: After one minute, Notifies Unit 2 Control Room that you were in the Reactor Building and felt the floor vibrating.</i>
	BOP	<ul style="list-style-type: none"> • May have the Unit 1 RO check the following: • Peak Shock Annunciator, 1L51-VDC-R620, plugged in on panel 1H11-P701 • BRKR 3 on 120/208V Essential AC Cab., 1R25-S065 • May have I & C refer to Seismic Instrumentation Earthquake Response Manual, SX-18271, for guidance in analyzing seismic data. • Enters 34AB-Y22-002-0, Naturally occurring Phenomenon • May inform the Shift Manager to evaluate an Emergency Classification
	SRO	<p>Directs the BOP to enter 34AB-Y22-002-0, Naturally occurring Phenomenon, if NOT already entered.</p> <ul style="list-style-type: none"> • Reviews TLCO3.3.6 Seismic Monitors Condition C: • TLCO3.3.6 Condition C requires: <ul style="list-style-type: none"> • C.1 – Submit a Special Report to the SEB describing the magnitude, frequency spectrum, and resultant effect on facility features important to safety. C.2 – Perform TSR 3.3.6.3

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
		NOTE: These actions are redundant to the SROs and either can perform.
	BOP	<ul style="list-style-type: none"> Enters 34AB-Y22-002-0 and performs the following actions: Determines that all electrical power is available Inform SRO of the requirement to enter 34GO-OPS-013-2, Normal Plant shutdown. Contacts switchyard maintenance to assist in switchyard damage assessment Contacts Maintenance to inspect Independent Spent Fuel Storage Installation (ISFSI) for damage Within one hour, dispatches personnel to locally close or confirmed closed the following valves (if NOT performed by the SRO): <ul style="list-style-type: none"> 1P11-F167, CST Sump to Radwaste Drain 1P11-F3002, Condensate Transfer Pumps and Sample Sink Drain Line to Yard 2P11-F051, Retaining Wall Drain 2P11-F100, Transfer Pump Wall Drain Dispatches personnel to inspect the plant for damage Dispatches personnel to inspect specific Control Room panels
	ATC	<ul style="list-style-type: none"> Enters 34GO-OPS-013-2 and starts making preparations for shutting down. As power is reduced, monitors reactor power. When directed, begins inserting control rods.

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
		<p><i>SIMULATOR OPERATOR, after 2 minutes and at Chief Examiners direction, ACTIVATE (RB-8)</i></p> <p><i>Torus leak at (3/4") 0.75"/min)</i> <i>svoT48140 (70/.75), svoT48142 (50/10), svoT48143 (50/10), svoT48147 (50/10), svoT48148 (50/100)</i></p> <p><i>NOTE:</i> <i>This leak will be modified to 2"/minute at 142 inches in the Torus.</i></p>
	ALL	<p>The following annunciators are received:</p> <ul style="list-style-type: none"> • PANEL 2H11-P657 SYSTEM TROUBLE, (650-224) • TORUS S-W AREA INSTR SUMP LVL HIGH, (657-086) • TORUS N-W AREA INSTR SUMP LVL HIGH, (657-087) • TORUS N-E AREA INSTR SUMP LVL HIGH, (657-088) • TORUS S-E AREA INSTR SUMP LVL HIGH, (657-089) • TORUS S-W AREA INSTR SUMP LVL HIGH-HIGH, (657-104) • TORUS N-W AREA INSTR SUMP LVL HIGH-HIGH, (657-105) • TORUS N-E AREA INSTR SUMP LVL HIGH-HIGH, (657-106) • TORUS S-E AREA INSTR SUMP LVL HIGH-HIGH, (657-107) • TORUS N-E AREA INSTR SUMP LVL HIGH-HIGH-HIGH, (657-013) • TORUS S-E AREA INSTR SUMP LVL HIGH-HIGH-HIGH, (657-031) • TORUS N-W AREA INSTR SUMP LVL HIGH-HIGH-HIGH, (657-049) • TORUS S-W AREA INSTR SUMP LVL HIGH-HIGH-HIGH, (657-067)
	BOP	<ul style="list-style-type: none"> • Reports multiple alarms to SRO indicating a break in the Reactor Building. • Directs SO/Maintenance to investigate the leak.
	SRO	<ul style="list-style-type: none"> • Directs BOP to 2H11-P657 panel. • When above alarms are reported, directs operator to monitor Torus water level and then if lowering, enter 34AB-T23-004-2, Torus Water Level.

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 7

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator: Two minutes after being dispatched to check for leaks in the Torus section of the Reactor Building, report to the crew:</i></p> <p><i>A leak has been identified on the "2B" Core Spray line between the Torus and the first Core Spray isolation valve.</i></p>
	All	<ul style="list-style-type: none"> • TORUS WATER LEVEL HIGH/LOW, (602-235) annunciates • Recognizes that Torus level is decreasing.
	SRO	<ul style="list-style-type: none"> • Dispatches personnel to determine the location of the Torus leak. • If NOT already directed, directs NPO to enter 34AB-T23-004-2, Torus Water Level, and to monitor Torus water level. • Enters the PC EOP Flowchart when Torus level decreases to 146 inches. • May determine that water will NOT be added to the torus until the cause of the low Torus level is identified and controlled. • Enter SC EOP flowchart for SC area water levels being high.
	BOP	<ul style="list-style-type: none"> • If NOT already performed, dispatches personnel to the Torus area <u>AND</u> the Reactor Building diagonals to determine the source of the water loss (if the leak location has NOT already been reported).
		<p>NOTE: The reactor mode switch to 'Shutdown' will activate EVENT TRIGGER C71-8 causing a RWCU leak (0.25 rate) in the Drywell.</p>
	SRO	<ul style="list-style-type: none"> • IAW the PC flowchart, prior to water level reaching 98 inches, determines that the reactor is required to be shutdown and enters the RC flowchart at point A. • Assigns the ATC to perform RC-1. • Assigns the BOP operator to perform RC-2 and RC-3. • Enters 31EO-EOP-010-2, RC EOP flow chart if RWL decreases below 3 inches. • Directs RWL Band of 3 to 50 inches.

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 7

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> • Performs RC-1 consisting of: <ul style="list-style-type: none"> • Inserts a manual scram. • Places the mode switch to shutdown. • Confirms all rods are inserted by observing full in lights, SPDS, or the RWM display. • Notifies SRO of rod position check. • Places SDV isolation valve switch to "isolate" & confirms closed. • If NOT tripped, places the Recirc pumps at minimum speed. • Inserts SRMs and IRMs. • Shifts recorders to read IRMS, when required. • Ranges IRMS to bring reading on scale. • Notifies the SRO when the above actions are complete.
	BOP	<p>Performs RC-2 actions consisting of:</p> <ul style="list-style-type: none"> • Confirms proper Level Control response: <ul style="list-style-type: none"> • Checks ECCS Injection Systems • Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value (<i>will NOT due to low power</i>) • Set down does NOT auto function (low power), manually reduces FW Master Controller setpoint to approximately 9 inches. • When feed flow is less than the capacity of the S/U level control valve (≈ 1.5 mlbm/hr), then: <ul style="list-style-type: none"> • Opens 2N21-F125 (normally open). • Confirms 2C32-R619, FW S/U level control valve controller, in Auto, set at approximately 9 inches. • Closes 2N21-F110. • Will control RWL and with SRO permission will raise RWL to 32 to 42 inches.

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 7

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Event Description: Earthquake requiring SCRAM prior to 98" in Torus. Leak in Drywell requiring Torus Sprays.

Time	Position	Applicant's Actions or Behavior
	BOP	Performs RC-3 consisting of: <ul style="list-style-type: none"> • Monitor RPV pressure. • Confirm proper operation of pressure control system (TBV, LLS, etc.). • If necessary, allow RPV pressure to exceed 1074 psig then cycle any SRV to initiate LLS. • Maintain RPV pressure between 1074 and 800 psig. • Notify SRO of pressure control system operation.
		<i>NOTE: Reopening 2P41-F316s may be performed now or later in the scenario as time allows.</i>
	ATC/BOP	<ul style="list-style-type: none"> • Re-opens 2P41-F316s per 34AB-P41-001-2, Loss of PSW, Placard • Places the "A" and "B" Isolation Override switches on the 2H11-P652 panel to Override • Fully opens 2P41-F316A or C and 2P41-F316B or D • Throttles 2P41-F316C or A and 2P41-F316D or B to open while monitoring PSW division 1 and 2 pressure on 2H11-P650 panel ensuring that PSW pressure remains above 80 psig
	SRO	<ul style="list-style-type: none"> • If the need to Emergency Depressurize is recognized in time, then Anticipates Emergency Depressurization. • Assign an operator to fully open all Main Turbine Bypass Valves.
	ATC/BOP	<ul style="list-style-type: none"> • On the DEHC panel • Selects the Control > Bypass Valve screen. • Inserts a ramp rate of 100, and then presses OK. • Inserts a bypass valve position of 100, and then presses OK. • Checks that the Bypass Valve Jack status is active. • Recognizes that ONLY 1 Bypass Valves will open. • Reports to the SRO that 2 Bypass Valves are failed closed and only 1 Bypass valve is open.

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 8

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Event Description: RHR 2E11-F027A or B RHR Torus Spray or Test Valve failed closed.

Time	Position	Applicant's Actions or Behavior
	SRO	<ul style="list-style-type: none"> Per the PC flowchart, as directed by Primary Containment Pressure, verifies Torus level is <285 inches and directs an operator to place Torus Sprays in service
		<i>Simulator Operator, confirm EVENT TRIGGER (E11-1 or E11-2) is activated when the operator positions 2E11-F027A or B to open.</i>
	ATC	<ul style="list-style-type: none"> Sprays the Torus per 34SO-E11-010-2 placard on the 2H11-P601 Panel as follows: <ul style="list-style-type: none"> Places Cnmt Spray Vlv Cntl switch in the MANUAL position. Starts RHR pump(s) in loop A or B, if NOT already running. Opens 2E11-F028A or B Opens 2E11-F027A or B (ONE WILL NOT OPEN AND OPERATOR TRANSITIONS TO THE OTHER LOOP) Throttles Open 2E11-F027A or B (<i>Critical Task</i>) Notifies SRO that RHR is in Torus Sprays
	ATC	<ul style="list-style-type: none"> Informs SRO that the 2E11-F027A or B will NOT Open
	SRO	<ul style="list-style-type: none"> Directs ATC to spray the Torus with the other loop of RHR.
	SRO	<ul style="list-style-type: none"> As time allows, directs an operator to perform 31EO-EOP-114-2 for RHR & CS If time allows, directs an operator to restore Drywell chillers and coolers per 31EO-EOP-100-2.

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 8

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Event Description: RHR 2E11-F027A or B RHR Torus Spray or Test Valve failed closed.

Time	Position	Applicant's Actions or Behavior
		NOTE to Evaluators: If crew addresses restoring DW Chillers they will NOT be able to due to Drywell temperature above 250°F.
		NOTE: Torus pressure is NOT expected to exceed 11 psig due to the RWCU leak in the Drywell.
	SRO	<ul style="list-style-type: none"> If time allows, directs H₂/O₂ Analyzers placed in service IAW 34SO-P33-001-2.
	BOP	Notifies the SSS to perform actions to prevent injection from RHR & CS IAW 31EO-EOP-114-2.
	BOP	Prevents injection IAW 31EO-EOP-114-2, the operator performs the following: <ul style="list-style-type: none"> CLOSES RHR OUTBD INJ VLV, 2E11-F017A CLOSES RHR OUTBD INJ VLV, 2E11-F017B Notifies SSS to OPEN links & INSTALL jumpers for 2E11-F017A Notifies SSS to OPEN links & INSTALL jumpers for 2E11-F017B Confirms/CLOSES RHR OUTBD INJ VLV, 2E11-F017A Confirms/CLOSES RHR OUTBD INJ VLV, 2E11-F017B Confirms/CLOSES INBD DISCHARGE VLV, 2E21-F005A Confirms/CLOSES INBD DISCHARGE VLV, 2E21-F005B Trips Core Spray pump A, 2E21-C001A Trips Core Spray pump B, 2E21-C001B Notifies SRO 31EO-EOP-114-2 actions for RHR & CS are complete
	ATC	<ul style="list-style-type: none"> Places H₂/O₂ Analyzers in service IAW 34SO-P33-001-2 Depresses Channel A and Channel B Reset pushbuttons on 2H11-P700 panel. Confirms Analyzers are running. Notifies SRO H₂/O₂ Analyzers are in service.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-01 Event No.: 9

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Event Description: Unisolable Torus leak worsens and Emergency Depress prior to 98" in Torus.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Provides periodic updates on Torus level to the SRO.
	SRO	Transitions to CP-1 and orders 7 ADS valves open for Emergency Depress.
	ATC/BOP	<ul style="list-style-type: none"> Places the switches for 7 ADS valves in the open position. <i>Critical Task – Open 7 SRVs BEFORE Torus water level reaches 98 inches. Critical task is met when at least 5 SRVs have been opened.</i> The amber lights for the SRVs will NOT illuminate if pressure has been reduced to below approximately 300 psig. In this case the operator must use 2H11-P614 recorder indication to monitor tail pipe temperatures for the SRVs to verify the valves actually opened (Recorder 2B21-R614). Depending on Reactor Water Level prior to opening ADS valves, RWL may swell to above 60 inches, requiring the operator to enter 34AB-C32-001-2, Reactor Water Level Above 60 inches. Operator secures all injection other than CRD.
		NOTE: <i>The Critical task is met when 5 SRVs have been opened (EOP minimum number of SRVs required to Emergency Depressurize the RPV).</i>
		<i>With Chief Examiners Permission the Scenario will be terminated when Reactor pressure is within 50 psig of Torus pressure or as directed by the Chief Examiner.</i>

NRC FINAL**Scenario Summary****Facility:** E. I Hatch**Scenario No.:** 8-01**Op-Test No.:** 2013-301

Initiating Conditions:	Unit 2 is operating at 60% RTP. RFPT '2A' operating at 2100 rpm.
Turnover	Continue startup and place 2A RFPT in service starting at step 7.1.11.2.10 of 34SO-N21-007-2. (All steps are complete thru 7.1.11.2.9 of 34SO-N21-007-2) After RFPT '2A' is in service, increase reactor power to 75% RTP IAW 34GO-OPS-005-2.

Summary:


- **Event 1:** Normal; The "2A" RFPT will be placed into service IAW 34SO-N21-007-2.
- **Event 2:** Reactivity; Increase reactor power via Recirc to 75% RTP.
- **Event 3:** Component; RBCCW Pump '2A' will experience a sheared shaft and the standby RBCCW pump will NOT automatically start. The operator will manually start the standby RBCCW pump to restore system flow/pressure to normal.
- **Event 4:** Component/TS; 2B Loop of Core Spray experiences high discharge pressure (valve leakage). When operator performs ARP actions and 2E21-F004B control switch is placed to open, the valve breaker trips causing the 2B CS Loop to be inop.
- **Event 5:** Component; The '2B' RFPT receives a high vibration trip signal but does NOT automatically trip. The ATC manually trips the '2B' RFPT.
- **Event 6:** Component; /TS; The HPCI system will experience an inadvertent start. The operator takes manual control to secure HPCI. **(Critical Task)**
- **Event 7:** Major; The plant experiences an Earthquake causing Torus water level to start lowering, SCRAM prior to 98 inches. **(Critical Task)** A leak in the Drywell requiring Torus Sprays and #1 & #3 Bypass valves fail closed (can NOT be opened).
- **Event 8:** Component; RHR 2E11-F027A or B Torus Spray/Test Valve (depends on which loop of RHR the operator attempts first) will fail closed when the operator attempts to place Torus Spray/Cooling in service. The operator must transition to the other loop of RHR to spray the Torus.
- **Event 9:** Component; Unisolable Torus leak worsens and Emergency Depress prior to 98" in Torus. **(Critical Task)**

NRC FINAL**Critical Task List****Facility:** E. I Hatch**Scenario No.:** 8-01**Op-Test No.:** 2013-301Critical Tasks

- The HPCI system will experience an inadvertent start. The operator takes manual control to secure HPCI. **(Event 6)**
- The plant experiences an Earthquake causing Torus water level to start lowering, SCRAM prior to 98 inches. **(Event 7)**
- Unisolable Torus leak worsens and Emergency Depress prior to 98 inches in Torus. **(Event 9)**

	ES 301-4 Attributes	Required	Actual	Items
1.	Total Malfunctions	5-8	7	1. RBCCW Pump '2A' sheared shaft (Event 2) 2. 2B Loop of CS valve leakage (Event 3) 3. 2B RFPT trip failure. (Event 4) 4. HPCI inadvertent start (Event 6) 5. Earthquake causing Torus water level to start lowering, SCRAM prior to 98". (Event 7) 6. RHR 2E11-F027A or B failure (Event 8) 7. Emergency Depress > 98" in Torus. (Event 9)
2.	Malfunctions After EOP Entry	1-2	1	1. RHR 2E11-F027A or B failure (Event 8)
3.	Abnormal Events	2-4	3	1. RBCCW Pump '2A' sheared shaft (Event 2) 2. HPCI inadvertent start (Event 6) 3. Earthquake causing Torus water level to start lowering, SCRAM prior to 98". (Event 7)
4.	Major Transients	1-2	2	1. Earthquake causing Torus water level to start lowering, SCRAM prior to 98". (Event 7) 2. Torus leak worsens, ED prior to 98". (Event 9)
5.	EOPs entered, requiring substantive actions	1-2	2	1. RC (Non-ATWS) (Event 7) 2. PC Primary Containment Control (Event 7)
6.	EOPs contingencies requiring substantive actions	0-2	1	1. CP-1 (Event 9)
7.	Critical Tasks	2-3	3	1. HPCI inadvertent start manual control to secure (Event 6) 2. Earthquake causing Torus water level to start lowering, SCRAM prior to 98". (Event 7) 3. Emergency Depress > 98" in Torus. (Event 9)

ILT-8 NRC Operating Exam Scenario 1
SHIFT TURNOVER

	Safety Focus						
UNIT 1 STATUS							
Plant Conditions:	Unit 1 is operating at 100% power Activities in progress: Maintaining Rated Thermal Power						
UNIT 2 STATUS							
Plant Conditions:	Unit 2 is operating at 60% power with RFPT '2A' operating at 2100 rpm. Main Condenser Water Boxes have been vented. Activities in progress: Place 2A RFPT in service.						
<table border="0" style="width: 100%;"><tr><td style="width: 50%; vertical-align: top;"><u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II</td><td style="width: 50%; vertical-align: top;"><u>EOOS:</u> <table border="0"><tr><td><input checked="" type="checkbox"/> Green</td><td><input type="checkbox"/> Orange</td></tr><tr><td><input type="checkbox"/> Yellow</td><td><input type="checkbox"/> Red</td></tr></table></td></tr></table>		<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <table border="0"><tr><td><input checked="" type="checkbox"/> Green</td><td><input type="checkbox"/> Orange</td></tr><tr><td><input type="checkbox"/> Yellow</td><td><input type="checkbox"/> Red</td></tr></table>	<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Orange	<input type="checkbox"/> Yellow	<input type="checkbox"/> Red
<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <table border="0"><tr><td><input checked="" type="checkbox"/> Green</td><td><input type="checkbox"/> Orange</td></tr><tr><td><input type="checkbox"/> Yellow</td><td><input type="checkbox"/> Red</td></tr></table>	<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Orange	<input type="checkbox"/> Yellow	<input type="checkbox"/> Red		
<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Orange						
<input type="checkbox"/> Yellow	<input type="checkbox"/> Red						
Scheduled evolutions:	<input type="checkbox"/> Place 2A RFPT in service starting at step 7.1.11.2.10 of 34SO-N21-007-2. (All steps are complete thru 7.1.11.2.9 of 34SO-N21-007-2) After RFPT '2A' is in service, increase reactor power to 75% RTP IAW 34GO-OPS-005-2.						
Surveillances due this shift:	<input type="checkbox"/> None						
Inop Equipment:	<input type="checkbox"/> None						
Active tagouts:	<input type="checkbox"/> None						
Rod Configuration:	<input type="checkbox"/> See RWM						

Appendix D

Scenario Outline

Form ES-D-1

NRC FINAL**Facility:** E. I Hatch**Scenario No.:** 8-03**Op-Test No.:** 2013-301

Examiners: _____ **Operators:** _____ **SRO**
 _____ **RO**
 _____ **BOP**

Initial Conditions. Unit 2 is operating at 75% RTP. Crew is preparing to swap Cooler Condensers in the Off Gas System.

