

Event Description: The crew will assume the shift with the plant operating at 11% power making preparations for rolling the Main Turbine. Operations Manual C.1, Reactor Startup, has been completed up through step VII.A.18. Control Rods need to be pulled to achieve 1 1/2 Turbine Bypass Valves in accordance with step VII.B.1.

Time	Position	Actions or Behavior
	SRO	Direct withdrawal of control rods to achieve 1 1/2 Main Turbine Bypass Valves open.
	RO	<p>Withdraws control rods in accordance with Ops Man B.05.05-05.E.1, Control Rod Movement.</p> <p>Place ROD SELECT POWER switch, 3A-S1, to ON.</p> <p>Press the appropriate ROD SELECT pushbutton (determined from the roller tape, RWM and control rod sequence package).</p> <p>NOTE: The control rod will move 1 notch in the indicated direction when the ROD MOVEMENT CONTROL switch is momentarily placed in ROD NOTCH OUT or ROD IN.</p> <p>Momentarily place ROD MOVEMENT CONTROL switch, 3A-S2, to ROD OUT NOTCH or ROD IN to obtain desired rod movement.</p> <p>NOTE: The RO will withdraw one rod from notch 12 to notch 48. On selection of the second rod, Event # 2 will occur.</p>
	BOP	<p>Monitoring plant parameters and may act as Peer Checker.</p> <p>Monitors Turbine Bypass valve position on Panel C-07 BYPASS VALVE 1 POSITION (POI-1788) and BYPASS VALVE 2 POSITION (POI-1789)</p>

Notes:

Event Description: During control rod withdrawal, the RWM will fail. This will cause control rod withdrawal to stop to investigate the failure. This failure will result in the RWM being bypassed and Tech Specs reviewed.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #1: When the RO selects the second rod, ensure that event trigger #1 activates to cause the RWM to fail.
	SRO	Acknowledge report of annunciator 5-A-35, RWM ROD BLOCK.
	SRO <i>Phone Talker</i>	Notifies the Nuclear Engineer and System Engineer. <i>When contacted as the Nuclear Engineer, acknowledge the report and state that you will investigate. Wait 2 minutes and then enter the simulator as the nuclear engineer. He reports that he performed additional diagnostics in the cable spreading room and cannot determine a problem with the RWM.</i>
	Chief Examiner	An exam team member will enter the simulator as the nuclear engineer. He will pretend to assist in filling out the form 2169, but will provide no specific direction. He will concur with any recommended made by the crew.
	SRO	Refers to Tech Spec 3.3.B.3.b. This TS states “Whenever the reactor is in the startup or run mode below 10% rated thermal power, no control rods shall be moved unless the rod worth minimizer is operable or a second independent operator or engineer verifies that the operator at the reactor console is following the control rod program. The second operator may be used as a substitute for an inoperable rod worth minimizer during a startup only if the rod worth minimizer fails after withdrawal of at least twelve control rods.” Determines that power is >10% and that TS allows bypassing the RWM.
	SRO	When Form 2169 is complete directs the operator to bypass the RWM.
	SRO	Directs RO to recommence rod withdrawal to achieve 1 1/2 bypass valves.

Event Description: During control rod withdrawal, the RWM will fail. This will cause control rod withdrawal to stop to investigate the failure. This failure will result in the RWM being bypassed and Tech Specs reviewed.

Time	Position	Action or Behavior
	RO	Acknowledges and informs CRS of annunciator 5-A-35, RWM ROD BLOCK.
	RO	Reviews ARP 5-A-35 and determines alarm is due to an inop RWM.
	RO	<p>When directed by the SRO, performs procedure B.05.02-05.G.2, RWM BYPASS.</p> <p>1. Perform 2169 (ROD WORTH MINIMIZER BYPASS CHECKLIST)</p>
	RO	<p>Performs procedure 2169, ROD WORTH MINIMIZER BYPASS CHECKLIST.</p> <p>Note 1: This procedure may be terminated at any STEP if the RWM returns to an operable condition.</p> <p>Note 2: The RWM bypass should be removed immediately when no longer required for continued operation.</p> <p>STEP 1 Check the SELF-TEST status on the RWM.</p> <p>A. If the self-test indicates OK, continue with STEP 2. (Mark STEP N/A if SELF-TEST: FAULT).</p> <p>Note for examiner: Self-Test will show FAULT. Marks step with an N/A.</p> <p>B. If the self-test indicates FAULT, cycle power on the NUMAC RWM instrument (Cable Spreading Room – Panel C289A) by removing the power cable in the rear of the chassis (J8), then re-installing it. (Mark step N/A if self-test: OK)</p> <p>Note for examiner: Directs operator to cable spreading room to cycle power.</p>

Event Description: During control rod withdrawal, the RWM will fail. This will cause control rod withdrawal to stop to investigate the failure. This failure will result in the RWM being bypassed and Tech Specs reviewed.