Turnover: Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2. After swap increase reactor power to 80% RTP.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP)	Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2.
2	mfB21_123A	C (BOP) TS (SRO)	Small leak on a Main Steam line in the DW requiring SBGT to vent DW.
3	mfC11_30A mf60311334	I (ATC)	CRD pump trips due to low suction pressure instrument failure. Must start standby pump to restore system flow & pressure.
4	mf65702234 mf65402051	C (BOP) TS (SRO)	Hi dP & Low flow on SBGT train requiring swapping to other SBGT.
5	mfB31_41B	C (ATC) TS (SRO) R (ATC)	Recirc Pump '2B' High Vibration requiring reducing reactor power in an attempt to clear alarm. Alarm remains in until pump is tripped. Reduces reactor power via Recirc.
6	mfB21_123A	M (ALL)	Leak on Main Steam line in the DW worsens causing Drywell LOCA signal.
7	mfE11_202B	C (BOP)	RHR LOCA logic failure – manual actions are required for proper RHR operation. (Critical Task)
8	diE11-F016A diE11-F016B	C (ATC)	RHR 2E11-F016A/B stuck closed requiring swapping to other loop of DW spray (Critical Task)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 1

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Event Description: Swap Cooler Condensers from 2N62-B003A to 2N62-B003B
IAW 34SO-N62-001-2, step 7.2.2.

Time	Position	Applicant's Actions or Behavior
10 Min	SRO	Directs BOP to swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2.
		<i>The BOP will perform the following at 2N62-P001 panel.</i>
	BOP	<ul style="list-style-type: none"> Monitors 2N62-R605, Glycol Pump Disch pressure indicator, and starts the idle 2N62-C001B, Glycol Sys Pump B, as necessary. Opens the following valves: <ul style="list-style-type: none"> 2N62-F026B, Glycol Sys To Cndsr B 2N62-F071B, Glycol Sys From Cndsr B <p><i>Simulator Operator, at the Chief Examiner's direction, when BOP is waiting for 15 minutes to elapse before opening 2N62-F025B, inform the BOP using Time Compression that 15 minutes has elapsed.</i></p> <ul style="list-style-type: none"> 2N62-F025B, Clr Cndsr B Inlet
		<i>Alarm, INLET FLOW TO STACK HIGH, (P600-020), may be received and will clear when the "A" side valves are closed.</i>
	BOP	<ul style="list-style-type: none"> Closes the following valves: <ul style="list-style-type: none"> 2N62-F026A, Glycol Sys To Cndsr A 2N62-F071A, Glycol Sys From Cndsr A 2N62-F025A, Clr Cndsr A Inlet If the second Glycol pump was started, stops 2N62-C001B, Glycol Sys Pump B Confirms Glycol Pump discharge pressure remains at 10 to 20 psig, on 2N62-R605, Glycol Pump Disch pressure Notifies SRO that the Cooler Condensers have been swapped
		<i>Simulator Operator – Continue with the next event at the Chief Examiners request.</i>

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 2

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Event Description: Small leak on a Main Steam line in the DW requiring SBTG to vent DW

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>Simulator Operator, at the direction of the lead examiner, ENTERS: (RB-2) malfunction mfB21_123A final value of 0.0025 and ramp of 100.</i>
	ALL	<ul style="list-style-type: none"> Receives Annunciators: <ul style="list-style-type: none"> PRIMARY CNMT PRESSURE HIGH, (603-115) PANEL 2H11-P657 SYSTEM TROUBLE, (650-224) May receive MULTIPOINT TEMPERATURE RCDR, (657-025)
	SRO	<ul style="list-style-type: none"> Directs the BOP to: <ul style="list-style-type: none"> Enter 657-025 ARP Monitor Drywell pressure Vent the DW with SBTG, when DW pressure approaches 0.65 psig Enter 34AB-T23-002-2, Small Pipe Break Inside Primary Containment (may give this to the ATC since BOP will be at back panel) <ul style="list-style-type: none"> Directs Operator Check DW Leakage per 34SV-SUV-019-2.
		<p>NOTE: <i>The operator may place Drywell venting in service by using the Placard that's available or using the appropriate section of the procedure. These steps assume the Placard is used. The 2A or 2B SBTG Train may be used. The following steps are written assuming "2A" Train is used. If "2B" Train is used, substitute "2B" for "2A" for valves and the alarm numbers in parenthesis.</i></p> <p><i>Simulator Operator, ENSURE ET-T46-13 & ET-T46-14 have ACTIVATED.</i></p>

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 2

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Event Description: Small leak on a Main Steam line in the DW requiring SBTG to vent DW

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Confirms Temperature is elevated on 2T47-R626 recorder • Enters 34SO-T48-002-2, "Containment Atmosphere Dilution System" or uses placard to vent the Drywell. • Enters 34SO-T46-001-2, "Standby Gas Treatment System" procedure or uses placard at the 2H11-P657 panel to start SBTG 2A. <ul style="list-style-type: none"> • Opens 2T46-F001A (1B) or 2T46-F003A (3B) • Places 2A (2B) SBTG Fan control switch to "RUN" • Alarm SBTG 2A (2B) SWITCH NOT IN AUTO, (657-091) (654-076), will be received • Confirms 2T46-F002A (2B) OPENS • Confirms SBTG 2A (B) Heater red light illuminates • Confirms SBTG 2A (B) flow on recorder 2T41-R618 Point 5 (2U41-R600 Point 3)
	BOP	<ul style="list-style-type: none"> • Opens 2T48-F334A or 2T48-F334B (both valves may be opened) • The following alarms will be received: <ul style="list-style-type: none"> • DRYWELL VENT EXHAUST BYPASS VALVES OPEN, (657-008) • DRWL/TORUS N2 M/U 2 INCH ISOL VALVES OPEN, (657-042) • DRYWELL VENT EXHAUST BYPASS VALVES OPEN, (654-002) • DRWL/TORUS N2 M/U 2 INCH ISOL VALVES OPEN, (654-035) • Opens 2T48-F335A or 2T48-F335B (both valves may be opened) • Opens 2T48-F336A or 2T48-F336B using controller (both valves may be opened) • Monitors DW pressure.
	SRO	<ul style="list-style-type: none"> • If DRYWELL PRESS HIGH, (602-210) alarm is received, may direct the operator to fast vent the Drywell IAW 34SO-T48-002-2.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 2

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Event Description: Small leak on a Main Steam line in the DW requiring SBTG to vent DW

Time	Position	Applicant's Actions or Behavior
	BOP/ATC	<ul style="list-style-type: none"> If directed, enters 34SO-T48-002-2, to fast vent and confirms the following alarms are NOT illuminated:
		<ul style="list-style-type: none"> SBGT/DRYWELL AND TORUS RADIATION HIGH (601-402) FISSION PRODUCT PARTIC RADN HIGH/INOP (602-406) FISSION PRODUCT IODINE RADN HIGH/INOP (602-412) FISSION PRODUCT GAS HIGH/INOP (602-418) CONTAINMENT RADIATION HIGH/INOP (602-436)
		<ul style="list-style-type: none"> Opens 2T48-F319, Drywell Vent Vlv (2H11-P602). Opens 2T48-F320, Drywell Vent Vlv (2H11-P601). When Drywell pressure is < 0.5 psig on 2T48-R607A OR 2T48-R607B, close 2T48-F320, Drywell Vent Vlv. Closes 2T48-F319, Drywell Vent Vlv.
	ATC/BOP	<ul style="list-style-type: none"> Enters 34AB-T23-002-2 and attempts to identify the location of the pipe break including: <ul style="list-style-type: none"> Instrumentation lines RWCU (may remove from service and isolate by tripping RWCU 2B and then closing 2G31-F001 and/or 2G31-F004) Recirc Pump seals HPCI RCIC SRV Tailpipe Vacuum Breakers malfunctioning <ul style="list-style-type: none"> Feedwater line break indication Notifies SSS to perform 34SV-SUV-019-2, DW Leakage check.
		<i>Simulator Operator, after 3 minutes as the operator checking DW leakage, reports that DW Equipment Drain leakage is stable at 1.7 gpm and that Floor Drain leakage has increased from 0.8 gpm to 10.1 gpm.</i>
	SRO	<ul style="list-style-type: none"> Enters Tech Specs 3.4.4, RCS Operational Leakage, Condition A and Condition B to reduce leakage to within limits in 4 hours.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 3

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Event Description: CRD pump trips due to low suction pressure instrument failure. Must start standby pump to restore system flow & pressure

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>At the Chief Examiner's direction, Simulator Operator enters (RB-3) malfunction mf60311334 CRD A Suction Pressure Low alarm. ENSURE Event Trigger ET C11-2 ACTIVATES when CRD A Suction Pressure Low alarms.</i>
	ATC	<ul style="list-style-type: none"> Recognizes the following occurs: <ul style="list-style-type: none"> CRD PUMP A SUCTION PRESSURE LOW, (603-146) alarms CRD PUMP 2A BREAKER TRIP, (603-128) alarms CRD pump 2A is tripped CRD HYD TEMP HIGH, (603-140) alarms CRD ACCUMULATOR PRESS LOW OR HIGH, (603-148) alarms ~ 1.5 minutes later (will NOT alarm if CRD 2B is started expeditiously).
	SRO/ATC	<ul style="list-style-type: none"> Dispatches SO/Maint to determine the cause of the low suction pressure condition for CRD pump 2A.
	SRO	<ul style="list-style-type: none"> Directs the ATC to enter 34AB-C11-001-2, Loss of CRD, and start CRD pump 2B.
		NOTE: <i>The Abnormal procedure requires charging water header to be restored within 20 minutes.</i>
	ATC	<ul style="list-style-type: none"> Enters 34AB-C11-001-2, Loss of CRD <ul style="list-style-type: none"> Places 2C11-R600, CRD Flow Control, in Manual Decreases 2C11-R600 output to zero Manually starts CRD pump 2B CHARGING WATER PRESSURE HIGH, (603-139) may come in and then clear on pump start Increases system flow to ~50 gpm Transfers 2C11-R600 to Automatic Notifies SRO CRD pump 2B is in service May place CRD pump 2A switch to stop, which clears CRD PUMP 2A BREAKER TRIP, (603-128) alarm.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 3

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Event Description: CRD pump trips due to low suction pressure instrument failure. Must start standby pump to restore system flow & pressure

Time	Position	Applicant's Actions or Behavior
	SRO/ATC	<ul style="list-style-type: none"> Dispatches an SO to check CRD temperatures and Accumulator pressures locally.
		<i>Simulator Operator, if dispatched to check Accumulator pressures, wait until after CRD pump 2B is started AND ALL Accumulator alarms are clear, THEN report all accumulator pressure are > 980 psig.</i>
	SRO	May review TS 3.1.5 for inop accumulators and since all accumulator pressures are > 980 psig, does NOT declare any accumulators inop.
		<i>Simulator Operator reports that:</i> <ul style="list-style-type: none"> <i>If the CRD High Temp Alarm is still lit, report that 1 CRD drive (26-35) is > 250°F</i> <i>If the CRD High Temp Alarm is NOT lit, report that all temps are < 250°F</i> <i>Suction pressure for CRD pump 2A is 22 psig and there is no apparent problem with the suction line-up or suction filter.</i>
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 4

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Event Description: Hi dP on SBTG train requiring swapping to other SBTG

Time	Position	Applicant's Actions or Behavior
10 Mins		<p><i>Simulator Operator, at the direction of the Chief Examiner, ENTERS: (RB-4) malfunction mf65702234 2A SBTG Filter Diff Pressure High alarm and override 2T46-R603A OR mf65402051 2B SBTG Filter Diff Pressure High alarm and override 2T46-R603B.</i></p> <p><i>THE MALFUNCTION WILL BE DECIDED BY WHICH SBTG FAN IS FIRST STARTED USING ET-T46-13 & ET-T46-14.</i></p>
		<p>NOTE: The operator may start either 2A or 2B SBTG Train. The following steps are written assuming "2A" Train is used. If "2B" Train is used, substitute "2B" for "2A" for valves and the alarm numbers in parenthesis.</p>
	ALL	<ul style="list-style-type: none"> Alarms received: <ul style="list-style-type: none"> P657 SYTEM TROUBLE, (650-224) (P654 SYSTEM TROUBLE, (650-214)) 2A SBTG FILTER DIFF PRESS HIGH, (657-055), (2B SBTG FILTER DIFF PRESS HIGH, (654-046))
	BOP	<ul style="list-style-type: none"> Enters 657-055 (654-046) <ul style="list-style-type: none"> Confirms Filter differential pressure > 5.7" WG as indicated on 2T46-R603A (B) (2H11-P700) Notifies SRO of high differential pressure on SBTG 2A (2B) Since Filter differential pressure is > 5.7" WG and continued SBTG operation is required, determines SBTG 2B (2A) fan is required to be started and 2A (2B) needs to be secured. (SRO may direct) Enters 34SO-T46-001-2, "Standby Gas Treatment System" procedure or uses placard at the 2H11-P657 panel to start SBTG 2B (2A). <ul style="list-style-type: none"> Opens 2T46-F001B (1A) or 2T46-F003B (3A) Places 2B (2A) SBTG Fan control switch to "RUN" Alarm 2B SBTG SWITCH NOT IN AUTO, (654-076). is received Alarm 2A SBTG SWITCH NOT IN AUTO, (657-091), is received Confirms 2T46-F002B (2A) OPENS Confirms SBTG 2B (2A) Heater red light illuminates.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 4

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Event Description: Hi dP on SBTG train requiring swapping to other SBTG

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Secures SBTG 2A (2B) <ul style="list-style-type: none"> • Confirm "SBTG AUTO SIGNAL PRESENT" annunciator is RESET • Place SBTG 2A (2B) in the AUTO position • Depress SBTG A (B) Fan/Htr Auto-Start Reset pushbutton • Confirm Green HTR OFF light illuminates • Confirm 2T46-F002A (2B) closes • Confirm closed OR close 2T46-F003A (3B) • Confirm closed OR close 2T46-F001A (1B) • Confirm that annunciator P657-093 (P654-078) is NOT in the alarm condition • As time permits, refers To 34SO-T46-001-2 AND place SBTG in Standby per subsection 7.1, Standby - Ready For Auto Start
	SRO	<ul style="list-style-type: none"> • Based on the alarms received and indications, <ul style="list-style-type: none"> • Directs BOP to swap SBTG fans. • Notifies Maintenance of high dP • Addresses Tech Specs: <ul style="list-style-type: none"> • 3.6.4.3, Standby Gas Treatment System Condition B, requires to; Restore required SGT subsystem to operable status within 7 days AND 30 days from discovery of failure to meet the LCO.
		NOTE: If time does NOT permit, the examiner may have to ask the SRO for the SBTG 2A/2B Tech Spec after the scenario is over.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Time	Position	Applicant's Actions or Behavior
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[illegible]

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Event Description: Recirc Pump '2B' will experience high vibration

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Enters the following procedures 34GO-OPS-005-2, "Power Changes" 34SO-B31-001-2, "Recirculation System" <ul style="list-style-type: none"> IAW 34SO-B31-001-2, the ATC decreases Recirc pump speed by depressing the Slow, Medium or Fast LOWER pushbuttons on the Master or Individual controls. Monitors power decrease by observing APRM and generator output indications. Stops power reduction periodically and depresses the High vibration reset pushbutton. The alarm will NOT remain clear until the pump is tripped. Continues to decrease BOTH Recirc pump speeds until minimum Notifies SRO when BOTH Recirc Pumps are at minimum. Notifies the SRO that the vibration alarm DID NOT clear after reducing BOTH Recirc pumps. Notifies SRO of entering Region of Potential Instabilities/Immediate Exit Region of Power to Flow Map.
	BOP	Notifies chemistry of 15% power change in 1 hour IAW 34GO-OPS-005-2, "Power Changes", Step 5.2.13.
		EXAMINER NOTE: Log time when Region of Instabilities/Immediate Exit Region has been entered. Time: _____
		NOTE: HEATER TROUBLE ALARM, (650-135) may alarm due to plant conditions. NOTE: 15% power change sample required IAW limitation 5.2.13, 34GO-OPS-005-2.

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Time	Position	Applicant's Actions or Behavior
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[illegible]

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Event Description: Recirc Pump '2B' will experience high vibration

Time	Position	Applicant's Actions or Behavior
		<p>NOTE: IAW 34AB-B31-001-2, During single loop operation, WHEN the speed of the running pump decreases below approximately 35% speed, positive flow through the idle pump loop due to natural circulation overcomes the negative flow due to reverse flow. The total core flow summing circuitry will continue to subtract this positive idle loop flow from the running loop flow AND give a misleading LOW core flow indication. Total core flow can be calculated by adding the JET PUMP LOOP "A" AND the JET PUMP LOOP "B" flows.</p>
	SRO	<ul style="list-style-type: none"> Has the operator determine if the plant is in the analyzed region of the Power to Flow map.
	ATC	<ul style="list-style-type: none"> Determines that the plant is in the Immediate Exit Region of the Power to Flow map.
		<p>NOTE: When the crew determines that the plant is in the Immediate Exit Region of the Power to Flow map, with Chief Examiners permission, PROCEED to the MAJOR EVENT.</p> <p>IF the crew makes a conservative decision to shut down the Reactor, with Chief Examiners permission, PROCEED to the MAJOR EVENT.</p>
	SRO	Performs the following:
	TIME	<ul style="list-style-type: none"> Within 15 minutes of entering the Immediate Exit Region of the Power to Flow map, directs operator to exit the region by inserting control rods. (Time is stopped when CR movement brief is started)
	TIME	<ul style="list-style-type: none"> Ensures the plant has exited the Immediate Exit Region of the Power to Flow map within one hour. (Time is stopped when region is exited)
		<ul style="list-style-type: none"> Has a control rod movement brief per 34GO-OPS-065-0 Directs ATC operator to insert rods to exit the Power to Flow Map "Immediate Exit Region".

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Event Description: Recirc Pump '2B' will experience high vibration

Time	Position	Applicant's Actions or Behavior
		NOTE: Advise the STA to recommend inserting the current rod group to its insert limit.
	SRO	<ul style="list-style-type: none"> Directs the operator to insert the rods to the insert limit after consulting with the STA. References Tech Spec 3.4.1.A.1 and has 24 hours to meet requirements for Single Loop Operation.
		<p><i>Simulator Operator</i></p> <p><i>If the Team calls for the STA or Reactor Engineering, for rod movement recommendations:</i></p> <ul style="list-style-type: none"> Respond as follows: "Use the Reactivity Manipulations Turnover." <p>NOTE: RBM Downscale alarm may alarm during this movement due to the significant rod worth of these rods. It is allowed to flag the RBM Downscale and Rod Block alarm.</p>
	ATC	<ul style="list-style-type: none"> Inserts control rods per 34GO-OPS-065-0, starting with control rod Group 52. During rod insertion, rod steps will be performed in reverse sequential order, starting at the highest numbered step. (** rod steps are NOT required to be performed sequentially, but must be positioned to their RWM insert limit prior to inserting lower numbered groups). Selects Rod Places Control Rod movement switch to the IN position Verifies Rod moves using Rod display information and Rx and Generator power decreasing.
	ATC	<ul style="list-style-type: none"> If required, adjust 2C11-F003 to get 220 – 280 psid drive water dp.

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Event Description: Recirc Pump '2B' will experience high vibration

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Releases Rod movement switch so that the control rod stops 1 position before the insert limit unless the insert limit is 00. Initials Rod movement Sheet. Verifier, if available, Initials Rod movement sheet. Notifies the SRO when they are out of the region of potential instabilities.
	BOP	<ul style="list-style-type: none"> Removes condensate pumps (CP & CBP) from service prior to CBP discharge pressure < 525 psig OR power <70% OR as soon as practical. For removal of CBP <ul style="list-style-type: none"> If 2C is to be removed, removes the Hydrogen Injection System from service Sends SO to closed selected pumps discharge valve Prior to discharge valve being full closed, trips pump and places control switch in Auto or PTL Has SO complete the procedure Removal of CP <ul style="list-style-type: none"> Sends SO to closed selected pumps discharge valve Trips pump and places control switch in Auto or PTL If pump left in Standby, has SO reopen discharge valve
		<p>NOTE: IAW 34GO-OPS-005-2, "WHEN Feedwater flow is less than 7 mlbm/HR AND two Reactor Feed Pumps are running, one Reactor Feed Pump MAY be shutdown"</p>

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Event Description: Recirc Pump '2B' will experience high vibration

Time	Position	Applicant's Actions or Behavior
	BOP	Enters 34SO-N21-007-2, "Condensate And Feedwater System", section 7.2.1 "First Reactor Feed Pump Shutdown and Leaving in Standby".
		<ul style="list-style-type: none"> • Confirms Feedwater Flow is less than 7 Mlbm / hr. • Confirms RFPT 2A <u>AND</u> RFPT 2B are in Automatic control on 2C32-R600, Master Controller. • Places 2C32-R601A (2C32-R601B), RFP A (B) M/A Station, in Manual, by depressing the 'M' pushbutton until it illuminates, panel 2H11-P603. • Slowly decrease RFPT 2A (2B) speed with RFP A (B) M/A Station until the other RFP is controlling reactor vessel level. <p>NOTE: <i>At this point the operator may stop here with the RFPT NOT injecting and continue with this section as time allows.</i></p>
		<ul style="list-style-type: none"> • When the other RFP has control of water level, slowly decrease RFPT 2A (2B) speed with RFP A (B) M/A Station until no speed decrease is observed AND/OR place the RFPT A (B) TMR switch to SS AND confirm Speed Setter yellow light illuminates. • Slowly lower RFPT 2A (2B) Speed Setter switch until RFPT speed is at 1000 rpm, at 2H11-P650. • IF desired, reduce the RFPT 2A (2B) speed to minimum AND allow the RFPT to "windmill", provided seal water, steam seals, AND lube oil systems remain in service.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: Steam line breaks inside Drywell

Time	Position	Applicant's Actions or Behavior
25 Min		<i>At the Chief Examiner's direction, Simulator operator MODIFY mfB21_123A to Final value of 0.1 with ramp of 1000</i>
	ALL	<ul style="list-style-type: none"> Determines that DW pressure is increasing and approaching 1.85 psig.
	SRO	<ul style="list-style-type: none"> Orders the Rx manually scrammed (may NOT have time to insert manual scram before the Rx auto scrams). Directs ATC to perform RC-1 placard Directs BOP to perform RC-2 and RC-3 placards Enters RC EOP Flowchart As time allows, <ul style="list-style-type: none"> Dispatches personnel to the EDGs to check for proper operation. Directs reopening 2P41-F316A-D IAW 34AB-P41-001-2, Loss of PSW
	ATC	<ul style="list-style-type: none"> Performs RC-1 consisting of: <ul style="list-style-type: none"> Inserts a manual scram. Places the mode switch to shutdown. Confirms all rods are inserted by observing full in lights, SPDS, or the RWM display. Notifies SRO of rod position check. Places SDV isolation valve switch to "isolate" & confirms closed. If NOT tripped, places the Recirc pumps at minimum speed. Inserts SRMs and IRMs. Shifts recorders to read IRMS, when required. Ranges IRMS to bring reading on scale. Notifies the SRO when the above actions are complete.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 6

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Event Description: Steam line breaks inside Drywell

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> Performs RC-2 actions consisting of: Confirms proper Level Control response: <ul style="list-style-type: none"> Checks ECCS Injection Systems and secure as necessary. Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value. IF set down does NOT auto function, then manually reduces FW Master Controller setpoint to approximately 9 inches.
	BOP	<ul style="list-style-type: none"> When feed flow is less than the capacity of the S/U level control valve (≈ 1.5 mlbm/hr), then: <ul style="list-style-type: none"> Opens 2N21-F125. Places 2C32-R619, FW S/U level control valve controller, in Auto, set at approximately 9 inches. Closes 2N21-F110. Trips One RFPT. Controls RWL with RFPTs, HPCI and/or RCIC. Notifies SRO if RWL gets outside assigned band.
	SRO	May direct operator to lower Pressure Set to establish a reactor pressure band.
	ATC/BOP	<ul style="list-style-type: none"> If directed, on the DEHC panel <ul style="list-style-type: none"> Selects the Control → psi- load screen (Clicks) the Lower button to decrease reactor pressure set to a psig value to stop the reactor pressure increase. Reports to the SRO that pressure set has been lowered to stop the reactor pressure increase.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 6

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Event Description: Steam line breaks inside Drywell

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none"> • Secures HPCI as follows: <ul style="list-style-type: none"> • Either, <ul style="list-style-type: none"> • Places HPCI Controller in Manual and lowers output to prevent injection and then performs the following: OR: <ul style="list-style-type: none"> • Depresses and holds the HPCI Turbine Trip push-button. <ul style="list-style-type: none"> • Receives the following: <ul style="list-style-type: none"> • HPCI TURBINE TRIP, (601-103) • HPCI TURBINE TRIP SOLENOID ENERGIZED, (601-109) • HPCI PUMP DISCHARGE FLOW LOW, (601-231) • When HPCI turbine has stopped, places the HPCI Aux Oil Pump in Pull To Lock off. <ul style="list-style-type: none"> • Receives HPCI TURBINE BRG OIL PRESS LOW, (601-112) • When HPCI TURBINE BRG OIL PRESS LOW, (601-112) alarm is received, releases the HPCI Turbine Trip push-button. <ul style="list-style-type: none"> • HPCI TURBINE TRIP SOLENOID ENERGIZED, (601-109) clears.
		NOTE: Reopening 2P41-F316s may be performed now or later in the scenario as time allows.
	ATC	<ul style="list-style-type: none"> • Re-opens 2P41-F316s due to high oil temp on the RFPTs per 34AB-P41-001-2, Loss of PSW, Placard. <ul style="list-style-type: none"> • Places the "A" and "B" Isolation Override switches on the 2H11-P652 panel to Override • Fully opens 2P41-F316A or C and 2P41-F316B or D • Throttles 2P41-F316C or A and 2P41-F316D or B to open while monitoring PSW division 1 and 2 pressure on 2H11-P650 panel ensuring that PSW pressure remains above 80 psig. • Notifies SRO 2P41-F316s have been reopened.
		Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.

Op-Test No.: 2013-301 Scenario No.: 8-03 Event No.: 7

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Event Description: LOCA RHR signal failure – manual actions are required.

Time	Position	Applicant's Actions or Behavior
		<i>NOTE: mfE11_202B (LOCA Signal failure) was inserted at beginning.</i>
	SRO	<ul style="list-style-type: none"> Enters 31EO-EOP-012-2, Primary Containment flow chart.
	BOP	<ul style="list-style-type: none"> At panel 2H11-P601, Confirms the 4 RHR pumps did NOT auto start and ONLY 2 Core Spray pumps are running. Notifies SRO of RHR pump logic failure and starts (Critical Task is met if one RHR pump is started) the 4 RHR pumps.
	SRO	<ul style="list-style-type: none"> Per the PC flowchart, verifies Torus level is <285 inches and directs an operator to place Torus Sprays in service.
	ATC	<ul style="list-style-type: none"> Sprays the Torus per 34SO-E11-010-2 placard on the 2H11-P601 Panel as follows: <ul style="list-style-type: none"> Places Cnmt Spray Vlv Cntl switch in the Manual position. (NOT required, since LOCA signal failed, but procedurally okay) Verifies RHR pump(s) in loop A (B) running. Opens 2E11-F028A or B Opens 2E11-F027A or B Throttles Open 2E11-F027A(B) Notifies SRO that RHR is in Torus Sprays (The flow is only 700gpm, so it may be difficult to see flow indication from a distance.)
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: RHR 2E11-F016A/B stuck closed requiring swapping to other loop of DW spray

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator, ENSURE Event Triggers E11-4 & E11-5 is ACTIVATED when the operator positions 2E11-F016A or B to open.</i>
	SRO	<ul style="list-style-type: none"> When Torus pressure exceeds 11 psig, verifies that Torus Level is <215 inches, in the safe area of Graph 8 (DWSIL) and Directs an operator to: <ul style="list-style-type: none"> Place the DW cooling fans to Off Shutdown Recirc pumps (if running) Spray the DW As time allows, directs an operator to perform 31EO-EOP-114-2 for RHR & CS
	ATC	<ul style="list-style-type: none"> Places the following DW cooling fans control switches in the OFF position: <ul style="list-style-type: none"> 2T47-B007B, Drywell Cooling Top Head Area Unit 2T47-B008B, Drywell Cooling Pedestal/Annular Area Unit 2T47-B009B, Drywell Cooling Recirc Pump Area Unit 2T47-C001B, Drywell Cooling Return Air Fan 2T47-C002B, Drywell Cooling Return Air Fan 2T47-B010B, Drywell Cooling EL 114 Unit 2T47-B007A, Drywell Cooling Top Head Area Unit 2T47-B008A, Drywell Cooling Pedestal/Annular Area Unit 2T47-B009A, Drywell Cooling Recirc Pump Area Unit 2T47-C001A, Drywell Cooling Return Air Fan 2T27-C002A, Drywell Cooling Return Air Fan 2T47-B010A, Drywell Cooling EL 114 Unit Notifies the SRO that the fans are Off.

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Event Description: RHR 2E11-F016A/B stuck closed requiring swapping to other loop of DW spray

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Sprays the Drywell per 34SO-E11-010-2 placard on the 2H11-P601 Panel as follows: <ul style="list-style-type: none"> Places Cnmt Spray Vlv Cntl switch in the Manual position. (not required, since LOCA signal failed, but procedurally okay) Starts RHR pump(s) in loop A (B), if NOT already running. Opens 2E11-F021A or B Opens 2E11-F016A or B (ONE WILL NOT OPEN AND OPERATOR TRANSITIONS TO THE OTHER LOOP) Informs SRO that the 2E11-F016A (or B) will NOT Open Opens 2E11-F021A or B Throttles Open 2E11-F016A(B) (Critical Task) to >5000 gpm Confirms Drywell pressure is reducing Notifies SRO that RHR is in Drywell Sprays
	BOP	<p>Notifies the SSS to perform actions for RHR per 31EO-EOP-114-2. IAW 31EO-EOP-114-2, the operator performs the following:</p> <ul style="list-style-type: none"> CLOSES RHR OUTBD INJ VLV, 2E11-F017A CLOSES RHR OUTBD INJ VLV, 2E11-F017B Notifies SSS to OPEN links & INSTALL jumpers for 2E11-F017A Notifies SSS to OPEN links & INSTALL jumpers for 2E11-F017B Confirms/CLOSES RHR OUTBD INJ VLV, 2E11-F017A Confirms/CLOSES RHR OUTBD INJ VLV, 2E11-F017B Confirms/CLOSES INBD DISCHARGE VLV, 2E21-F005A Confirms/CLOSES INBD DISCHARGE VLV, 2E21-F005B Trips Core Spray pump A, 2E21-C001A Trips Core Spray pump A, 2E21-C001B <p>Notifies SRO 31EO-EOP-114-2 actions for RHR & CS are complete</p>
	SRO	<ul style="list-style-type: none"> As time allows, directs H2/O2 Analyzers placed in service IAW 34SO-P33-001-2.

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Event Description: RHR 2E11-F016A/B stuck closed requiring swapping to other loop of DW spray

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none">• If directed, places H₂/O₂ Analyzers in service IAW 34SO-P33-001-2 or "Placard" by performing the following at 2H11-P700 panel:<ul style="list-style-type: none">• Confirms closed 2P33-F605• Places 2P33-S16, LOCA Override to 'Bypass'• Places 2P33-S17, LOCA Override to 'Bypass'• Confirms analyzers are running by either red analyzer lights illuminated or values indicated on the Primary Display of SPDS• If analyzers red light is off, depresses Channel A and Channel B Reset pushbuttons on 2H11-P700 panel.• Notifies SRO H₂/O₂ Analyzers are running.
		<i>With Chief Examiners Permission, the scenario should be terminated when the crew has sprayed the Drywell with the other Loop of RHR.</i>

NRC FINAL**Scenario Summary****Facility:** E. I Hatch**Scenario No.:** 8-03**Op-Test No.:** 2013-301


Initiating Conditions:	Unit 2 is operating at 75% RTP. Crew is preparing to swap Cooler Condensers in the Off Gas System.
Turnover	Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2. After Cooler Condenser swap, increase reactor power to 80% RTP via Recirc.
<p>Summary:</p> <ul style="list-style-type: none"> • Event 1: Normal; Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2 • Event 2: Component/TS; A Small leak on a Main Steam line in the DW requiring the BOP to place SBTG in service to vent DW. DW Floor drain leakage will be above TS limits. • Event 3: Instrument; The 2A CRD pump will trip due to a low suction pressure instrument failure. The ATC will be required to manually start the standby CRD pump to restore system flow & pressure. • Event 4: Component/TS; The operating train of SBTG will experience a Hi dP condition requiring the BOP to swap to the other SBTG train. SBTG will be declared inop. • Event 5: Component/TS/Reactivity; Recirc Pump '2A' will experience high vibration requiring reducing reactor power in an attempt to clear the alarm. Alarm remains in until pump is tripped. The SRO addresses TS for an inoperable Recirc pump. The plant will be operating in the Immediate Exit Region of the Power-to-Flow map. The ATC operator will insert control rods to exit the Immediate Exit Region of the P/F map. • Event 6: Major; Steam line breaks inside Drywell causing LOCA. • Event 7: Component; RHR LOCA logic failure requiring manual actions to place RHR in service. (Critical Task) • Event 8: Component; When Torus pressure exceeds 11 psig, the operator will have to swap to the other loop of RHR to spray the Drywell, since one RHR DW spray valve will NOT open. The first DW spray valve attempted will NOT open but the other loop of RHR DW spray valve will work. (Critical Task) 	

NRC FINAL**Critical Task List****Facility:** E. I Hatch**Scenario No.:** 8-03**Op-Test No.:** 2013-301Critical Tasks

- RHR LOCA logic failure requiring manual actions for proper RHR Loop operation, when any mode of RHR operation is desired. **(Event 7)**
- RHR 2E11-F016A/B stuck closed requiring the operator to swap to other loop of RHR to spray the DW. **(Event 8)**