Time	Position	Action or Behavior
	<i>Phone talker</i>	<i>Have operator stand by at operating station for 2 minutes. Then tell operator that power has been cycled to RWM and to return to the control room.</i>
	RO	<p>STEP 2 Select the MESSAGES menu and check the upper part of the screen for the current insert/withdraw block messages. These messages will also appear with the message number on the PCS alarm typer.</p> <p>Note: The RWM will always issue a “Critical self-test failure” message immediately after initial power-up until the first self-test is completed.</p> <p>Note to examiner: RWM will not display any messages.</p>
	RO	<p>STEP 3 Consult Table 1 for most recent rod block messages and note message number of block below.</p> <p>Note: Table 1 is intended to provide guidance as to the type of RWM rod block and probable cause.</p> <p>Note to examiner: RWM will not display any message numbers.</p>
	RO	<p>STEP 4 If type is BYP, the RWM may be bypassed in accordance with the requirements of Tech spec 3.3.B.3 (b)</p> <p>Note to examiner: Determines this step is N/A.</p>
	RO	<p>STEP 5 If STEP 4 is N/A, and if it is determined that the RWM still must be bypassed, apply the bypass in accordance with Tech Spec 3.3.B.3 (b)</p> <p>Note to examiner: RO should determine that RWM can be bypassed.</p>

Event Description: During control rod withdrawal, the RWM will fail. This will cause control rod withdrawal to stop to investigate the failure. This failure will result in the RWM being bypassed and Tech Specs reviewed.

Time	Position	Actions or Behavior
	RO	From B.05.02-05.G.2 2. <u>WHEN</u> Shift Supervisor permission is obtained to bypass the RWM, <u>THEN</u> place the RWM to BYPASS using the keylock switch on the OD (Panel C-05)
	RO	3. Withdraws/inserts one group in the rod sequence. Note to examiner: Steps 3 and 4 mean to continue with the rod withdrawal with a second person present.
	RO	4. Independently verifies the rod pattern.
	RO	5. Repeats step 3 and step 4 for each group in the rod sequence. Note to examiner: Step 6 of the procedure is NA.
	RO	When directed by the CRS, recommences withdrawal of control rods to 1 1/2 bypass valves..
	BOP	Monitoring plant parameters and may act as Peer Checker.

Notes:

Event Description: After bypassing the RWM, the crew will continue with the startup and begin to roll the Main Turbine.

Time	Position	Actions or Behavior
	SRO	Direct the BOP operator to roll the turbine in accordance with C.1.VII.B.
	RO	Monitor plant parameters.
	BOP	Rolls the Main Turbine in accordance with C.1.VII.B.
	BOP	Determine initial First Stage Shell Temperature is < 250°F.
	BOP	Determine Turbine acceleration rate is 60 RPM/min.
	BOP	NOTE: The acceleration rate may be exceeded momentarily when increasing speed. Raise the Load Limit setpoint and spin the turbine to approximately 200 rpm. (LLM CO7)
	BOP	Adjust the Load Limit to maintain approximately 200 rpm.
	BOP	Verify the TURB TURNING GEAR “amber” ENGAGED light is OFF.
	BOP	STOP the TURB TURNING GEAR drive motor. (CS-42-4216/CS CO7) Note to the examiner: Initiate event 4 at this point.
	BOP <i>Phone Talker</i>	Direct that a local inspection of the turbine be conducted and verify the TURBINE TURNING GEAR has disengaged. <i>When directed as an extra licensed operator to perform a local inspection of the Main Turbine and verify the turning gear has disengaged reply “Local inspection of the Main Turbine is satisfactory, no abnormal noise or vibrations, and the turning gear is disengaged”.</i>

Notes:

Event Description: When turbine speed reaches 200 rpm a failure of the Electrical Pressure Regulator (EPR) will occur while the operator is securing the Turning Gear resulting in Turbine Bypass Valve oscillations. The crew should recognize cycling of the bypass valves, reactor pressure and Main Steam Pressure Control System. The failure will clear once the crew has taken control with the MPR.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #2: When directed by the Chief Examiner at 200 rpm main turbine speed and the BOP operator is securing the Turning Gear motor insert event trigger #2 to cause a failure of the EPR.
	SRO	Acknowledge report of computer alarms: <ul style="list-style-type: none"> • TRB021 “Turb Elec Press Reg Cont Off” • TRB023 “Turb Mech Press Reg Cont On” <p>Note to examiner: There may be other computer alarms present, but these two are the only ones germane to the scenario.</p>
	SRO	Verify Bypass Valve Oscillations are occurring and notices MPR and EPR green and red lights are cycling ON and OFF.
	SRO	Direct that pressure control be switched to the MPR per B.5.09-05.H.2 “BYPASS VALVE OSCILLATIONS”.
	SRO	Direct that the MPR be left in control.
	SRO	Notify Supt. Electrical and Instrument Engineering.
	<i>Phone Talker</i>	<i>When contacted as Superintendent of Electrical and Instrument Engineering then acknowledge the report and inform the crew that you will investigate the failure.</i>

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Time	Position	Actions or Behavior
	RO	Monitoring plant parameters.
	BOP	Acknowledge computer alarms: TRB021 "Turb Elec Press Reg Cont Off" TRB023 "Turb Mech Press Reg Cont On" Note: There may be other computer alarms present, but these two are the only ones germane to the scenario.
	BOP	Notify SRO of computer alarms.
	BOP	Determines Bypass Valve oscillations are occurring and notices MPR and EPR green and red lights are cycling ON and OFF.
	BOP	LOWER the MPR setpoint until the red MPR CONTROLLING YES light is ON.
	BOP	RAISE the EPR setpoint until the green EPR CONTROLLING NO light is ON.
	BOP	Determines that oscillations have stopped.
	BOP	Notify SRO Bypass Valve oscillations have stopped.
	BOP	Leave MPR in pressure control.