	ES 301-4 Attributes	Required	Actual	Items
1.	Total Malfunctions	5-8	7	1. Small leak on a Main Steam line in the DW (Event 2) 2. CRD pump trips (Event 3) 3. Hi dP on SBTGT train (Event 4) 4. Recirc Pump '2B' high vibration (Event 5) 5. Steam line worsens inside Drywell (Event 6) 6. RHR LOCA logic failure (Event 7) 7. RHR 2E11-F016A/B stuck closed (Event 8)
2.	Malfunctions After EOP Entry	1-2	2	1. RHR LOCA logic (Event 7) 2. RHR 2E11-F016A/B stuck closed (Event 8)
3.	Abnormal Events	2-4	4	1. Small leak on a Main Steam line in the DW (Event 2) 2. CRD pump trips (Event 3) 3. Hi dP on SBTGT train (Event 4) 4. Recirc Pump '2B' high vibration (Event 5)
4.	Major Transients	1-2	1	1. Steam line worsens inside Drywell (Event 6)
5.	EOPs entered, requiring substantive actions	1-2	2	1. RC (Non-ATWS) flow chart (Event 6) 2. PC flow chart (Event 7)
6.	EOPs contingencies requiring substantive actions	0-2	0	
7.	Critical Tasks	2-3	2	1. RHR LOCA logic failure requiring manual actions to place RHR in service (Event 7) 2. RHR 2E11-F016A/B stuck closed requiring swapping to other loop of DW spray (Event 8)

SHIFT TURNOVER

	Safety Focus		
UNIT 1 STATUS			
Plant Conditions:	Unit 1 is operating at 100% power Activities in progress: Maintaining Rated Thermal Power		
UNIT 2 STATUS			
Plant Conditions:	Unit 2 is operating at 74% power Activities in progress: Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2.		
<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II </td> <td style="width: 50%; vertical-align: top;"> <u>EOOS:</u> <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Yellow </div> <div> <input type="checkbox"/> Orange <input type="checkbox"/> Red </div> </div> </td> </tr> </table>		<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Yellow </div> <div> <input type="checkbox"/> Orange <input type="checkbox"/> Red </div> </div>
<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Yellow </div> <div> <input type="checkbox"/> Orange <input type="checkbox"/> Red </div> </div>		
Scheduled evolutions:	<input type="checkbox"/> Swap Cooler Condensers from 2N62-B003A to 2N62-B003B IAW 34SO-N62-001-2, step 7.2.2. <input type="checkbox"/> After Cooler Condenser swap, increase reactor power to 80% RTP via Recirc.		
Surveillances due this shift:	<input type="checkbox"/> None		
Inop Equipment:	<input type="checkbox"/> None		
Active tagouts:	<input type="checkbox"/> None		
Rod Configuration:	<input type="checkbox"/> See RWM		

Appendix D

Scenario Outline

Form ES-D-1

NRC FINAL**Facility:** E. I. Hatch**Scenario No.:** 8-04**Op-Test No.:** 2013-301

Examiners: _____ **Operators:** _____ **SRO**
 _____ **RO**
 _____ **BOP**

Initial Conditions. A Tornado watch has been issued by the National Weather Service for Southern Toombs and Northern Appling counties for the next 2 hours. Unit 2 is operating at 53% RTP and holding due to current weather conditions. SRV 2B inop for LLS.

Turnover: Unisolate RCIC, place in standby and then after the weather improves, increase reactor power to 65% RTP.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP)	Unisolate RCIC and place in standby.
2	mfB21_130F	C (ATC) TS (SRO)	2F LLS SRV cycles open/close until fuses are pulled. (Critical Task)
3	mf70022416 (ON)	C (BOP)	Instrument Air System Prefilter dP Hi – swap Prefilters.
4	mfN21_88A	C (ATC)	RFPT loop seal failure
5	mfB21_229A ET-T46-01 ET-T46-02	C (BOP) TS (SRO)	Small leak on the “A” FW line in the DW requiring SBGT to vent Drywell. Suction valves for the first SBGT started will fail to open, must use opposite train to vent the Drywell.
6	mfS11_227A	R (ATC) TS (SRO)	Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.
7	mfB21_229A diC11B-S4A diC11B-S4B ET-C71-3	M (ALL)	Leak on the “A” FW line in the DW worsens/ruptures requiring a reactor shutdown. Small RWCU leak in DW.
8	diN21-F006A	C (BOP)	2N21-F006A fails to close requiring all Cond/FW isolated (Critical Task)
9	mfE51_61	M (ALL)	RCIC trips on overspeed. Loss of High pressure feed. Emergency Depress between TAF & -185 inches. (Critical Task)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 1

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Event Description: Unisolate RCIC and place in standby.

Time	Position	Applicant's Actions or Behavior
10 Min.	SRO	Directs BOP to unisolate RCIC and place in standby IAW 34SO-E51-001-2, RCIC System, starting at step 7.1.1.36.
		<p>NOTE: The RCIC Steam Line can be warmed and pressurized by performing either step 7.1.1.36.1 (2E51-F007)</p> <p>OR</p> <p>7.1.1.36.2 (2E51-F008).</p> <p>If the BOP chooses step 7.1.1.36.1, (2E51-F007), then the following steps are applicable.</p>
	BOP	<p>Pressurizing RCIC steam supply with 2E51-F007:</p> <ul style="list-style-type: none"> • Confirm closed 2E51-F007, Steam Supply Isol Valve • Opens 2E51-F008 Steam Supply Line Isol Valve • Opens 2E51-F054 Steam Line Drain Valve • Slowly throttles open 2E51-F007 Steam Supply Isol Valve • Fully Opens 2E51-F007 when turbine steam inlet pressure (2E51-R602) is within 50 psig of reactor pressure on 2B21-R623A or B (P601 panel) • Confirms RCIC ISOLATION VLV F007/F008 NOT FULLY OPEN, (602-336) alarm clears • Closes 2E51-F054, Steam Line Drain Valve, when alarm, RCIC TURBINE INLET DRAIN POT LEVEL HIGH, (602-308), clears • Completes Attachment 1 and notifies SRO to be verified
	SRO	Notifies SSS to complete verification of Attachment 1.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 1

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Event Description: Unisolate RCIC and place in standby.

Time	Position	Applicant's Actions or Behavior
		<p>NOTE: The RCIC Steam Line can be warmed and pressurized by performing either step 7.1.1.36.1 (2E51-F007)</p> <p>OR</p> <p>7.1.1.36.2 (2E51-F008).</p> <p>If the BOP chooses step 7.1.1.36.2, (2E51-F008), then the following steps are applicable.</p>
		<p>Pressurizing RCIC steam supply with 2E51-F008:</p> <ul style="list-style-type: none"> • Confirm closed 2E51-F008, Steam Supply Line Isol Valve • Opens 2E51-F007 Steam Supply Isol Valve • Opens 2E51-F054 Steam Line Drain Valve • Slowly throttles open 2E51-F008 Steam Supply Line Isol Valve • Fully Opens 2E51-F008 when turbine steam inlet pressure (2E51-R602) is within 50 psig of reactor pressure on 2B21-R623A or B (P601 panel) • Confirms RCIC ISOLATION VLV F007/F008 NOT FULLY OPEN, (602-336) alarm clears • Closes 2E51-F054, Steam Line Drain Valve, when alarm, RCIC TURBINE INLET DRAIN POT LEVEL HIGH, (602-308), clears
	SRO	Notifies SSS to complete verification of Attachment 1.
		<p>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</p>

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 2

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Event Description: SRV 2F (LLS) cycles open/close until fuses are pulled.

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>At the Chief Examiner's direction, Simulator operator, INSTRUCT the BOP operator by phone to stay on the line until told to hang up, THEN ENTER (RB-2) malfunction mfb21_130F, 2F LLS valve intermittently cycling open and close. ENSURE Event Trigger ET-B21-12 ACTIVATES. This SRV will cycle such that it is open for 15 seconds, then stays closed for 45 seconds, then repeats this cycle for 5 minutes or until fuses for SRV 2F are pulled.</i>
	ATC	<ul style="list-style-type: none"> Receives SAFETY BLOWDOWN PRESSURE HIGH, (602-311) and SAFETY/BLOWDOWN VALVE LEAKING, (603-122) alarms
	SRO	<p>Directs operator to enter 34AB-B21-003-2, Failure of Safety/Relief Valves</p> <ul style="list-style-type: none"> Enters a RAS for TS LCO 3.6.1.6.A for 2 or more LLS valves inop, which requires the unit to be in mode 3 in 12 hours and mode 4 in 36 hours. Directs operators to verify that the SRV 2F is closed, after the fuses are pulled.
	ATC	<ul style="list-style-type: none"> Enters 34AB-B21-003-2, Failure of Safety/Relief Valves Determines SRV 2F is cycling open then close Cycles the SRV 2F Control Switch several times May depress the ADS Logic A Timer Reset pushbutton (2B21-S2A) May depress the ADS Logic B Timer Reset pushbutton (2B21-S2B) Depresses the LLS Channel A / C Reset pushbutton (2B21-S15A) Depresses the LLS Channel B / D Reset pushbutton (2B21-S15B) Informs SRO that SRV 2F is cycling and the fuses will have to be pulled for the valve Notifies the SSS to pull the fuses for SRV 2F
	ATC	<p>Receives DRYWELL/TORUS RCDR R627 TEMP HIGH, (650-204) alarm</p> <ul style="list-style-type: none"> Determines Torus Water Temp (Point 2) is high at 98°F When the SRV is closed Point 2 starts decreasing.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 2

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Event Description: SRV 2F (LLS) cycles open/close until fuses are pulled.

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator, assuming that a request was made to pull fuses for SRV 2F, wait 4 minutes, then DELETE mfB21_130F, 2F LLS Valve or Scenario B21-12, then ENTER (RB-8), rfb21_305, to simulate pulling the fuses for SRV 2F.</i></p> <p><i>Then, Notify the crew that the fuses have been pulled for SRV 2F.</i></p>
	ATC	<ul style="list-style-type: none"> • Confirms that SRV 2F is closed by monitoring one or more of the following: <ul style="list-style-type: none"> • SRV tailpipe temperature decrease (Directs BOP to P614 panel) • Torus level stabilizing • Torus Temp stabilizing • Rx and Generator power returns to the pre-event level • Resets the SRV leak detection by placing the Leak Detection Logic A Reset keylock switch and Leak Detection Logic B Reset keylock switch to Reset position and back to Normal position • Confirms that the Amber SRV indicating lights have Extinguished • SAFETY BLOWDOWN PRESSURE HIGH, (602-311), clears • Informs the SRO that SRV 2F is closed.
	SRO/ATC	<p>Informs the crew that operability of the suppression chamber-drywell vacuum breakers must be performed within 12 hours per 34SV-T48-002-2, Suppression Chamber To Drywell Vacuum Breaker System Operability.</p> <p>Notifies Chemistry and initiates a CR to initiate increased monitoring of vessel moisture content carryover per 64CH-SAM-025-0.</p>
		<p><i>At this time, Torus temperature will still be below 95°F, therefore RHR is NOT required to be placed into Torus Cooling. The SRO may elect to place Torus Cooling in service, since steam was admitted to the Torus. The following steps are written IF the SRO elects to place Torus Cooling in service.</i></p>

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 2

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Event Description: SRV 2F (LLS) cycles open/close until fuses are pulled.

Time	Position	Applicant's Actions or Behavior
		<p>NOTE: The operator may place torus cooling in service by using the Placard that's available or using the appropriate section of the procedure. These steps assume the Placard is used. The A or B loop of RHR may be used. The following steps are written assuming "B" loop and "B" pump is used. If "A" loop is used, substitute "A" for "B" for valves and if "B" pump is not used substitute "A", "C", or "D" for "B" pump.</p>
	BOP	<ul style="list-style-type: none"> Enters 34SO-E11-010-2, Residual Heat Removal Places RHRSW in service Prelube RHRSW pump Overrides 2E11-F068B Low Discharge Pressure Interlock Positions 2E11-F068B to 45% OPEN Starts RHRSW pump B Places 2E11-F068B Low Discharge Pressure Interlock switch to normal position. Positions 2E11-F068B to obtain < 4400 gpm AND < 450 psig
	BOP	<ul style="list-style-type: none"> IF desired to start a SECOND RHRSW pump, <ul style="list-style-type: none"> Throttles 2E11-F068B to achieve max flow rate (not to exceed 4400 GPM). Opens 2E11-F068B an additional 5%. Starts second RHRSW Pump. Positions 2E11-F068B to obtain < 8800 gpm AND < 450 psig

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 2

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Event Description: SRV 2F (LLS) cycles open/close until fuses are pulled.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> Places RHR B Loop in Torus cooling per the placard by performing the following steps: <ul style="list-style-type: none"> Opens 2E11-F048B Closes 2E11-F047B. Opens 2E11-F003B. Starts RHR Loop B pump Receives alarm, RHR LOW FLOW, (601-222) Opens 2E11-F028B Receives alarm, AUTO BLOWDOWN CS OR RHR PRESS PERMISSIVE, (602-312) Receives alarm, SEC SYSTEM AUTO INITIATION SIGNAL PRESENT, (650-234) Throttles OPEN 2E11-F024B Alarm, RHR LOW FLOW, (601-222), clears Opens 2E11-F047B Ensures RHR flow is < 11,500 GPM, THEN Closes 2E11-F048B Notifies the SRO that RHR "B" loop is in service May place the second pump in service.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 3

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Event Description: Instrument Air System Prefilter dP Hi – swap Prefilters.

Time	Position	Applicant's Actions or Behavior
7 Mins		<i>Simulator Operator at direction of the lead examiner, ACTIVATE: (RB-3) malfunction mf70022416 – Window 25 INSTRU AIR PREFLTR D103A DIFF PRESS HIGH (ANNUNCIATOR ON)</i>
	All	The following annunciators are received: <ul style="list-style-type: none"> • PANEL 2H11-P700 SYSTEM TROUBLE, (650-225) • INSTR AIR PREFLTR D103A DIFF PRESS HIGH, (700-225)
	BOP	<ul style="list-style-type: none"> • Acknowledges 2H11-P700 panel alarm on 2H11-P650 • Acknowledges INSTR AIR PREFLTR D103A DIFF PRESS HIGH, (700-225) on 2H11-P700 and notifies the SRO of the alarm • Dispatches an SO locally to determine Prefilter dP on 2P52-dPIS-N301A, look for air leaks on the filter and to verify that the instrument isolation valve is open.
		<i>Simulator Operator: 2 minutes after being dispatched to check Prefilter dP, inform the BOP that 2P52-dpis-N301A indicates 6 psid and that no air leaks exist.</i>
	SRO	<ul style="list-style-type: none"> • Notifies Maintenance (if BOP has not) to change out the Prefilter cartridge and initiates a condition report. • Directs the BOP to swap Prefilters IAW 34AR-700-225-2.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 3

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Event Description: Instrument Air System Prefilter dP Hi – swap Prefilters.

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator, WHEN the BOP swaps Prefilters, ENSURES EVENT TRIGGER P51-1 & P52-2 ACTIVATES: deleting malfunction mf70022416 – Window 25 INSTRU AIR PREFLTR D103A DIFF PRESS HIGH (ANNUNCIATOR ON) and simulates correct light arrangement.</i>
	BOP	<p>At 2H11-P700:</p> <ul style="list-style-type: none"> • Places control switch to ON for Turb Bldg Inst Air PreFltr/Afterfilter 2P52-D103B/2P52-D102B Inlet Isol, 2P52-F002B/2P52-F011B. • Places control switch to OFF for Turb Bldg Inst Air PreFltr/Afterfilter 2P52-D103A/2P52-D102A Inlet Isol, 2P52-F002A/2P52-F011A. • Notifies the SRO that the Prefilter has been swapped from “A” to “B”. • 700-225 alarm clears.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 4

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Event Description: RFPT loop seal failure.

Time	Position	Applicant's Actions or Behavior
10 Min		<p><i>SIMULATOR OPERATOR: At the direction of the Chief Examiner, ACTIVATE (RB-6)</i></p> <ul style="list-style-type: none"> mf65031541 "RFP Loop Seal Level Low (Annunciator On)" mfN61_73 "Main Condenser Air In-leakage" <p><i>NOTE: It takes approximately 28 minutes for vacuum to decrease to 25.9".</i></p>
	ATC	<ul style="list-style-type: none"> Recognize RFP LOOP SEAL LEVEL LOW, (650-319), annunciator
	ATC	<ul style="list-style-type: none"> Respond to annunciator RFP LOOP SEAL LEVEL LOW, (650-319) Dispatches an SO to 2H21-P216 to confirm 2N22-F398, RFP Bracket Drain Loop Seal Fill Valve is open. Monitors vacuum at 2H11-P650, on 2N21-R602. Dispatches an SO to confirm seal water lineup and pressures IAW 34S0-N21-007-2, Condensate and Feedwater System.
	BOP	<ul style="list-style-type: none"> Monitors Inlet Flow to Stack on 2N62-P600 Receives INLET FLOW TO STACK HIGH, (600-020) Monitors Inlet flow to Stack at 2N62-P600, on 2N21-R604
	SRO	May direct entry into 34AB-N61-002-2, Main Condenser Vacuum Low, abnormal.
	BOP	If directed, may REDUCE reactor power per 34GO-OPS-005-2, Power Changes, to establish and maintain vacuum greater than 25 in. Hg.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 4

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Event Description: RFPT loop seal failure.

Time	Position	Applicant's Actions or Behavior
		<p><i>SIMULATOR OPERATOR: Wait 4 minutes from being dispatched, NOTIFY the ATC of ONE of the following messages:</i></p> <p style="text-align: center;">MESSAGE 1</p> <p><i>IF 2N22-F265 is still OPEN REPORT:</i></p> <ul style="list-style-type: none"> • <i>Having difficulty locating 2N22-F398, RFP Bracket Drain Loop Seal Fill Valve but still attempting to locate.</i> • <i>Seal water pressures are normal and/but the lineup check is NOT completed.</i> • <i>NO water is coming out of weep holes.</i>
		<p style="text-align: center;">MESSAGE 2</p> <p><i>IF 2N22-F265 has been CLOSED REPORT:</i></p> <ul style="list-style-type: none"> • <i>2N22-F398, RFP Bracket Drain Loop Seal Fill Valve was closed and now is open</i> • <i>Seal water pressures are normal and/but the lineup check is NOT completed.</i> • <i>NO water is coming out of weep holes.</i>
		<p><i>SIMULATOR OPERATOR: ENSURE Event Trigger ET-N21-2 deletes mfN61_73 when one of the following occurs:</i></p> <ul style="list-style-type: none"> • <i>Condenser vacuum drops to 25.9"</i> • <i>2N21-F265 is closed</i> <p><i>Then 45 seconds later, DELETES mf65031541.</i></p>
	ATC	<ul style="list-style-type: none"> • With seal water pressures normal, will be required to close 2N21-F265, RFP Loop Seal Outlet Isol Vlv after 5 minutes of alarm RFP LOOP SEAL LEVEL LOW, (650-319), being received. • With vacuum degrading may close 2N21-F265 sooner to reverse degrading vacuum condition.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 4

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Event Description: RFPT loop seal failure.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none">Opens 2N21-F265 when RFP LOOP SEAL LEVEL LOW, (650-319) clears.
	BOP	<ul style="list-style-type: none">Alarm INLET FLOW TO HOLDUP LINE HIGH, (600-020), clears when flow returns to normal.
		<i>SIMULATOR OPERATOR; At Chief Examiners direction, proceed to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 5

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Event Description: Small leak on the "A" FW line in the DW requiring SBTG to vent Drywell. Suction valves for the first SBTG started will fail to open, must use opposite train to vent the Drywell.

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>Simulator Operator, at the direction of the lead examiner, ENTERS: (RB-5) malfunction mfb21_229A final value of 0.05 and ramp of 1000.</i>
	ALL	<ul style="list-style-type: none"> Receives Annunciators: <ul style="list-style-type: none"> PRIMARY CNMT PRESSURE HIGH, (603-115) MULTIPOINT TEMPERATURE RCDR 2T47-R626 TEMP HIGH, (657-025)
	SRO	<ul style="list-style-type: none"> Directs the BOP to: <ul style="list-style-type: none"> Enter 657-025 ARP. Monitor Drywell pressure. Vent the DW with SBTG, when DW pressure approaches 0.65 psig. Enter 34AB-T23-002-2; Small Pipe Break Inside Primary Containment (may give this to the ATC since BOP will be at back panel). Directs Operator Check DW Leakage per 34SV-SUV-019-2.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 5

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Event Description: Small leak on the "A" FW line in the DW requiring SBGT to vent Drywell. Suction valves for the first SBGT started will fail to open, must use opposite train to vent the Drywell.

Time	Position	Applicant's Actions or Behavior
		<p>NOTE: Event triggers will insert overrides to keep the first valves that are operated from opening, that particular SBGT failing to auto start and then remove the event trigger from the opposite SBGT train. The examinee will NOT be successful with the first SBGT train; however, the second SBGT train used will be successful.</p> <p>Simulator Operator, ENSURE ET-T46-01 & ET-T46-02 are ACTIVATED.</p>
	BOP	<ul style="list-style-type: none"> Enters 34SO-T48-002-2, "Containment Atmosphere Dilution System" or uses placard to vent the Drywell. Enters 34SO-T46-001-2, "Standby Gas Treatment System" procedure or uses placard at the 2H11-P657 panel to start SBGT 2A or 2B. Determines that 2T46-F001 (A or B) and 2T46-F003 (A or B) for the selected train will NOT open. Informs SRO that SBGT (2A or 2B) CANNOT be started due to suction valve failure.
	SRO	<ul style="list-style-type: none"> Addresses Tech Specs: <ul style="list-style-type: none"> 3.6 Containment Systems 3.6.4.3, Standby Gas Treatment System Condition: 3.6.4.3.B, one required Unit 2 SGT subsystem inoperable. <p>Required Action: 3.6.4.3.B.1, Restore required SGT subsystem to operable status.</p> <p>Completion time: 7 days AND 30 days from discovery of failure to meet the LCO.</p> <ul style="list-style-type: none"> Direct that maintenance be contacted to determine problem with failed SBGT suction dampers.

Op-Test No.: 2013-301 Scenario No.: 8-04 Event No.: 5

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Event Description: Small leak on the "A" FW line in the DW requiring SBGT to vent Drywell. Suction valves for the first SBGT started will fail to open, must use opposite train to vent the Drywell.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> Vents with the opposite train of SBGT per 34SO-T46-001-2 SBGT System procedure or uses placard.
	BOP (Placard)	<ul style="list-style-type: none"> Opens 2T46-F001 (A or B) or 2T46-F003 (A or B) for the subsequent train. Places SBGT Fan (2A or 2B) control switch to "RUN." Receives (2B or 2A) SBGT SWITCH NOT IN AUTO, (657-091 or 654-076), alarm Confirms 2T46-F002 (A or B) OPENS Confirms SBGT Heater red light illuminates.
	BOP (Placard)	<ul style="list-style-type: none"> Opens 2T48-F334A or 2T48-F334B (both valves may be opened) Receives alarm DW VENT EXH BYPASS VLV OPEN, (657-008) or (654-002) Receives alarm DRWL/TORUS N2 M/U 2 INCH ISOL VALVES OPEN, (657-042) or (654-035) Opens 2T48-F335A or 2T48-F335B (both valves may be opened) Opens 2T48-F336A or 2T48-F336B (both valves may be opened) Monitors DW pressure Notifies SRO that venting of the Drywell is in progress.
	BOP/ATC	<ul style="list-style-type: none"> If directed, enters 34SO-T48-002-2, to fast vent and confirms the following alarms are NOT illuminated:
		<ul style="list-style-type: none"> SBGT/DRYWELL AND TORUS RADIATION HIGH (601-402) FISSION PRODUCT PARTIC RADN HIGH/INOP (602-406) FISSION PRODUCT IODINE RADN HIGH/INOP (602-412) FISSION PRODUCT GAS HIGH/INOP (602-418) CONTAINMENT RADIATION HIGH/INOP (602-436)
		<ul style="list-style-type: none"> Opens 2T48-F319, Drywell Vent Vlv (2H11-P602). Opens 2T48-F320, Drywell Vent Vlv (2H11-P601). When Drywell pressure is < 0.5 psig on 2T48-R607A OR 2T48-R607B, close 2T48-F320, Drywell Vent Vlv. Closes 2T48-F319, Drywell Vent Vlv.

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Event Description: Small leak on the "A" FW line in the DW requiring SBGT to vent Drywell. Suction valves for the first SBGT started will fail to open, must use opposite train to vent the Drywell.

Time	Position	Applicant's Actions or Behavior
	ATC/BOP	<ul style="list-style-type: none"> Enters 34AB-T23-002-2 and attempts to identify the location of the pipe break including: <ul style="list-style-type: none"> Instrumentation lines RWCU (may remove from service and isolate by tripping RWCU 2B and then closing 2G31-F001 and/or 2G31-F004) Recirc Pump seals HPCI RCIC SRV Tailpipe Vacuum Breakers malfunctioning <ul style="list-style-type: none"> Feedwater line break indication Notifies SSS to perform 34SV-SUV-019-2, DW Leakage check.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>Simulator Operator, at Chief Examiners direction, ACTIVATE (RB-4) mfS11_227A, SUT 2C FAILURE.</i>
	All	The following annunciators is received: <ul style="list-style-type: none"> • 230KV BRKR TRIP, (653-218)
	BOP	<ul style="list-style-type: none"> • Acknowledges 230KV BRKR TRIP, (653-218) alarm • Communicates the alarm to the SRO
	BOP	<p>Enters 230KV BRKR TRIP, (653-218) and performs the following:</p> <ul style="list-style-type: none"> • On panel 1H11-P653, determine PCBs 179470 & 179480 breakers have tripped • Notifies substation maintenance so they may aid in determining and correcting the cause of alarm AND notify GCC of the cause and any actions taken and to record any alarms and relay targets for the tripped breaker to aid in determining the cause of the trip. • Notifies the SRO to confirm the requirements of Unit 1 Technical Specifications, Section 3.8.1, are met AND perform any actions required by these Specifications.

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Event Description: Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.

Time	Position	Applicant's Actions or Behavior
		<p><i>Simulator Operator: After one minute,</i></p> <p><i>NOTIFIES Unit 2 Control Room that a Tornado was sighted near the High Voltage Switchyard and you saw a line fall in the High Voltage Switchyard. The Tornado has crossed over the river and is now moving into Toombs County and away from the plant.</i></p>
	SRO	<ul style="list-style-type: none"> • Directs the BOP to enter 34AB-Y22-002-0, Naturally Occurring Phenomenon, if NOT already entered. • Reviews TS 3.8.1 AC Sources – Operating, and enters 3.8.1 Condition A: <ul style="list-style-type: none"> • TS 3.8.1 Condition A requires: <ul style="list-style-type: none"> • A.1 - performance of SR 3.8.1.1 for OPERABLE required offsite circuits in 1 hour and once per 8 hours thereafter • A.2 - declare required feature(s) with no offsite power available inoperable when the redundant required feature(s) are inoperable within 24 hours of discovery of no offsite power to one 4160 V ESF bus concurrent with inoperability of redundant required feature(s). • A.3 - Restore required offsite circuit to OPERABLE status within 72 hours and 17 days from discovery of failure to meet LCO 3.8.1.a, b, or c. • Notifies SSS to perform (SR 3.8.1.1) 34SV-SUV-013-0 for inop SAT 2C.

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Event Description: Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.

Time	Position	Applicant's Actions or Behavior
		NOTE: <i>The BOP can perform actions in 34AB-Y22-002-2 in any order and may not perform all actions before moving the scenario forward.</i>
	BOP	<p>Enters 34AB-Y22-002-0, Naturally Occurring Phenomena and performs the following:</p> <ul style="list-style-type: none"> • Notifies Security Personnel of the following: <ul style="list-style-type: none"> • Merge the Plant PA AND the Simulator Building PA systems. • Take appropriate security measures for Naturally Occurring Phenomena. • Inform them of any actions which may degrade the current level of security, OR a need to close or open security doors, power outages which could impact security lighting OR communication equipment, etc. • Have them consider securing outside post AND bring officers inside for protection.
		NOTE: <i>The BOP can perform actions in 34AB-Y22-002-2 in any order and may not perform all actions before moving the scenario forward.</i>
	BOP	<ul style="list-style-type: none"> • Makes a Page announcement. • The shift operating crew will review 34AB-R22-003-2, Station Blackout procedure. • Notify Maintenance AND Facilities to remove OR secure equipment in the Protected AND outside areas. • Notify the System Operator in Birmingham AND the Division Operator in Valdosta. • Inspect the plant, Independent Spent Fuel Storage Installation (ISFSI), AND Switchyard for damages. • May inform the Shift Manager to evaluate an Emergency Classification.

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Event Description: Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.

Time	Position	Applicant's Actions or Behavior
		NOTE: The BOP can perform actions in 34AB-Y22-002-2 in any order and may not perform all actions before moving the scenario forward.
	BOP	<ul style="list-style-type: none"> Confirms Unit 1 4160V Emergency Buses, on SAT 1D, per 34SO-R22-001-1, 4160 VAC Systems Operation, 1R22-S005, 1R22-S006 & 1R22-S007 Confirms Unit 2 4160V Emergency Buses, on SAT 2D, per 34SO-R22-001-2, 4160 VAC Systems Operation, 2R22-S005, 2R22-S006 & 2R22-S007 Dispatches operators to the Diesel Building to prepare to locally start any diesels that are needed AND fail to start automatically. Notifies SRO to suspend the following: <ul style="list-style-type: none"> All surveillance testing All core alterations AND movement of irradiated fuel Maintenance on, AND restore to operable status the following systems: <ul style="list-style-type: none"> All ECCS RCIC RPS EDG Emergency Power Supply Buses PSW
		NOTE: The BOP can perform actions in 34AB-Y22-002-2 in any order and may not perform all actions before moving the scenario forward.
	BOP	<ul style="list-style-type: none"> Notifies SRO that since a SCRAM did not occur, AND a tornado hit the plant site, reactor power is required to be reduced to 40-50% of RTP per 34GO-OPS-005-2, Power Changes
	SRO	<ul style="list-style-type: none"> IAW 34AB-Y22-002-2, directs ATC to decrease reactor power to ~45% by decreasing Recirc flow. Power decreases should be made as recommended by the STA/Reactor Engineering at a rate not to exceed 10 MWe/min.

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Event Description: Tornado causes loss of SAT 2C with ATC lowering reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena.

Time	Position	Applicant's Actions or Behavior
		<p><i>NOTE: May get the RBM UPSCALE, (603-202) and ROD OUT BLOCK, (603-238), alarm, if a peripheral control rod is not selected. This is expected and the operator may select a peripheral rod at this time.</i></p> <p><i>May also get HEATER TROUBLE, (650-135) alarm. This is expected at this power level.</i></p>
	ATC	<ul style="list-style-type: none"> IAW 34SO-B31-001-2 (step 7.1.5) & 34GO-OPS-005-2, the ATC decreases Recirc pump speed, by either of the following ways: <ul style="list-style-type: none"> Exceeding 10 MWE per minute by depressing the FAST LOWER pushbutton on the Master (P603 panel) or Individual controls (P602 panel) until reactor power is between 40%-50%. NOT exceeding 10 MWE per minute by depressing the LOWER SLOW or LOWER MEDIUM pushbuttons on the Master (P603 panel) or Individual controls (P602 panel) until reactor power is between 40%-50%. If using Individual Controls, pump speed increases will alternate between the "A" & "B" Recirc pumps to prevent excessive flow mismatches. Monitors power decrease by observing APRM and generator output indications. Notifies SRO of attaining 45% reactor power.
		<p><i>Simulator Operator, after ~ 5% power reduction or at the Chief Examiners direction, PROCEEDS to the MAJOR event.</i></p>

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Event Description: Leak on the "A" FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. FW isolation F006A fails to close.

Time	Position	Applicant's Actions or Behavior
10 Mins		<i>Simulator Operator, at Chief Examiners direction, MODIFY malfunction mfB21_229A to Final value of 60 with ramp of 1000. When the Mode switch is placed to shutdown, ENSURE Event Trigger C71-1 inserts Main Condenser Inleakage to 100% and mfG31_242 RWCU unisolable leak in the Drywell.</i>
	ALL	<ul style="list-style-type: none"> Recognizes rapidly increasing Containment Pressure from the following alarms: <ul style="list-style-type: none"> PRIMARY CNMT HIGH PRESSURE TRIP, (603-106) PRIMARY CNMT PRESSURE HIGH, (603-115) DRYWELL PRESSURE HIGH, (602-210)
	SRO	<ul style="list-style-type: none"> Directs ATC to perform RC-1 placard Directs BOP to perform RC-2 & RC-3 placards Enters RC & PC EOP Flowchart Enters CP-1 when a loss of all high pressure feed systems occurs
	ATC (Placard)	<ul style="list-style-type: none"> Performs RC-1 consisting of: <ul style="list-style-type: none"> Inserts a manual scram using the SCRAM pushbuttons Places the mode switch to shutdown. Confirms all rods are inserted by observing full in lights, SPDS, or the RWM display. Informs the SRO that all rods are fully inserted. Places SDV isolation valve switch to "isolate" & confirms closed. If not tripped, places the Recirc pumps at minimum speed. Inserts SRMs and IRMs. Shifts recorders to read IRMS, when required. Ranges IRMS to bring reading on scale. Notifies SRO when RC-1 complete.

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Event Description: Leak on the "A" FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. FW isolation F006A fails to close.

Time	Position	Applicant's Actions or Behavior
		NOTE: <i>IF "A" FW Line break has NOT been discovered, the BOP will perform the following RC-2 actions; otherwise see Event 8 for RWL actions.</i>
	BOP	<ul style="list-style-type: none"> • Performs RC-2 actions consisting of: • Confirms proper Level Control response: <ul style="list-style-type: none"> • Checks ECCS Injection Systems and secure as necessary. <ul style="list-style-type: none"> • If NOT running, places 2E41-C002-3, HPCI Aux Oil Pump, in Pull-To-Lock • Ensures FW Master Controller setpoint reduces to 9 inches and output reduces to 25% of previous value. • IF set down does not auto function, then manually reduces FW Master Controller setpoint to approximately 9 inches. • When feed flow is less than the capacity of the S/U level control valve (≈ 1.5 mlbm/hr), then: <ul style="list-style-type: none"> • Opens 2N21-F125. • Confirms/places 2C32-R619, FW S/U level control valve controller, in Auto, set at approximately 9 inches. • Closes 2N21-F110. • May attempt maximize CRD flow IAW 34SO-C11-005-2 • May attempt to restart the CRD pumps (<i>neither pump will restart</i>) • Attempts to controls RWL with the RCIC System (see Event 9). • Notifies SRO if RWL gets outside assigned band.
	BOP	<ul style="list-style-type: none"> • Performs RC-3 consisting of: <ul style="list-style-type: none"> • Monitor RPV pressure. • Confirm proper operation of pressure control system (TBV, LLS, etc.). • If necessary, allow RPV pressure to exceed 1074 psig then cycles any SRV to initiate LLS. (LLS 2B will NOT cycle on LLS setpoints) • Maintain RPV pressure between 1074 and 800 psig. • Notify SRO of pressure control system operation.
	SRO	<ul style="list-style-type: none"> • Per the PC flowchart, verifies torus level is <285 inches and may direct ATC to spray the Torus if RHR is NOT needed for adequate core cooling.

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Event Description: Leak on the "A" FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. FW isolation F006A fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Re-opens 2P41-F316s due to high temp on the Condensate Pumps/Booster pumps per 34AB-P41-001-2, Loss of PSW, Placard OR as directed by the SRO. Places the "A" and "B" Isolation Override switches on the 2H11-P652 panel to Override Fully opens 2P41-F316A or C and 2P41-F316B or D Throttles 2P41-F316C or A and 2P41-F316D or B to open while monitoring PSW division 1 and 2 pressure on 2H11-P650 panel ensuring that PSW pressure remains above 80 psig.
	ATC	<ul style="list-style-type: none"> Sprays the Torus per 34SO-E11-010-2 placard on the 2H11-P601 Panel as follows: <ul style="list-style-type: none"> Places Cnmt Spray Vlv Cntl switch in the MANUAL position. Starts RHR pump(s) in loop A (B), if NOT already running. Opens 2E11-F028A or B Opens 2E11-F027A or B Throttles Open 2E11-F027A or B Notifies SRO that RHR is in Torus Sprays
	SRO	<ul style="list-style-type: none"> Per the PC flowchart, may direct ATC to spray the Drywell if RHR is NOT needed for adequate core cooling. Confirms Torus pressure > 11 psig, verifies that Torus Level is <215 inches, in the safe area of Graph 8 (DWSIL) and then directs an operator to: <ul style="list-style-type: none"> Place the DW cooling fans to Off Shutdown Recirc pumps (if running) Spray the DW May direct the operator to secure DW sprays & Torus sprays when pressure is <1 psig in the respective areas

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Event Description: Leak on the "A" FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. FW isolation F006A fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> • If directed to spray the Drywell, places BOTH Recirc pumps to PTL Off on panel 2H11-P602. • Places the following DW cooling fans control switches in the OFF position. <ul style="list-style-type: none"> • 2H11-P654: <ul style="list-style-type: none"> • 2T47-B007B • 2T47-B008B • 2T47-B009B • 2T47-B010B • 2T47-C001B • 2T47-C002B
	ATC	<ul style="list-style-type: none"> • 2H11-P657: <ul style="list-style-type: none"> • 2T47-B007A • 2T47-B008A • 2T47-B009A • 2T47-B010A • 2T47-C001A • 2T47-C002A
	ATC	<ul style="list-style-type: none"> • Sprays the Drywell using 34SO-E11-010-2 placard at P601 panel. • Places Cnmt Spray (A or B) Vlv Cntl switch in the MANUAL position. • Starts RHR pump(s) in loop A (B), if not already running. • Opens 2E11-F021A or B • Opens 2E11-F016A or B and establishes flow > 5000 gpm on 2E11-R608A or B. • When directed, closes 2E11-F016A or B • Closes 2E11-F021A or B • Notifies SRO that DW spraying the Drywell is complete
	SRO	<ul style="list-style-type: none"> • Directs H₂/O₂ Analyzers placed in service IAW 34SO-P33-001-2.