Notes:

Event Description: After the bypass valve oscillations have been corrected a trip of the 11 RBCCW Pump will occur with a failure of the standby pump to auto start. The crew will manually start the 12 RBCCW Pump and verify proper system response.

Time	Position	Actions or Behavior
	Simulator Operator	<p>TRG #3: When directed by the Chief Examiner insert event trigger #3 to cause a trip of the 11 RBCCW Pump with a failure of the 12 RBCCW Pump to auto start.</p> <p>Note to examiner: Insert trigger when BOP operator is away from panel (i.e. raising speed on the turbine) so that the OATC is closest to the panel and most likely to respond.</p>
	SRO	Acknowledge report of 6-B-32, RBCCW LOW DISCH PRESS.
	SRO	Acknowledges report of actions taken to start No. 12 RBCCW Pump.
	SRO	Acknowledges reports of RWCU and Recirc pump alarms
	RO	Acknowledge annunciator 6-B-32, RBCCW LOW DISCH PRESS.
	RO	Reports annunciator 6-B-32 to SRO.
	RO	Verify a RBCCW pump is running.
	RO <i>Phone Talker</i>	<p>Identifies that No. 11 RBCCW Pump has tripped and No. 12 RBCCW Pump has failed to automatically start.</p> <p><i>If directed as TBO to investigate the failure, report that the breaker for the No. 11 RBCCW Pump is tripped.</i></p> <p>Note: RO may start 12 RBCCW pump without the C.4 procedure in hand as this is an immediate action.</p>
	RO <i>Phone Talker</i>	<p>Manually starts No. 12 RBCCW Pump.</p> <p><i>If directed as RBO to investigate the failure, report that the No. 12 RBCCW Pump is running satisfactorily and that the No. 11 RBCCW Pump is secured; no indication of the trip.</i></p>
	RO	Refers to ARP 6-B-32, RBCCW LOW DISCH PRSS.

Event Description: After the bypass valve oscillations have been corrected a trip of the 11 RBCCW Pump will occur with a failure of the standby pump to auto start. The crew will manually start the 12 RBCCW Pump and verify proper system response.

Time	Position	Actions or Behavior
	RO <i>Phone Talker</i>	Notifies Shift Supervision and System Engineer. <i>When contacted as System Engineering, acknowledge the report and inform the crew that you will investigate the failure.</i>
	RO	Refers to C.4-B.02.05.A, LOSS OF RBCCW FLOW to verify actions taken.
	RO	Notify Shift Supervision.
	RO	Acknowledges ARP 4-B-26 (CLEAN UP DEMIN TEMP HI), 4-B-21 (CLEANUP FILTER DEMIN FAILURE) and 4-B-31 (CLEANUP DEMIN TEMP HI-HI)
	RO	Verifies RWCU isolates and notifies Control Room Supervisor.
	RO	Notifies Reactor Building Operator that RWCU has isolated.
	RO	Acknowledges ARPs 4-B-5 (RECIRC PUMP A LOW COOL WATER FLOW) and 4-B-10 (RECIRC PUMP B LOW COOL WATER FLOW) Notifies Control Room Supervisor of Recirc Alarms.
	RO	IF RBCCW System pressure cannot be restored within 60 seconds, <ul style="list-style-type: none"> a. Trip the Recirc pumps, then execute C.4-B.01.04.B (TRIP OF TWO RECIRC PUMPS) concurrently. b. Close RBCCW drywell isolation valves MO-1426, MO-4229 and MO-4230. Note to examiner: This action is not expected to happen. RBCCW should be returned within 60 seconds.
	BOP	Monitor plant parameters.

Notes:

Event Description: At the completion of actions for the trip of the running RBCCW pump a failure of the instrument air header will occur. This event will ultimately result in a manual (or automatic) scram being inserted by the crew. After a scram has been inserted the crew will discover that a hydraulic ATWS has occurred in the West SDV.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #4: At the completion of actions for trip of the No. 11 RBCCW Pump or when directed by the Chief Examiner, insert event trigger #4 to cause a rupture of the Instrument Air Header.
	SRO	Acknowledge report of annunciators.
	SRO	Acknowledge action taken in response to loss of Instrument Air.
	SRO	Per C.4.K – IMMEDIATE REACTOR SHUTDOWN <i>NOTE: C.4.K actions may not be performed if Instrument Air header pressure decreases too rapidly.</i>
	SRO	May direct the Reactor Operator to reduce Recirculation flow to minimum or realizes that Recirc flow is already minimum.
	SRO	Directs the Reactor Operator to manually scram the reactor.
	RO	Determines Main Feedwater Reg Valves have locked up.
	RO	May direct Turbine building operator to take local manual control of low flow Feedwater Reg Valves.
	Phone Talker	<i>If directed as the Turbine building operator to take local manual control of low flow Feedwater Reg Valve, than acknowledge the order.</i>
	RO	If directed performs steps of C.4.K 1. Verifies that Recirc pump speed is at minimum.
	RO	2. Depress REACTOR SCRAM A and B pushbuttons. (5A-S3A and 5A-S3B)
	RO	Recognize control rods are NOT inserted to or beyond position 04.
	RO	Place the reactor mode switch in SHUTDOWN.
	RO	Notify Shift Supervision.