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Event Description: Leak on the "A" FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. FW isolation F006A fails to close.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none">• Places H₂/O₂ Analyzers in service IAW 34SO-P33-001-2• Confirms closed 2P33 F605, Panel Inlet from Torus• Places 2P33 S16, LOCA Override, H₂/O₂ Analyzer Outbd Isol Vlvs to Bypass• Places 2P33 S17, LOCA Override, H₂/O₂ Analyzer Inbd Isol Vlvs to Bypass• Confirms the H₂/O₂ Analyzer Running red light for the A & B train are illuminated• If either train red light does not illuminate, depresses Channel A or Channel B Reset pushbuttons on 2H11-P700 panel.• Confirms analyzers are running.• Notifies SRO H₂/O₂ Analyzers are running.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: 2N21-F006A fails to close requiring all Cond/FW isolated

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator, the malfunction for this event was in at the beginning of the scenario (diN21-F006A Final Value of OPEN).</i>
	BOP	<ul style="list-style-type: none"> • Discovers "A" FW line break • Notifies SRO of "A" FW line break and attempts to close 2N21-F006A, "A" FW Isolation valve on P603 panel • Notifies SRO that 2N21-F006A will NOT close • Closes 2N21-F110, S/U Level Control Bypass Vlv (Critical Task) • Closes 2N21-F125, S/U Level Control Isol Vlv (Critical Task) <p>NOTE: The above Critical Task, if NOT performed, will require an Emergency Depress from exceeding EOP Graph 2, Heat Capacity Temperature Limit.</p>
	BOP	<ul style="list-style-type: none"> • Once 2N21-F110 & 2N21-F125 are closed performs either: <ul style="list-style-type: none"> • Trips RFPTs or lowers RFPT speed to minimum • Places all Condensate Booster pumps switches in Pull-To-Lock OFF • Shuts down all Condensate pumps except ONE.
	SRO	<ul style="list-style-type: none"> • Directs the BOP to: <ul style="list-style-type: none"> • Close 2N21-F006A • Close 2N21-F110 • Close 2N21-F125

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Event Description: 2N21-F006A fails to close requiring all Cond/FW isolated

Time	Position	Applicant's Actions or Behavior
	BOP	<p><u>IF</u> HPCI pumping out of the "A" FW Line break has <u>NOT</u> been discovered:</p> <ul style="list-style-type: none"> • Adjusts 2E41-R612, HPCI Flow Control, to desired injection rate • Transfers 2E41-R612 controller to manual and adjust its speed demand output to obtain the desired pump flow <p><u>IF</u> HPCI pumping out of the "A" FW Line break <u>HAS</u> been discovered:</p> <ul style="list-style-type: none"> • Shuts down HPCI by: <ul style="list-style-type: none"> • Depresses and holds the HPCI Turbine Trip pushbutton • When HPCI turbine has stopped, places 2E41-C002-3, HPCI Aux Oil Pump, in Pull-To-Lock • When HPCI TURBINE BRG OIL PRESS LOW, (601-112), alarm is received, releases the HPCI Turbine Trip push-button.
	BOP	<ul style="list-style-type: none"> • May attempt to restart the CRD pumps (<i>neither pump will restart</i>) • Attempts to controls RWL with the RCIC System (see Event 9). • Notifies SRO if RWL gets outside assigned band.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Event Description: RCIC trips on overspeed. Loss of High pressure feed. Emergency Depress between TAF & -185 inches.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Confirms all MSIVs close at -101 inches OR 10 inches Mercury Vacuum • Monitors RPV water level as it trends down. • Informs the SRO of water level reaching -155.” • Manually arms LLS actuation logic by performing the following: <ul style="list-style-type: none"> • Confirms RPV pressure > 1074 psig • Opens any SRV by placing control switch to open • Confirms red and yellow indicator light for SRV illuminated • Returns LLS valve control switch to close or ADS valve to auto • Monitors RPV pressure to confirm proper operation of LLS.
	SRO	<ul style="list-style-type: none"> • Per CP-1 <ul style="list-style-type: none"> • Orders emergency depressurization after RWL level decreases to below -155 inches; but prior to RWL decreasing to below -185 inches • Orders all available table 8 systems injecting until RWL increases to above -155 inches
	BOP	If directed, attempts to maximize injection from CRD. (will NOT work)
		<i>NOTE: When RWL drops below -101 inches OR Main Condenser Vacuum decreases to 10 inches Mercury Vacuum, the MSIVs will close requiring the following actions to take place.</i>
	SRO	<ul style="list-style-type: none"> • Per CP-1 • Order BOP to Inhibit ADS • Orders BOP to start ALL RHR & Core Spray pumps. • Orders Emergency Depressurization once water level decreases below -155” and prior to -185”. • Orders all available Table 8 systems injecting until water level raises above -155”. • Orders SBLC injection (will NOT START). • As time permits, directs Torus Cooling to be placed in service.

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Event Description: RCIC trips on overspeed. Loss of High pressure feed. Emergency Depress between TAF & -185 inches.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> Verifies ALL RHR & Core Spray pumps (P601) are running or starts by placing switches to start IAW placard.
	ATC/BOP	<ul style="list-style-type: none"> Places SBLC switch to either Start A or Start B (will NOT START) CONFIRMS the following: <ul style="list-style-type: none"> 1106A and 1106B, Squib Vlv Ready, Indicating Lights, DID NOT EXTINGUISH SBLC LOSS OF CONTINUITY TO SQUIB VALVE (603-152) annunciator DID NOT ALARM Selected 2C41-C001A or 2C41-C001B, SBLC Pump, DID NOT START CONFIRMS or CLOSE 2G31-F004, Rx Water Cleanup Vlv, panel 2H11-P601 Notifies SRO SBLC is NOT injecting
	ATC	<ul style="list-style-type: none"> Opens 7 ADS valves prior to RWL reaching -185" by: (Critical Task) <ul style="list-style-type: none"> Placing switches for the ADS valves to OPEN. Confirms ALL ADS valve red lights illuminate. Confirms ALL ADS valve yellow lights illuminate. Confirms Reactor pressure is decreasing. Notifies the SRO that ALL ADS valves are open.

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Event Description: RCIC trips on overspeed. Loss of High pressure feed. Emergency Depress between TAF & -185 inches.

Time	Position	Applicant's Actions or Behavior
		<p>NOTE: The operator may place Torus Cooling in service by using the Placard that's available or using the appropriate section of the procedure. These steps assume the Placard is used. The A and/or B loop of RHR may be used depending on Torus temperature. The following steps are written assuming "B" loop and "B" pump is used. If/When "A" loop is used, substitute "A" for "B" for valves and if "B" pump is not used substitute "A", "C", or "D" for "B" pump.</p>
	ATC	<ul style="list-style-type: none"> Enters 34SO-E11-010-2, Residual Heat Removal Places RHRSW in service <ul style="list-style-type: none"> Prelube RHRSW pump Overrides 2E11-F068B (A) Low Discharge Pressure Interlock Positions 2E11-F068B (A) to 45% OPEN Acknowledges RHR HX B (A) DIFF PRESS LOW, (601-215) / (601-313) Starts RHRSW pump B (A) Places 2E11-F068B (A) Low Discharge Pressure Interlock switch to normal position. Positions 2E11-F068B (A) to obtain < 4400 gpm AND < 450 psig
	ATC	<ul style="list-style-type: none"> IF desired to start a SECOND RHRSW pump, <ul style="list-style-type: none"> Throttles 2E11-F068B (A) to achieve max flow rate (not to exceed 4400 GPM). Opens 2E11-F068B (A) an additional 5%. Starts second RHRSW Pump. Positions 2E11-F068B (A) to obtain < 8800 gpm AND < 450 psig

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Event Description: RCIC trips on overspeed. Loss of High pressure feed. Emergency Depress between TAF & -185 inches.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Places RHR B (A) Loop in Torus Cooling per the placard by performing the following steps: <ul style="list-style-type: none"> Opens 2E11-F048B (A) Closes 2E11-F047B (A). Opens 2E11-F003B (A). Starts RHR Loop B (A) pump Opens 2E11-F028B (A) <ul style="list-style-type: none"> Receives annunciator AUTO BLOWDOWN CS OR RHR PRESS, (602-312) Receives annunciator SEC SYSTEM AUTO INITIATION SIGNAL PRESENT, (650-234) Throttles OPEN 2E11-F024B (A) Opens 2E11-F047B (A) Ensures RHR flow is < 11,500 GPM, THEN Closes 2E11-F048B Notifies the SRO that RHR "B" (A) loop is in service May place the second pump in service.
	SRO	<ul style="list-style-type: none"> If SBLC was started previously, directs that SBLC be secured following the Emergency Depress before SBLC tank level decreases to below 8%.
	ATC/BOP	<ul style="list-style-type: none"> Verifies / Opens RHR and Core Spray injection valves open once the Reactor Pressure Low 500 psig alarm illuminates. Verifies injection from Core Spray and RHR pumps begins as soon as reactor pressure decreases below the shut off head of the pumps. When water level is restored above Top of Active Fuel throttles flow for C/S and RHR per the SRO directions. If directed by the SRO, places the SBLC switch (P603) to the off (mid) position.
		<p><i>With Chief Examiners Permission:</i></p> <p><i>The scenario should be terminated when the crew has Emergency depressurized the reactor before -185" AND re-established adequate core cooling with water level above TAF.</i></p>

NRC FINAL**Scenario Summary**

Facility: E. I Hatch **Scenario No.:** 8-04 **Op-Test No.:** 2013-301

Initiating Conditions:	Unit 2 is operating at 53% RTP, increasing power to place the 2 nd RFPT in service. SRV 2B inop for LLS. A Tornado watch has been issued by the National Weather Service for Southern Toombs and Northern Appling counties.
Turnover	Unisolate RCIC, place in standby and then increase reactor power to 65% RTP.
<p>Summary:</p> <ul style="list-style-type: none"> • Event 1: Normal; Unisolate RCIC system and place in standby. • Event 2: Component; SRV 2F (LLS) cycles open/close until fuses are pulled. (Critical Task) • Event 3: Component; Instrument Air System Prefilter dP Hi – swap Prefilters. The operator will dispatch an SO locally to determine dP. Report back will require BOP swapping Prefilters to restore normal system flow/pressure. (OE) • Event 4: Component; RFPT loop seal failure requiring manual operation of bypass valve to prevent Main Turbine trip on low vacuum. • Event 5: Component/TS; Small Feedwater line leak causes DW pressure to increase. The team will receive a P603 alarm that will direct DW venting to be placed in service. The BOP operator will attempt to start Standby Gas Treatment (SBGT). The SBGT suction dampers will not open for the first SBGT system the operator attempts to start. The opposite SBGT train will then be started and DW venting will be aligned. The SRO will address TS for an inoperable train of SBGT. • Event 6: Reactivity/TS; A Tornado causes the loss of SAT 2C requiring the ATC to lower reactor power to ~45% to comply with 34AB-Y22-002-0, Natural Occurring Phenomena. • Event 7: Major; Leak on the “A” FW line in the DW worsens/ruptures resulting in the crew inputting a reactor scram. • Event 8: Component; 2N21-F006A fails to close requiring the BOP to close 2N21-F125 and F110, isolating all Condensate/Feedwater. (Critical Task) This is critical since the Condensate/Feedwater system has the potential to pump ~189,000 gallons of Hotwell/CST water to the DW and then to the Torus via the broken FW line, requiring an Emergency Depress from exceeding EOP Graph 2, Heat Capacity Temperature Limit. • Event 9: Component; RCIC trips on Overspeed causing RWL to decrease. When RWL reaches TAF, the SRO will direct the ATC operator to open all SRVs to Emergency Depressurize the RPV and restore RWL with low pressure ECCS pumps. The plant will be emergency depressed due to low RWL. (Critical Task) 	

NRC FINAL**Critical Task List****Facility:** E. I Hatch**Scenario No.:** 8-04 **Op-Test No.:** 2013-301Critical Tasks

- SRV 2F (LLS) valve cycles open and close until the fuses are pulled. **(Event 2)**
- Close 2N21-F125 and F110, isolating all Condensate/Feedwater. **(Event 8)**
- Open ADS valves before RWL reaches -185 inches. **(Event 9)**

	ES 301-4 Attributes	Required	Actual	Items
1.	Total Malfunctions	5-8	8	1. 2F LLS SRV cycles open/close until fuses are pulled (Event 2) 2. Instrument Air System Prefilter dP Hi – swap Prefilters (Event 3) 3. RFPT loop seal failure (Event 4) 4. Small leak on the “A” FW line in the DW requiring SBTG to vent Drywell. (Event 5) 5. Tornado causing loss of SAT 2C (Event 6) 6. Leak on the “A” FW line in the DW worsens/ruptures (Event 7) 7. 2N21-F006A fails to close requiring all Cond/FW isolated. (Event 8) 8. RCIC trips on overspeed. Loss of High pressure feed. (Event 9)
2.	Malfunctions After EOP Entry	1-2	2	1. 2N21-F006A fails to close requiring all Cond/FW isolated. (Event 8) 2. RCIC trips on overspeed. Loss of High pressure feed. (Event 9)
3.	Abnormal Events	2-4	3	1. 2F LLS SRV cycles open/close until fuses are pulled (Event 2) 2. Small leak on the “A” FW line in the DW requiring SBTG to vent Drywell. (Event 5) 3. Tornado causing loss of SAT 2C (Event 6)
4.	Major Transients	1-2	2	1. Leak on the “A” FW line in the DW worsens/ruptures (Event 7) 2. Emergency Depress between TAF & -185 inches. (Event 9)
5.	EOPs entered, requiring substantive actions	1-2	2	1. RC (Non-ATWS) EOP Flowchart (Event 7) 2. PC EOP Flow Chart (Event 7)
6.	EOPs contingencies requiring substantive actions	0-2	1	1. CP EOP Flow Chart (Event 9)

Appendix D

Scenario Outline Continued

Form ES-D-1

NRC FINAL

Facility: E. I Hatch

Scenario No.: 4-04

Op-Test No.: 2009-301

Examiners: _____

Operators: _____


SRO

RO

BOP

7.	Critical Tasks	2-3	3	<p>1. SRV 2F (LLS) valve cycles open and close until the fuses are pulled. (Event 2)</p> <p>2. 2N21-F006A fails to close requiring the BOP to close 2N21-F125 and F110, isolating all Condensate/Feedwater, requiring an Emergency Depress from exceeding EOP Graph 2, Heat Capacity Temperature Limit. (Event 8)</p> <p>3. Emergency Depress with 7 ADS valves prior to RWL reaching -185 inches. (Event 9)</p>
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ILT-08 NRC Operating Exam Scenario 4**Turnover Sheet**

 Every day, every job, safely.	Safety Focus		
UNIT 1 STATUS			
Plant Conditions:	Unit 1 is operating at 100% power Activities in progress: Maintaining Rated Thermal Power		
UNIT 2 STATUS			
Plant Conditions:	A Tornado watch has been issued by the National Weather Service for Southern Toombs and Northern Appling counties for the next 2 hours. Unit 2 is operating at 53% RTP and holding due to current weather conditions. RCIC is being returned to a standby lineup. RFPT '2A' operating at 1000 rpm. Activities in progress: Unisolate RCIC.		
<table border="0" style="width: 100%;"><tr><td style="width: 50%; vertical-align: top;"><u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II</td><td style="width: 50%; vertical-align: top;"><u>EOOS:</u> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Yellow <input type="checkbox"/> Red</td></tr></table>		<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Yellow <input type="checkbox"/> Red
<u>Protected Train:</u> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<u>EOOS:</u> <input checked="" type="checkbox"/> Green <input type="checkbox"/> Orange <input type="checkbox"/> Yellow <input type="checkbox"/> Red		
Scheduled evolutions:	<input type="checkbox"/> Unisolate RCIC starting at step 7.1.1.36 of 34SO-E51-001-2. <input type="checkbox"/> After weather improves, increase reactor power to 60% RTP and then place 2A RFPT in IAW 34SO-N21-007-2. <input type="checkbox"/> After RFPT '2A' is in service, increase reactor power to 75% RTP IAW 34GO-OPS-005-2.		
Surveillances due this shift:	<input type="checkbox"/> None		
Inop Equipment:	<input type="checkbox"/> RCIC (RAS written 2 days ago) <input type="checkbox"/> SRV 2B inop for LLS Function (RAS written)		
Active tagouts:	<input type="checkbox"/> None		
Rod Configuration:	<input type="checkbox"/> See RWM		

Appendix D

Scenario Outline

Form ES-D-1

NRC FINAL**Facility:** E. I. Hatch**Scenario No.:** 8-05**Op-Test No.:** 2013-301

Examiners: _____ **Operators:** _____ **SRO**
 _____ **RO**
 _____ **BOP**

Initial Conditions. Unit 2 is operating at 95% power preparing to place Torus Cooling in service for an upcoming RCIC surveillance the next shift.