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Time	Position	Actions or Behavior
	BOP	Acknowledge annunciators: <ul style="list-style-type: none"> • 6-B-24, INSTRUMENT AIR DRYER BYPASSED. • 6-B-30, INSTRUMENT AIR PRESSURE LOW. • 6-B-35, SERVICE AIR HEADER LOW PRESS.
	BOP	Enters C.4-B.08.04.01.A, LOSS OF INSTRUMENT AIR.
	BOP <i>Phone Talker</i>	Dispatch an operator to verify proper operation of all available air compressors and an instrument air dryer. <i>When directed as TBO to investigate the Instrument Air header and air compressors wait 2 minutes and then report, "A large rupture exists in the instrument air header and I can't find an isolation".</i>
	BOP	Notifies Shift Supervision.
	BOP	Makes plant page announcement to secure use of breathing air.
	BOP	Closes CV-1474, SERVICE AIR ISOLATION.
	BOP	Makes plant page announcement to secure use of air systems.

Event Description: After a scram has been inserted the crew will discover that a hydraulic ATWS has occurred in the West SDV. They will be required to enter C.5-2007 FAILURE TO SCRAM and take action to insert control rods.

Time	Position	Actions or Behavior
	SRO	Enter: C.5-1100 (RPV CONTROL)
	SRO	Verify Reactor Scram has been initiated.
	SRO	Determine all rods ARE NOT in to at least 04.
	SRO	Determine the reactor WILL NOT stay shutdown under all conditions without boron.
	SRO	Leave C.5-1100 (RPV CONTROL) and Enter C.5-2007 (FAILURE TO SCRAM)
	SRO	Enter C.5-2007: FAILURE TO SCRAM
	SRO *Critical Step	*Direct the BOP operator to inhibit ADS
	SRO *Critical Step	*Direct the BOP operator to prevent Core Spray injection per C.5-3205. TERMINATE AND PREVENT.
	SRO	Directs BOP operator to defeat the Low-Low isolation for MSIVs per C.5-3301 (DEFEATING RPV LOW-LOW LEVEL ISOLATION FOR MISV CLOSURE)
		<u>POWER LEG</u>
	SRO	Verify Mode switch in SHUTDOWN.
	SRO	Directs RO to trip Recirc Pumps.
	SRO	Direct RO to actuate ATWS.
	SRO	Directs RO to insert control rods per C.5-3101. ALTERNATE ROD INSERTION

Event Description: After a scram has been inserted the crew will discover that a hydraulic ATWS has occurred in the West SDV. They will be required to enter C.5-2007 FAILURE TO SCRAM and take action to insert control rods.

Time	Position	Action or Behavior
		<u>PRESSURE LEG</u>
	SRO	Determine Drywell pressure is < 2 psig.
	SRO	Determine SRVs are not rapidly cycling.
	SRO	Determines PRV pressure can be controlled with main turbine bypass valves.
		<u>LEVEL LEG</u>
	SRO	Check Detail 'A' for instrument limits.
	SRO	Determine no instrument limits have been exceeded.
	SRO	Directs an operator to maintain RPV water level +9 to 48" using one or more of the following: <ul style="list-style-type: none"> • CRD • RCIC • HPCI
	RO	Trip the MG set drive motors. <ul style="list-style-type: none"> • Place HS 2A-S1A to STOP (#11 MG set drive motor breaker) • Place HS 2A-S1B to STOP (#12 MG set drive motor breaker)
	RO	Refer to procedure B.05.06-05 ATWS SYSTEM MANUAL INITIATION (hard card)
	RO	SET the arming collars of one pair of the following switches to the armed position and depress the pushbuttons ATWS A MAN and ATWS C MAN (PB S-5A & S-5C) (CO5) ATWS B MAN and ATWS D MAN (PB S-5B & S-5D) (CO5)

Event Description: After a scram has been inserted the crew will discover that a hydraulic ATWS has occurred in the West SDV. They will be required to enter C.5-2007 FAILURE TO SCRAM and take action to insert control rods.

Time	Position	Actions or Behavior
	RO	Verifies the MG set drive motor breakers are tripped.
	RO	Determine Control Rods DO NOT insert.
	RO	Inserts control rods per C.5-3101, "ALTERNATE ROD INSERTION", Part C.
	RO	Determines that Parts 'A' through 'D' are not available due to loss of instrument air.
	RO	Determines that Part E, MANUALLY OPEN SDV VENT AND DRAIN VALVES, should be performed due to the hydraulic lock on the West SDV.
	RO <i>Phone Talker</i>	Directs the RBO to determine the position of CV-127, OUTLET SCRAM VALVES, for all West SDV HCUs. <i>When directed as RBO to determine the position of the CV-127 valves associated with the West SDV HCUs, acknowledge the order. No further response is required.</i>
		NOTE: The crew will not actually perform all of the steps of C.5-3101 (ALTERNATE ROD INSERTION), Part E. The next event should begin once the crew has addressed all of the concerns associated with the ATWS.