Turnover: Continue placing 'B' Loop of RHR in Torus Cooling at step 7.2.5.2.8 of 34SO-E11-010-2. After 'B' Loop of RHR is in Torus Cooling, increase reactor power to 100% RTP via Recirc.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP)	Continue placing 'B' Loop of RHR in Torus Cooling at step 7.2.5.2.8 of 34SO-E11-010-2.
2	mfE51_114 diE51A-S17	C (ATC) TS (SRO)	RCIC Inadvertent start with Trip pushbutton failure.
3	aoN40R600 mf65111604 mf651116045	C (BOP) R (ATC)	UAT 2B Hi temp/lower reactor power/swap house loads/remove from service
4	mf60121104 (ON)	C (BOP) TS (SRO)	B RHRSW pump overload – manually trip & swap pumps.
5	mfE51_250 svoE51075	C (ATC) TS (SRO)	RCIC Steam Line breaks in the Rx bldg. RCIC isolation valves fail to auto close (Critical Task)
6	mfS11_161	M (ALL)	Loss of Offsite Power
7	mfR43_62A mfR43_239C mfR43_49B	C (ATC)	2A EDG will tie after manually started, 1B EDG will NOT operate & 2C EDG fails to auto tie (Critical Task to energize at least one emergency bus)
8	mfE41_106	C (BOP)	HPCI flow controller output fails low requiring manual increase to obtain injection (Critical Task)
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 1

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Event Description: Continue placing Torus Cooling in service.

Time	Position	Applicant's Actions or Behavior
10 Mins	SRO	Orders BOP to continue placing Torus Cooling in service beginning at step 7.2.5.2.8
		<i>Simulator Operator, if asked, an SO has been dispatched locally awaiting the start of the RHR pump AND, if asked, a Page Announcement has been performed for the upcoming pump start.</i>
	BOP	<ul style="list-style-type: none"> Starts RHR Pump B or D Dispatches an operator to locally check the RHR pump for seal leakage May dispatch an operator to locally check that the charging motor stops running and the charged tab is visible.
		<i>Simulator Operator – as an SO in the RHR B pump diagonal; Inform the BOP that there is NO seal leakage on RHR pump “B”.</i>
	BOP	The following expected alarms will be received as a result of starting the RHR pump.
		<ul style="list-style-type: none"> SEC SYSTEM AUTO INITIATIONSIGN, (650-234) AUTO BLOWDOWN CS OR RHR PRESS PERMISSIVE, (602-312) RHR FLOW LOW, (601-222)
		<ul style="list-style-type: none"> Opens 2E11-F028B Throttles Open 2E11-F024B to establish ≤ 7700 GPM flow on indicator 2E11-R603B or 2E11-R608B recorder.
		<ul style="list-style-type: none"> Opens 2E11-F047B, Hx Inlet Vlv Closes 2E11-F048B, Hx Bypass Valve Confirms 2E11-R600B-1 indicates >20 psid, if NOT throttles 2E11-F068B to maintain > 20 PSID Informs the SRO that RHR B pump is in Torus cooling
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Time	Position	Applicant's Actions or Behavior
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[illegible]

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 2

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Event Description: RCIC Inadvertent start with Trip pushbutton failure.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Enters 34AB-E10-001-2, Inadvertent Initiation of ECCS/RCIC Enters 34SO-E51-001-2, RCIC System Dispatches RO/Maintenance to determine cause of initiation signal and the cause of the Trip pushbutton failure. May attempt to reset the Initiation signal Will close 2E51-F524, Trip and Throttle Vlv, if not already closed. Notifies SRO that RCIC is shutdown.
	SRO	<ul style="list-style-type: none"> May have the operator run the Trip and Throttle Valve down to in case RCIC is needed later. Enters TS RAS for RCIC 3.5.3 Condition A, which requires verifying HPCI is operable within 1 hour and restoring RCIC in 14 days.
		NOTE: <i>It is intended that RCIC is left in its' current condition and not returned to standby.</i>
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 3

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Event Description: UAT 2B Hi temp requiring reactor power to be lowered and the removal from service.

Time	Position	Applicant's Actions or Behavior
15 Min		<p><i>Simulator Operator At Lead Examiner's direction, ACTIVATE: (RB-2)</i></p> <ul style="list-style-type: none"> mf65111604, Unit Aux Xfmr "2B" Misc Alarm (Annunciator On) aoN40R600, Gen & Transformer Temps, final of 110, ramp 100 <p><i>THEN, 2 minutes later ACTIVATE: (RB-9)</i></p> <ul style="list-style-type: none"> mf65111605, Unit Aux Xfmr "2B" Winding Temp High (Annunciator On)
	ALL	<p>UNIT AUX XMFR 2B MISC ALARM, (651-116), annunciates</p> <p>Two minutes later, UNIT AUX XMFR 2B WINDING TEMP HIGH, (651-117) annunciates.</p>
	BOP	<ul style="list-style-type: none"> Responds to alarm UNIT AUX XMFR 2B MISC ALAR, (651-116) Notifies GCC of the alarm. Dispatches an operator to check the transformer local panel in the Low Voltage Switchyard, 2H21-P214. Responds to alarm UNIT AUX XMFR 2B WINDING TEMP HIGH, (651-117) Notifies the SRO that per the ARPs Rx Power will need to be reduced if the winding temperature is increasing and to Transfer the loads to Startup Transformer (SUT) 2C, if the oil temperature is high.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 3

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Event Description: UAT 2B Hi temp requiring reactor power to be lowered and the removal from service.

Time	Position	Applicant's Actions or Behavior
		<p>SIMULATOR OPERATOR:</p> <ul style="list-style-type: none"> 3 minutes from being dispatched, call the control room as the operator dispatched to the Unit 2B UAT and report that the 2B UAT oil temperature is 93°C and that the winding temperature is 106°C and slowly increasing. If asked, Transformer fans and oil pumps are running. DO NOT PROMPT TO TRANSFER LOADS If more updates of temperature are required, increase temps 1°C EACH UPDATE, until load is reduced. Temps will eventually stabilize above the setpoints. <p>When the UAT is unloaded, temps will slowly decrease, however the afore mentioned alarms will NOT clear until locally reset.</p>
	SRO	<ul style="list-style-type: none"> Directs BOP operator to enter 34SO-R22-001-2 for transferring 4160VAC buses from Unit Aux Transformer (UAT) 2B to Start-Up transformer (SUT) 2C
	BOP	<ul style="list-style-type: none"> Enters 34SO-R22-001-2, 4160 VAC System
	SRO	<ul style="list-style-type: none"> May direct the ATC to lower Rx power to LOWER the load on UAT 2B.
		<p>NOTE: If the SRO does not direct the lowering of reactor power, SIMULATOR OPERATOR as the Shift Manager in consultation with Switchyard Maintenance, NOTIFY the SRO to reduce reactor power to ~ 90% RTP due to increasing 2C SAT temperatures.</p>
		<p>NOTE: The SRO may direct the operator to exceed 10MWe/min. It is allowable to enter the immediate exit region for protecting equipment, but in this particular event the power reduction should be completed prior to entering the immediate exit region.</p>

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 3

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Event Description: UAT 2B Hi temp requiring reactor power to be lowered and the removal from service.

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> Reduces Rx power to <2558 MWth using Recirc per SRO direction (approx 90% power). Enters the following procedures <ul style="list-style-type: none"> 34GO-OPS-005-2, "Power Changes" 34SO-B31-001-2, "Recirculation System"
	ATC	<ul style="list-style-type: none"> Depresses either the Master Recirc Flow Control Lower Fast/Medium/Lower Slow pushbuttons or the individual pump Speed Control Lower Fast/Medium/Lower Slow pushbuttons. Monitors power decrease by observing APRM and generator output indications. Monitors the Power to Flow map to determine if the Immediate Exit Region is entered. Notifies the SRO of the proximity to the Immediate Exit region.
	SRO	If reactor power is reduced, directs the BOP to swap 2A & 2B 4160V buses from UAT to the SAT.
	BOP	Swapping of 2A 4160VAC from the UAT to the SAT <ul style="list-style-type: none"> Verifies reactor power < 2558 MWth Confirms power is available to Startup Aux XFmr 2C as indicated by the potential lights on panel 2H11-P651 Confirms OPEN ACBs 135544, 135564 and 135584 (2H11-P652)
	BOP	<ul style="list-style-type: none"> Places 135434/135454 Station Svc Interlock Cutout switch in OFF-(DOWN) Places Sync Switch (SSW) ACB 135454 in ON Confirms the sources of power to 4160V Bus 2A are synchronized and voltage is normal on Start-Up Aux Transformer 2C

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 3

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Event Description: UAT 2B Hi temp requiring reactor power to be lowered and the removal from service.

Time	Position	Applicant's Actions or Behavior
	BOP	<ul style="list-style-type: none"> • Closes ACB 135454, 4160V Bus 2A Alternate Supply, AND confirms that current increases from Startup Auxiliary Transformer 2C • Trips ACB 135434, 4160V Bus 2A Normal Supply • Places Sync Switch (SSW) ACB 135454 in OFF • Places 135434/135454 Station Svc Interlock Cutout switch in NORMAL-(UP)
	BOP	Swapping of 2B 4160VAC from the UAT to the SUT <ul style="list-style-type: none"> • Confirms power is available to Startup Aux XFmr 2C as indicated by the potential lights on panel 2H11-P651 • Confirms OPEN ACBs 135544, 135564 and 135584 (2H11-P652)
		<ul style="list-style-type: none"> • Places 135444/135464 Station Svc Interlock Cutout switch in OFF-(DOWN) • Places Sync Switch (SSW) ACB 135464 in ON • Confirms the sources of power to 4160V Bus 2B are synchronized and voltage is normal on Start-Up Aux Transformer 2C
	BOP	<ul style="list-style-type: none"> • Closes ACB 135464, 4160V Bus 2B Alternate Supply, AND confirms that current increases from Startup Auxiliary Transformer 2C • Trips ACB 135444, 4160V Bus 2B Normal Supply • Places Sync Switch (SSW) ACB 135464 in OFF • Places 135444/135464 Station Svc Interlock Cutout switch in NORMAL-(UP) • Notifies the SRO that 4160 VAC 2A and 2B buses have been transferred from the UAT to SUT 2C.
		<i>SIMULATOR OPERATOR, after UAT 2B is removed from service, MODIFIES Override aoN40-R600 to a Final of 50 with a 5 ramp rate.</i>
		<i>SIMULATOR OPERATOR, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 4

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Event Description: RHRSW pump overload – manually trip & swap pumps.

Time	Position	Applicant's Actions or Behavior
15 Min		<p><i>At the Chief Examiner's direction, Simulator Operator;</i></p> <p><i>ENTERS (RB-4) malfunction mf60121104 – Window 32 RHRSW PUMP B OVERLOAD (ANNUNCIATOR ON).</i></p> <p><i>ENSURE ET E11-10 deletes malfunction mf60121104, when RHRSW pump 2B switch is placed to stop.</i></p>
	All	<ul style="list-style-type: none"> Annunciator RHR SERV WTR PUMP B OVERLOAD, (601-232) alarms
	BOP	<ul style="list-style-type: none"> Announces alarm to the SRO Enters ARP 34AR-601-232-2 Determines that the 2B RHRSW pump is still running Informs the SRO that the 2B RHRSW pump failed to trip
	SRO	<ul style="list-style-type: none"> Directs the BOP to Trip the 2B RHRSW pump and place the 2D RHRSW pump in service
	BOP	<ul style="list-style-type: none"> Trips RHRSW Pump 2B And Verifies Green light illuminates Alarm RHR HX B DIFF PRESS LOW, (601-215) is received when the RHRSW pump is secured. Confirms 2E11-F068B, Hx B Disch Vlv, closes. Alarm 601-215 clears when the 2E11-F068B is closed.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 4

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Event Description: RHRSW pump overload – manually trip & swap pumps.

Time	Position	Applicant's Actions or Behavior
		NOTE: <i>If the crew decides to secure Torus Cooling instead of starting 2D RHRSW pump, skip the following steps for placing 2D RHRSW pump in service and go to the steps just prior the SRO making the Tech Spec call for inop RHRSW pump.</i>
	BOP	<ul style="list-style-type: none"> Enters 34SO-E11-010-2, RHR System, OR may use Placard, to start 2D RHRSW Pump Determines That The System Does NOT Require Filling Depresses the RHR Service Water Lube Valves Pushbutton For Pump Division 2 And waits for One Minute
	BOP	<ul style="list-style-type: none"> Bypasses The Low RHR Service Water Pressure Interlock On 2E11-F068B By Placing The Interlock Override Vlv 2E11-F068B Keylock Switch In The OVERRIDE Position. Throttles Open 2E11-F068B To 45% Open As Indicated On 2E11-R600B. <ul style="list-style-type: none"> Confirms: <ul style="list-style-type: none"> 2E11-F068B Opens (RED light illuminates) 601-215, RHR HX B DIFF PRESS LOW, annunciator illuminates May make a Page Announcement of pending RHRSW pump 2D start (Announcing large motor/pump starts may NOT occur if the operator senses the urgency to start the pump with low dP on the RHR/RHRSW system) Starts the 2D RHRSW Pump and has the ATC log the start Places 2E11-F068B Interlock Override Vlv keylock switch in the NORMAL position Throttles 2E11-F068B to 4400 GPM maximum, while maintaining RHRSW System pressure < 450 PSIG Confirms 2E11-R600B-1 indicates >20 psid, if NOT throttles 2E11-F068B to maintain > 20 PSID Notifies Maintenance (if SRO has NOT) to investigate RHRSW pump 2B.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 4

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Event Description: RHRSW pump overload – manually trip & swap pumps.

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator: When dispatched to check RHRSW B loop strainer dP, inform the BOP that the dP is 3 psid.</i>
	BOP	<ul style="list-style-type: none"> • Dispatches SO to confirm that the in-service RHR Service Water strainer dP is < 8 PSID, and logs Dp in the Control Room Log • Informs the SRO that RHR B pump is in Torus cooling
		NOTE: <i>Start here if the crew decides to secure Torus Cooling instead of starting 2D RHRSW pump.</i>
	BOP	IAW 34SO-E11-010-2, performs the following starting with step 7.3.3.2.2.1: <ul style="list-style-type: none"> • OPENS 2E11-F048B, Hx Bypass Vlv • Closes 2E11-F024B, Full Flow Test Line Vlv • Confirms the following: <ul style="list-style-type: none"> • 2E11-F007B, Min Flow Vlv, OPENS • RHR FLOW LOW, (601-302), ALARMS • Stops the operating RHR Loop B Pump • Closes 2E11-F028B, Torus Spray OR Test Vlv • Confirms 2E11-S18B, Cnmt Spray Vlv Cntl 2/3 Core Ht Permis switch, in the OFF position • Confirms RESET the Containment Spray Vlv Control switch <u>AND</u> observe the green reset flag on the control switch • Confirms RHR Service Water System pump is off (previously manually shutdown) • Notifies SRO RHR Torus Cooling is shutdown.
		NOTE: <i>TS 3.0.6 provides information so that LCO 3.6.2.3 for RHR Suppression Pool Cooling is NOT required to be entered.</i>
	SRO	<ul style="list-style-type: none"> • Enters Tech Specs LCO 3.7.1 and determines that a 30 day RAS is required IAW TS 3.7.1.A. • Notifies Maintenance (if BOP has not) to investigate RHRSW pump 2B.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Time	Position	Applicant's Actions or Behavior
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[illegible]

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 5

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Event Description: RCIC steam line break with failure to auto close, manual works.

Time	Position	Applicant's Actions or Behavior
	BOP	Acknowledges LEAK DET DIF TEMP HIGH, (601-321) and reports to SRO. Enters 601-321 and starts investigating.
		<ul style="list-style-type: none"> Confirms which area is producing alarm using Temperature Recorder on 2H11-P614: <ul style="list-style-type: none"> R604, Pt. 115 is reading approximately 32°F delta-T R608, Pt. 117 is reading approximately 32°F delta-T Enters 34AB-T22-003-2, 'Secondary Containment Control'
		<p><i>SIMULATOR OPERATOR: ENSURE Event Trigger (E51-2) is ACTIVATED when alarm, LEAK DET DIFF TEMP HIGH, (601-321) illuminates.</i></p> <p>NOTE: It will take about 30 minutes for a Group 1 isolation to occur. At direction of the Chief Examiner, if P603-2 "Group 1 System A Trip" alarms, IMMEDIATELY DELETE mfE51_250.</p>
	SRO	<ul style="list-style-type: none"> Enters the 31EO-EOP-014-2, 'Secondary Containment' EOP Flowchart on Secondary Containment High Differential Temperature. Has an operator monitor Sec Cont. Temps. Has operators monitor systems for source of the leak.
	BOP	Receives RX BLDG POT CONTAM AREA RADIATION HIGH, (601-426) and reports to SRO, then enters 601-426 and starts investigating.
		<ul style="list-style-type: none"> On panel 2H11-P600, confirms radiation levels on 2D11-K609A - D on 2D11-R605 recorder On panel 2H11-P606, monitors radiation levels on 2D11-K609 A - D, R/B Pot Contamination Vent Exh Rad Mon A through D. Enters 34AB-T22-003-2, Secondary Containment Control.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 5

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Event Description: RCIC steam line break with failure to auto close, manual works.

Time	Position	Applicant's Actions or Behavior
		<p><i>SIMULATOR OPERATOR:</i> <i>If 2E51-F007 is CLOSED DO NOT ENTER (RB-10):</i></p> <p><i>SIMULATOR OPERATOR: When EOP SC flowchart is ENTERED and Chief Examiner concurs ENTER (RB-10) mfE51_113 (RCIC Auto Isolation E51-F008)</i></p> <ul style="list-style-type: none"> • ENSURE Event Trigger (E51-1) is ACTIVATED when F007 is manually closed: • svoD11174 • svoD11175 • svoD11176 • svoD11177 • mf601411026
		As time allows the BOP will enter the following ARPs:
	BOP	<p>Responds to the following annunciators:</p> <ul style="list-style-type: none"> • RCIC STEAM LINE DIFF PRESS HIGH, (602-302) • RCIC TURBINE TRIP, (602-301) • RCIC ISOLATION SIGNAL LOGIC A, (602-307) • RCIC ISOLATION SIGNAL LOGIC B, (602-313) <p>Time: _____</p>
	BOP	<p>Responds to failure of RCIC Isolation:</p> <ul style="list-style-type: none"> • Places 2E51- F008 control switch to CLOSE. • Places 2E51- F007 control switch to CLOSE <p><i>(Critical Task is to position 2E51-F007 control switch to close within 5 minutes of receiving 602-302, 602-307 and 602-313 listed above OR may close before alarms are received).</i></p> <p>Time: _____</p> <ul style="list-style-type: none"> • Informs SRO of failure of 2E51-F008 to close • Dispatches operator/Maintenance to investigate the leak.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 5

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Event Description: RCIC steam line break with failure to auto close, manual works.