Event Description: After a scram has been inserted the crew will discover that a hydraulic ATWS has occurred in the West SDV. They will be required to enter C.5-2007 FAILURE TO SCRAM and take action to insert control rods.

Time	Position	Actions or Behavior
	BOP	Defeat RPV low-low level isolation for MSIV closure per C.5-3301.
	BOP	Determines prerequisites are met. <ul style="list-style-type: none"> • Main condenser available • No fuel element failure • No steam line break
	BOP	Places the following switches in BYPASS (Panels C-15 and C-17): <ul style="list-style-type: none"> • 16A-S62A • 16A-S62C • 16A-S62B • 16A-S62D
	BOP *Critical Step	*Places ADS INHIBIT switches 2E-S7A & 2E-S7B on CO3 to INHIBIT.
	BOP *Critical Step	*Prevents Core Spray per C.5-3205, "TERMINATE AND PREVENT", Part A.
	BOP	Places MO-1751 CS INJECTION BYPASS handswitch in BYPASS (14A-S16A).
	BOP	Closes MO-1751.
	BOP	Places No. 11 Core Spray Pump in PTL.
	BOP	Places MO-1752 CS INJECTION BYPASS handswitch in BYPASS (14A-S16B).
	BOP	Closes MO-1752.
	BOP	Places No. 12 Core Spray Pump in PTL.

Notes:

Event Description: While trying to insert control rods, a rupture of the West SDV will occur. With a loss of instrument air the operators will not be able to reset the scram, which will result in an un-isolable rupture into the reactor building. This will result in high radiation levels in the West SDV area and Outside RWCU area causing the crew to emergency depressurize.

Time	Position	Actions or Behavior
	Simulator Operator	<p>Prior to initiating this event select (highlight) all 61 stuck control rod malfunctions in the “Malfunction” block of the Summary Screen.</p> <p>TRG #6: When all of the concerns associated with the ATWS have been addressed or as directed by the Chief Examiner, select the “Delete” button of the Malfunction Block to remove the stuck rod malfunction for all 61 stuck control rods and then insert event trigger #6 to cause a rupture of the West SDV.</p>
	SRO	Acknowledges report that all control rods have inserted.
	SRO	Exits C.5-2007 FAILURE TO SCRAM and re-enters C.5-1100 RPV CONTROL.
	SRO Phone Talker	<p>Acknowledge report of annunciator 4-A-11, “REACTOR BUILDING HI RADIATION”.</p> <p><i>About 2 minutes after initiation of this event or at the discretion of the Chief Examiner, inform the crew as the RP Tech “A rupture of the West SDV has occurred”.</i></p> <p style="text-align: center;"><i>OR</i></p> <p><i>If the RBO was dispatched to the West HCU area, immediately report as the RBO that a rupture of the West SDV has occurred.</i></p>
	SRO	<p>Acknowledges report of alarming ARM.</p> <p>Note: The ARM in the West SDV area of Rx building will be rising quickly. Eventually it will peg high at 1 R/hr. This will be followed shortly by ARM outside the RWCU rising. It too, will eventually peg high at 1 R/hr.</p>
	SRO	Enters C.5-1300, “SECONDARY CONTAINMENT CONTROL”.
	SRO	Determines that a rupture of the West SDV has occurred.
	SRO	Directs entry into C.4-B.02.04-A “Steam Leak Outside Primary Containment”

Event Description: While trying to insert control rods, a rupture of the West SDV will occur. With a loss of instrument air the operators will not be able to reset the scram, which will result in an un-isolable rupture into the reactor building. This will result in high radiation levels in the West SDV area and Outside RWCU area causing the crew to emergency depressurize.

Time	Position	Actions or Behavior
	SRO	Determines that the leak cannot be isolated due to the loss of Instrument Air.
	SRO	Acknowledges the report that the West CRD HCU and Outside RWCU room are above max safe radiation.
	SRO	Enters C.5-2002, "EMERGENCY RPV DEPRESSURIZATION".
	SRO	Determines Drywell pressure is below 2 psig.
	SRO	Determines Torus level is above -5.9 feet.
	SRO *Critical Step	*Directs BOP to open all 3 ADS valves.
	RO	Determines that all control rods have inserted.
	RO	Reports to the CRS all rods in.
	RO	Performs C.4-A, "REACTOR SCRAM", Part A actions.

Event Description: While trying to insert control rods, a rupture of the West SDV will occur. With a loss of instrument air the operators will not be able to reset the scram, which will result in an un-isolable rupture into the reactor building. This will result in high radiation levels in the West SDV area and Outside RWCU area causing the crew to emergency depressurize.

Time	Position	Actions or Behavior
	BOP	Acknowledges annunciator 4-A-11, "REACTOR BUILDING HI RADIATION".
	BOP	Checks ARMs on Panel C-11.
	BOP	Determines that West CRD HCU Area ARM is in alarm.
	BOP	Notifies CRS of alarming ARM.
	BOP	Per C.4-B.02.04-A "STEAM LEAKS OUTSIDE PRIMARY CONTAINMENT" makes plant announcement to evacuate the Reactor Building.
	BOP	Notifies Radiation Protection to perform surveys and control entry.
	BOP	Reports that the West CRD HCU and Outside RWCU room are above max safe radiation.
	BOP	Performs C.4-A, "REACTOR SCRAM", Part B actions.

Notes:

Event Description: When directed to open 3 SRVs to depressurize the vessel, one SRV will fail to open. The operator will be required to notice that one SRV failed to open and to open another SRV to ensure that 3 SRVs are open.

Time	Position	Actions or Behavior
	SRO	Acknowledges report that one SRV failed to open
	SRO	Directs BOP to open more SRVs until three SRVs are open.
	BOP *Critical Step	*Opens all 3 ADS valves.
	BOP	Determines that the 'A' SRV did not open and informs the CRS.
	BOP *Critical Step	Opens a third SRV.

Termination Point:

- All control rods have been inserted.
- 3 Safety/Relief Valves are open.
- At the discretion of the Chief Examiner.

Classification:

Guideline 28.B (General Emergency) Loss of 2 of 3 Fission Product Barriers with a Potential Loss of the Third

Event Description: The crew will take the duty with the plant at approximately 47% reactor power. Power was reduced last shift to perform on-line maintenance on the No. 11 RFP. After taking the duty the crew will start the No. 11 RFP.

Time	Position	Actions or Behavior
	SRO	Direct the BOP to start the No. 11 RFP per B.06.05-05.D.7, PLACING 11 RFP IN SERVICE FROM WARM-UP.
	SRO	Acknowledges report that No. 11 RFP is in service.
	RO	Monitoring plant parameters and may act as Peer Checker.
	BOP	Directs TBO to perform step 5 of B.06.05-05.D.7 "PLACING 11 RFP IN SERVICE FROM WARM-UP.
	<i>Phone talker</i>	<i>When requested to perform step 5 state "Step 5 for starting No. 11 RFP is complete."</i>
	BOP	Places HS-1100, 11 RFP RECIRC VALVE, handswitch in AUTO/START.
	BOP	Verifies OPEN CV-3489.
	BOP <i>Phone Talker</i>	Stations an operator at the RFP area, makes a plant announcement and starts the No. 11 RFP. <i>When directed as TBO to report to the RFP area report that you are standing by in the feed pump area.</i>
	BOP <i>Phone Talker</i>	Verifies the following: (Note: These are steps 11-13 of the procedure.) Balance drum flow is 30 – 115 gpm. Vibration is less than 2.5 mils on all local vibration monitors. Axial position is between +35 mils and -35 mils. <i>When directed to verify the following or perform steps 11-13:</i> <ul style="list-style-type: none"> • <i>Balance drum flow is 30 – 115 gpm.</i> • <i>Vibration is less than 2.5 mils on all local vibration monitors.</i> • <i>Axial position is between +35 mils and -35 mils.</i> <i>Report that steps 11 through 13 are complete.</i>
	BOP	Place HS-1100, 11 RFP RECIRC VALVE, handswitch in AUTO.

Event Description: The crew will take the duty with the plant at approximately 47% reactor power. Power was reduced last shift to perform on-line maintenance on the No. 11 RFP. After taking the duty the crew will start the No. 11 RFP.

Time	Position	Actions or Behavior
	BOP <i>Phone Talker</i>	Verifies minimum flow of 3300 gpm on local flow controller, FIC-3489. <i>When requested as TBO to verify minimum flow of 3300 gpm on local flow controller FIC-3489, report minimum flow of 3400 gpm on FIC-3489.</i>
	BOP <i>Phone Talker</i>	Verifies the following: Bearing header oil flow is > 8 gpm. Bearing header discharge pressure is > 6 psig. <i>When requested to verify bearing header flow and pressure report bearing header flow is 14 gpm and bearing header discharge pressure is 12 psig.</i>
	BOP	Places the No. 11 RFP Aux Oil pump handswitch to AUTO, pausing momentarily in OFF to allow logic to reset.
	BOP	Verifies No. 11 RFP Aux Oil Pump has stopped.
	BOP <i>Phone Talker</i>	Directs out plant operator to: (Note to examiner: May tell TBO to perform steps 18-20 of the procedure.) Maintain oil temp to bearings at 100 to 120°F. Ensure seal water drain temperatures are maintained approx. 170°F. Closes warm-up valves FW-69-1 & FW-70-1. <i>States that steps 18-20 are complete</i>
	BOP	Verifies the bias setting of the main FW control valve M/A stations is set to maintain approximately equal flow in each feedwater train. Note to examiner: Bias settings should not require adjustment because feedwater flows are matched.
	BOP	Verifies final FW temperatures within 3.5°F of each other by comparing computer points CFW524 & CFW525. Note to examiner: These temperatures do work in the simulator and the candidate should check the process computer to complete this step.
	BOP	Report to the SRO that #11 RFP is in service

Notes:

Op-Test No.

Scenario No. 2

Event No. 2

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Event Description: After the No. 11 RFP has been started the crew will begin to return reactor power to 100%.