Time	Position	Applicant's Actions or Behavior
	SRO	<p>Reviews Tech Specs section 3.6.1.3, 'Primary Containment Isolation Valves' Condition A.1 and A.2 and determines:</p> <ul style="list-style-type: none"> • 2E51-F008 Inop • 2E51-F007 must be closed and deactivated within 4 hours AND • 2E51-F007/F008 penetration must be verified ISOLATED every 31 days. • As time allows, contacts the Shift Support Supervisor to draft a Danger Tagout for 2E51-F007. <p>Enters TS RAS for RCIC 3.5.3 Condition A, which requires verifying HPCI is operable within 1 hour and restoring RCIC in 14 days.</p>
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

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Time	Position	Applicant's Actions or Behavior
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[illegible]

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 6

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Event Description: Loss Of Offsite Power

Time	Position	Applicant's Actions or Behavior
		NOTE: <i>With a Loss of Offsite Power, the pertinent operator RC-2 actions are limited to checking ECCS.</i>
	BOP	<ul style="list-style-type: none"> Checks ECCS Injection Systems and verifies no initiation signal present.
		<ul style="list-style-type: none"> Performs RC-3 consisting of: <ul style="list-style-type: none"> Monitor RPV pressure. Confirm proper operation of pressure control system (LLS and SRVs). If necessary, allows RPV pressure to exceed 1074 psig then cycles any SRV to initiate LLS. Maintain RPV pressure between 1074 and 800 psig. Notify SRO that LLS is the pressure control system.
		<i>Simulator Operator, at the Chief Examiners direction, PROCEEDS to the next event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 7

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Event Description: EDG 2A will tie after manual start and EDG 2C auto starts but fails to tie/must lower then raise frequency to energize bus. 1B EDG will not run

Time	Position	Applicant's Actions or Behavior
20 mins	ATC	<ul style="list-style-type: none"> Confirms appropriate Diesel Generator response to the event and evaluates the emergency buses determining <ul style="list-style-type: none"> 2A EDG did NOT start, 2E bus is de-energized, 1B EDG did NOT start, 2F bus is de-energized, 2C EDG is running but did NOT energize 2G bus. Enters 34AB-R22-003-2, "Station Blackout" and "Diesel Generator Recovery," abnormal, 34AB-R43-001-2.
		NOTE: The ATC may start first with any of the Diesel Generators.
	ATC	<ul style="list-style-type: none"> IAW 34AB-R43-001-2, Diesel Generator Recovery, for EDG 2A: <ul style="list-style-type: none"> Determines the EDG is NOT running Determines the Auto Start System Operative Light is lit. Places the EDG START/STOP Switch to START Determines the 2A EDG has started Reports to SRO that 2E Bus is now energized. (<i>Critical Task to energize at least one emergency bus</i>)
	ATC	Reviews EDG "1B" annunciators and determines a "Lube Oil Press Low" and "Emergency Engine Shutdown".
		<ul style="list-style-type: none"> IAW 34AB-R43-001-2, Diesel Generator Recovery, for EDG "1B": <ul style="list-style-type: none"> Determines the EDG is NOT running <ul style="list-style-type: none"> Determines the Auto Start System Operative Light is NOT lit. Depresses the Shutdown Relay Pushbutton Alarm EMERGENCY ENGINE SHUTDOWN, (652-229) clears 100 seconds later 652-229 is received again Determines the EDG did NOT start. Sends an SO to locally start the EDG Sends an SO/Maintenance to investigate EDG failure

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Time	Position	Applicant's Actions or Behavior
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[illegible]

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 7

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Event Description: EDG 2A will tie after manual start and EDG 2C auto starts but fails to tie/must lower then raise frequency to energize bus. 1B EDG will not run

Time	Position	Applicant's Actions or Behavior
		NOTE: The following can be performed in any order.
	ATC/BOP	<ul style="list-style-type: none"> As time allows, directs the SSS to perform the following: <ul style="list-style-type: none"> 2B RPS MG Set - restarted RPS Alternate Supply from 2B Essential Cabinet - restarted 2B SSAC local breaker - reclosed Vital AC Battery Charger returned to service Depresses Non-Essential Load lockout on Panel 2H11-P652 Restore Division II Station Service Battery Chargers by depressing pushbuttons on 2H11-P664 (may have been previously performed) Restores RBCCW as follows: <ul style="list-style-type: none"> Directs SO to close discharge valve 2P42-F005B Places RBCCW pump control switch to off and then to auto Directs SO to slowly open discharge valve 2P42-F005B Starts second pump by taking control switch to off and then to run
	SRO	<ul style="list-style-type: none"> Enters the PC EOP flow chart. May direct operator to restart Drywell Chillers and Cooling Fans IAW EOP-100.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 7

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Event Description: EDG 2A will tie after manual start and EDG 2C auto starts but fails to tie/must lower then raise frequency to energize bus. 1B EDG will not run

Time	Position	Applicant's Actions or Behavior
	ATC	<ul style="list-style-type: none"> If directed, restores drywell chillers per 31EO-EOP-100-2 section 3.7 by: <ul style="list-style-type: none"> Verifies chilled water expansion tank is within normal level, (NO high/low alarms on 2H11-P700 panel or verify locally) Verifies D/W temperature is <250°F, in the vicinity of 2T47-B007A / 2T47-B007B Notifies SSS to place switch for 2P64-C008A/2P64-C008B, Chilled Water pump, to RUN & then verify Chilled Water return temperature is <100°F. Place 2P64-S3, LOCA Override Switch, to BYPASS on panel 2H11-P700. Notifies SSS to: <ul style="list-style-type: none"> Open link, Lower TB4-12 in 2R22-S005 Fr. 6, for 2P64-B006A Open link, Upper TB1-11 in 2R22-S007 Fr. 7, for 2P64-B006B Reset 86 lockout relays on drywell chiller breaker on 4160V buses "E" and "G" (2R22-S005 Fr. 11 and 2R22-S007 Fr. 11 Reset the POR relay for each chiller. Monitors for chiller start by observing the red light on 2H11-P700 or input from the SSS.
	ATC	<ul style="list-style-type: none"> If directed, restores the drywell coolers per 31EO-EOP-100-2 section 3.6 by: <ul style="list-style-type: none"> Verifies chilled water expansion tank is within normal level, (NO high/low alarms on 2H11-P700 panel or verify locally) Verifies D/W temperature is <250°F, in the vicinity of 2T47-B007A / 2T47-B007B Notifies SSS to place switch for 2P64-C008A/2P64-C008B, Chilled Water pump, to RUN & then verify Chilled Water return temperature is <100°F. Places drywell cooling fans system A key-lock LOCA override switch to BYPASS on 2H11-P657. Places drywell cooling fans system B key-lock LOCA override switch to BYPASS on 2H11-P654. Observes the drywell cooler fans start by observing their red lights illuminating on 2H11-P654 and panel P657.
	SRO	<ul style="list-style-type: none"> May direct operator to place Torus Cooling in service if Torus temperature exceeds 95°F.

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 7

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Event Description: EDG 2A will tie after manual start and EDG 2C auto starts but fails to tie/must lower then raise frequency to energize bus. 1B EDG will not run

Time	Position	Applicant's Actions or Behavior
	BOP (Placard)	<ul style="list-style-type: none"> Enters 34SO-E11-010-2, Residual Heat Removal or uses placard on 2H11-P601. Places RHRSW in service Prelubes RHRSW D pump Overrides 2E11-F068B Low Discharge Pressure Interlock Positions 2E11-F068B to 45% OPEN RHR HX B DIFF PRESS LOW, (601-215) alarms
	BOP (Placard)	<ul style="list-style-type: none"> Starts RHRSW pump D Places 2E11-F068B Low Discharge Pressure Interlock switch to normal position. Positions 2E11-F068B to obtain < 4400 GPM AND < 450 PSIG RHR HX B DIFF PRESS LOW, (601-222) alarm clears
	BOP (Placard)	<ul style="list-style-type: none"> Place RHR loop B in Suppression Pool Cooling Does NOT position the 2/3 Core Height Permissive switch. (RWL will NOT be lowered to below 2/3 core height) Does NOT place the Containment Spray valve Control switch in the manual position. (LOCA signal is NOT present) Confirm open 2E11-F048B, HX Bypass Vlv. Close 2E11-F047B, Hx Inlet Vlv. Confirm open 2E11-F003A, HX Outlet Vlv Start "2B RHR pump <ul style="list-style-type: none"> SEC SYSTEM AUTO INITIATION SIGNAL PRESENT, (650-234) alarms AUTO BLOW DOWN CS OR RHR PRESS PERMISSIVE, (602-312) RHR FLOW LOW, (601-222) alarms

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 7

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Event Description: EDG 2A will tie after manual start and EDG 2C auto starts but fails to tie/must lower then raise frequency to energize bus. 1B EDG will not run

Time	Position	Applicant's Actions or Behavior
		<ul style="list-style-type: none">• Open 2E11-F028B, Torus Spray or Test Vlv.• Throttle open 2E11-F024B, Full Flow Test Line Vlv. and establish RHR flow of less than or equal to 7700 gpm (R603B)- RHR Flow Low (601-215) alarm clears• Open 2E11-F047B, Hx Inlet Vlv.• Close 2E11-F048B, Hx Bypass Vlv.• Reports to SRO that RHR has been placed in Suppression Pool Cooling mode.
		<i>Simulator Operator, the next event was already active during the Major Event.</i>

Op-Test No.: 2013-301 Scenario No.: 8-05 Event No.: 8

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Event Description: HPCI flow controller output fails low requiring manual increase to obtain injection.

Time	Position	Applicant's Actions or Behavior
		<i>Simulator Operator, ENSURE Event Trigger E41-1 ACTIVATES malfunction m/E41_106, HPCI Flow Controller Fails Low, with HPCI speed >3800 rpm.</i>
	BOP	<ul style="list-style-type: none"> Allows HPCI to auto start at -35" or 1.85 psig DW pressure <p>OR</p> <p>manually starts per 34SO-E41-001-2, prior to Emergency Depressurization on low RWL.</p> <ul style="list-style-type: none"> Opens 2E41-F059, Lube Oil Cooling Wtr Vlv. Starts 2E41-C002-2, Barometric Condenser Vacuum Pump. Opens 2E41-F001, Turbine Steam Supply Vlv. Starts 2E41-C002-3, Aux Oil Pump. Opens 2E41-F006, Pump Discharge Valve.
		NOTE TO EXAMINER: <i>Prolonged operation with HPCI <2000 RPMs is to be avoided.</i>
	BOP	<ul style="list-style-type: none"> Confirms the following valves OPENED: <ul style="list-style-type: none"> Turbine Control Vlv Turbine Stop Vlv Confirms the turbine does NOT come up to proper speed. Recognizes that HPCI flow controller has failed and places 2E41-R612, Flow Controller, in MANUAL and adjusts output to maintain RWL. (Critical Task) When flow increases to 790 GPM, confirms 2E41-F012, Min Flow Vlv, closed.
		<p><i>Termination criteria:</i></p> <p><i>The scenario may be terminated, at the direction of the Chief Examiner, when RWL is being controlled with HPCI and at least ONE Emergency bus has been energized.</i></p>

NRC FINAL**Scenario Summary****Facility:** E. I Hatch**Scenario No.:** 8-05**Op-Test No.:** 2013-301

Initiating Conditions:	Unit 2 is operating at 90% power preparing to place Torus Cooling in service for an upcoming RCIC surveillance the next shift.
Turnover	Continue placing 'B' Loop of RHR in Torus Cooling at step 7.2.5.2.8 of 34SO-E11-010-2. After 'B' Loop of RHR is in Torus Cooling, increase reactor power to 95% RTP via Recirc.

Summary:


- **Event 1:** Normal; 2A RHR Loop will be placed into service.
- **Event 2:** Component/TS; RCIC will experience an inadvertent start with Trip pushbutton failing to trip RCIC. Operator will shutdown RCIC by either; closing T&TV, isolating steam to RCIC or placing flow controller in manual and lowering speed to prevent injection.
- **Event 3:** Component; UAT 2B will experience a Hi temperature requiring the removal from service. The ATC will lower Reactor power in order to remove the UAT from service. Once power is <2558 MWt, the BOP will remove the UAT from service.
- **Event 4:** Component/TS; B RHRSW pump overload requiring manually tripping & starting another RHRSW pump in the B Loop of RHR.
- **Event 5:** Component/TS; A RCIC steam line will break outside of Primary Containment. The outboard isolation valve is failed open and cannot be closed. Both isolation valves fail to automatically close on an automatic isolation signal and must be manually closed. **(Critical Task)** The SRO addresses Tech Specs for inoperable Primary Containment Isolation Valve.
- **Event 6:** Major; The plant will experience a Loss of Offsite power with all 4160 V Emergency Buses initially de-energized
- **Event 7:** Component; 2C EDG fails to auto tie to the emergency bus and must have its frequency lowered, then raised to force the 2C EDG output breaker to close. 2A EDG will tie after manually started. **(Critical Task to energize at least one emergency bus)**
- **Event 8:** Component; HPCI flow controller output fails low requiring the BOP to manually increase speed to obtain HPCI injection. **(Critical Task)**

NRC FINAL**Critical Task List****Facility:** E. I Hatch**Scenario No.:** 8-05**Op-Test No.:** 2013-301Critical Tasks

- Manually isolate the RCIC isolation valves within 5 minutes of receiving 602-302 and 602-313. **(Event 5)**
- 2C EDG fails to auto tie to the emergency bus and must have its frequency lowered, then raised to force the 2C EDG output breaker to close. 2A EDG will tie after manually started. **(Event 7)**
- HPCI flow controller fails low requiring the BOP to manually increase speed to obtain HPCI injection to maintain RWL above TAF. **(Event 8)**

	ES 301-4 Attributes	Required	Actual	Items
1.	Total Malfunctions	5-8	7	1. RCIC inadvertent start with p.b. fails (Event 2) 2. UAT 2B Hi temp (Event 3) 3. B RHRSW pump overload (Event 4) 4. RCIC steam line break (Event 5) 5. Loss Of Offsite Power (Event 6) 6. Manually start EDG 2A, manually tie EDG 2C (Event 7) 7. HPCI flow controller fails. RCIC trips on overspeed during startup (Event 8)
2.	Malfunctions After EOP Entry	1-2	2	1. Manually start EDG 2A, manually tie EDG 2C (Event 7) 2. HPCI flow controller fails. RCIC trips on overspeed during startup (Event 8)
3.	Abnormal Events	2-4	4	1. RCIC inadvertent start with p.b. fails (Event 2) 2. RCIC steam line break (Event 5) 3. Loss Of Offsite Power (Event 6) 4. Manually start EDG 2A, manually tie EDG 2C (Event 7)
4.	Major Transients	1-2	1	1. Loss Of Offsite Power (Event 6)
5.	EOPs entered, requiring substantive actions	1-2	2	1. SC/RR EOP Chart (Event 5) 2. RC EOP flow chart (Event 6)
6.	EOPs contingencies requiring substantive actions	0-2	1	1. 31EO-EOP-100-2 (Event 7)
7.	Critical Tasks	2-3	3	1. Manually isolate RCIC (Event 5) 2. Manually start EDG 2A, manually tie EDG 2C (Event 7) 3. Manually increase speed to obtain HPCI injection. (Event 8)

SHIFT TURNOVER

	<p align="center">Safety Focus</p>								
<p>UNIT 1 STATUS</p>									
<p>Plant Conditions:</p>	<p>Unit 1 is operating at 100% power Activities in progress: Maintaining Rated Thermal Power</p>								
<p>UNIT 2 STATUS</p>									
<p>Plant Conditions:</p>	<p>Unit 2 is operating at 95% power preparing to place Torus Cooling in service for an upcoming RCIC surveillance the next shift. Activities in progress: Continue placing 'B' Loop of RHR in Torus Cooling at step 7.2.5.2.8 of 34SO-E11-010-2. After 'B' Loop of RHR is in Torus Cooling, increase reactor power to 100% via Recirc. A SO has performed pre-start checks for the 'B' Loop RHR pumps and is stationed in the diagonal awaiting for you to start the RHR pump.</p>								
<table border="0"> <tr> <td data-bbox="228 961 477 995"><u>Protected Train:</u></td> <td data-bbox="1029 961 1136 1001"><u>EOOS:</u></td> </tr> <tr> <td data-bbox="256 1005 449 1094"> <input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II </td> <td data-bbox="803 1005 1461 1098"> <table border="0"> <tr> <td data-bbox="803 1005 951 1050"><input checked="" type="checkbox"/> Green</td> <td data-bbox="1291 1012 1461 1054"><input type="checkbox"/> Orange</td> </tr> <tr> <td data-bbox="803 1052 954 1094"><input type="checkbox"/> Yellow</td> <td data-bbox="1291 1058 1401 1100"><input type="checkbox"/> Red</td> </tr> </table> </td> </tr> </table>		<u>Protected Train:</u>	<u>EOOS:</u>	<input checked="" type="checkbox"/> Division I <input type="checkbox"/> Division II	<table border="0"> <tr> <td data-bbox="803 1005 951 1050"><input checked="" type="checkbox"/> Green</td> <td data-bbox="1291 1012 1461 1054"><input type="checkbox"/> Orange</td> </tr> <tr> <td data-bbox="803 1052 954 1094"><input type="checkbox"/> Yellow</td> <td data-bbox="1291 1058 1401 1100"><input type="checkbox"/> Red</td> </tr> </table>	<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Orange	<input type="checkbox"/> Yellow	<input type="checkbox"/> Red
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<input checked="" type="checkbox"/> Green	<input type="checkbox"/> Orange								
<input type="checkbox"/> Yellow	<input type="checkbox"/> Red								
<p>Scheduled evolutions:</p>	<p><input type="checkbox"/> Continue placing 'B' Loop of RHR in Torus Cooling at step 7.2.5.2.8 of 34SO-E11-010-2. <input type="checkbox"/> Increase Reactor power to 100%</p>								
<p>Surveillances due this shift:</p>	<p><input type="checkbox"/> None</p>								
<p>Inop Equipment:</p>	<p><input type="checkbox"/> None</p>								
<p>Active tagouts:</p>	<p><input type="checkbox"/> None</p>								
<p>Rod Configuration:</p>	<p>See RWM</p>								