Time	Position	Actions or Behavior
	SRO	Review Official 3D Monitor printout and Periodic Log.
	SRO	Reviews the "Reactivity Adjustment Request" form and determines that power should be raised to 70% using Recirc pumps at a rate of ~5 MWe/ minute.
	SRO	Directs RO to raise Reactor power to 70% using recirc flow.
	RO	Raise Reactor power to 70% per C.2-05, "POWER OPERATION".
	BOP	Monitoring plant parameters and may act as Peer Checker.

Notes:

Event Description: While the crew is raising power with Recirc pumps, a failure will occur causing a slow, steady rise in No. 11 Recirc pump speed. The RO should diagnose this failure of speed control and by procedure lock the scoop tube.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #1: While the crew is raising power with Recirc pumps or at the discretion of the Chief Examiner, insert trigger #1 to cause a speed failure on 'A' Recirc Flow Control.
	SRO	Acknowledges report from RO that speed continues to increase on the 'A' Recirc Pump.
	SRO	Directs the RO to perform B.01.04-05.H.1, UNSTABLE SPEED CONTROL ON ONE PUMP.
	SRO	Acknowledge report from RO of annunciator 4-C-5, FLUID DRIVE A SCOOP TUBE LOCK.
	SRO <i>Phone Talker</i>	Notifies the Nuclear Engineer. <i>When informed as the Nuclear Engineer of the loss of speed control on the 'A' Recirc Pump, ask them what the crews plans are and then concur to whatever they say.</i>
	SRO	May direct the RO to reduce speed locally for the 'A' Recirc Pump, coordinating with licensed RO in-plant, to match 'B' Recirc Pump speed. Note: If speed mismatch is within specifications, reduction of speed locally is not required.
	SRO <i>Phone Talker</i>	Notifies the following: General Superintendent Operations Superintendent Electrical and Instrument Engineering Instrument Engineer <i>Acknowledge report from CRS as the managers stated for the given plant condition.</i>
	RO	Informs CRS that speed is increasing on the 'A' Recirc Pump.

Event Description: While the crew is raising power with Recirc pumps, a failure will occur causing a slow, steady rise in No. 11 Recirc pump speed. The RO should diagnose this failure of speed control and by procedure lock the scoop tube.

Time	Position	Actions or Behavior
	RO	Performs actions from B.01.04-05.H.1, UNSTABLE SPEED CONTROL ON ONE PUMP.
	RO	Depressed the SCOOP TUBE LOCK pushbutton for the 'A' Recirc Pump.
	RO	Acknowledges annunciator 4-C-5 FLUID DRIVE A SCOOP TUBE LOCK.
	RO	Coordinates with in-plant RO to adjust speed of the 'A' Recirc Pump to match speed of the 'B' Recirc Pump.
	RO <i>Phone Talker</i>	Establishes communications with the RO in-plant. <i>When directed as in-plant RO, report that communications have been established at the 'A' Recirc MG Set.</i>
	RO <i>Phone Talker & Simulator Operator</i>	Directs the in-plant RO to slowly turn the handcrank in the counter-clockwise direction to lower pump speed. <i>When directed as in-plant RO to slowly reduce 'A' Recirc Pump speed; coordinate with the simulator operator, begin to reduce pump speed from the simulator computer, and report to the RO that you are turning the handcrank in the counter-clockwise direction.</i>
	RO <i>Phone Talker & Simulator Operator</i>	Stops the in-plant RO when speeds are matched. <i>When directed as the in-plant RO to stop reducing pump speed stop, coordinate with the simulator operator to stop reducing pump speed and report to the RO that you have stopped turning the handcrank.</i>
	RO	Informs CRS that Recirc pump speeds are matched.
	BOP	Monitoring plant parameters and may act as a peer checker.

Notes:

Event Description: After completing the actions for increasing Recirc pump speed, an automatic initiation of the RCIC system will occur. The crew should work together to diagnose this event by watching reactor water level and RCIC controls and indications. The crew should enter the C.4 to secure RCIC and determine Tech Spec and reportability requirements.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #2: While increasing reactor power and when directed by the Chief Examiner, insert event trigger #2 to cause an auto initiation of RCIC.
	SRO	Recognize RCIC has started.
	SRO	Directs performance of C.4-G INADVERTENT ECCS INITIATION
	SRO	Directs one of the following to shutdown RCIC <ol style="list-style-type: none"> 1. Directs that MO-2080 be closed. 2. Manual initiation of a Group V.
	SRO	Review Technical Specification 3.5.A.2 – 14 day LCO
	SRO <i>Phone Talker</i>	Directs System Eng and I&C to investigate. <i>When contacted as System Engineering or I&C to investigate RCIC initiation acknowledge the request.</i>
	SRO	May look into Reportability Requirements, this is normally the duty of the Shift Manager. (Procedure 4 AWI-04.08.02)
	RO	Recognize RCIC has started.
	RO	Acknowledge annunciator 5-B-24 “REACTOR WATER LEVEL HI/LO” (if actuated). Note: This assumes RCIC injects and RPV high water level results.
	RO	Verify RPV water level is >-47 inches as indicated on LI-6-94A & B and LI-2-3-85A & B.
	RO	Notify Shift Supervision.

Event Description: After completing the actions for increasing Recirc pump speed, an automatic initiation of the RCIC system will occur. The crew should work together to diagnose this event by watching reactor water level and RCIC controls and indications. The crew should enter the C.4 to secure RCIC and determine Tech Spec and reportability requirements.

Time	Position	Actions or Behavior
	BOP	Recognize RCIC has started
	BOP	Perform applicable C.4-G "INADVERTENT ECCS INITIATION" Immediate Operator Actions.
	BOP	Verify RPV water level >-47 inches.
	BOP	Verify RPV water level is normal.
	BOP	Determine manual override is allowed.
	BOP	Depress the RCIC TURBINE TRIP pushbutton. Note: This will not trip the RCIC turbine and additional action will be needed.
	BOP	When directed by the SRO performs one of the following: 1. Closes MO-2080. 2. Initiates a manual Group V
		The following steps are the applicable steps for a manual initiation of a Group V.
	BOP	Closes MO-2075
	BOP	Closes MO-2080
	BOP	Report to CRS actions taken and plant conditions.

Notes

Event Description: After the initiation of RCIC has been addressed a trip of the running stator cooling pump will occur with a failure of the standby pump to auto start. The BOP operator should manually start the standby pump.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #3: When actions for the initiation of RCIC are completed or when directed by the Chief Examiner, insert event trigger #3 to cause a trip of the Stator Cooling Pump with a failure of the 12 Stator Cooling Pump to auto start.
	SRO	Acknowledge report of annunciator 8-A-17, NO. 1 GENERATOR COOLING WTR FAILURE.
	SRO	Acknowledges failure of 11 Stator Cooling Water Pump and manual start of 12 Stator Cooling Water Pump.
	RO	Monitoring plant parameters.
	BOP	Acknowledge annunciator 8-A-17 “NO. 1 GENERATOR COOLING WTR FAILURE” and reports to SRO.
	BOP	Determines that 11 Stator Cooling Water pump is not running and 12 Stator Cooling Water Pump has not automatically started.
	BOP	Manually starts 12 Stator Cooling Water Pump.
	BOP	Consults ARP 8-A-17 “NO. 1 GENERATOR COOLING WTR FAILURE”.
	BOP	Determine trouble from annunciator Panel C-83A.
	Phone Talker	<i>When requested as TBO to check Panel C-83A and report indications wait 3 minutes and report “Annunciator C-83A-8, Reserve Pump Running, is in alarm”.</i>

Event Description: After the initiation of RCIC has been addressed a trip of the running stator cooling pump will occur with a failure of the standby pump to auto start. The BOP operator should manually start the standby pump.

Time	Position	Actions or Behavior
	BOP <i>Phone Talker</i>	Verify a Stator Cooling Water Pump is running. <i>If asked as TBO to perform post-start checks of 12 Stator Cooling Water Pump wait 2 minutes and report "Post start checks of 12 Stator Cooling Water Pump are completed satisfactorily".</i>
	BOP <i>Phone Talker</i>	Notify Shift Supervisor and System Engineer. <i>If asked to investigate the trip of the stator cooling water pump as system engineer acknowledge the request.</i>
	BOP	Refer to C.4-B.6.2.4.A "STATOR COOLING WATER FAILURE" for further guidance.
	BOP	Verify a Stator Cooling Water Pump is running.
	BOP	Notify Shift Supervision.
	BOP	Determines that no further action is required per C.4-B.6.2.4.A.
	BOP	Reports failure of 11 Stator Cooling Water Pump and manual start of 12 Stator Cooling Water Pump to SRO.

Notes:

Event Description: At the completion of actions for the trip of the running stator cooling pump a failure of the reactor water level setpoint on the digital feedwater control system will occur. This will result in a slowly lowering reactor water level and will require the RO to take manual control of both FWRVs.

Time	Position	Actions or Behavior
	<i>Chief Examiner</i>	NOTE: This event may need to start before completing actions for the loss of No. 11 Stator Cooling Pump to ensure that the OATC takes the applicable actions.
	Simulator Operator	TRG #4: When actions for loss of 11 Stator Cooling Pump are completed or when directed by the Chief Examiner, insert event trigger #4 to cause a failure of reactor water level setpoint on the digital feedwater control system.
	SRO	Acknowledge report of annunciator 5-B-24, REACTOR WATER LEVEL HI/LO.
	SRO	Acknowledge report of actions taken by RO to control reactor water level.
	SRO <i>Phone Talker</i>	Notifies I&C and System Engineering to investigate. <i>When contacted as System Engineering or I&C acknowledge the request; no further response is required.</i>
	RO	Acknowledge annunciator 5-B-24, REACTOR WATER LEVEL HI/LO.
	RO	Refers to C.4-B.05.07.A, LOSS OF REACTOR WATER LEVEL CONTROL.
	RO	Takes manual control of both FW Reg Valves to control reactor water level. Note to examiner: RO must place the control switches for both FW Reg valves in manual to prevent both Reg valves from closing. However, he may only adjust on one Reg valve to actually control the water level.
	RO	Notifies CRS of actions taken.
	RO	Controls reactor water level between 30 and 40 inches in manual.
	RO	Notifies System Engineer to investigate the cause and correct if possible.
	BOP	Monitoring plant parameters and may assume manual control of reactor water level.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #5: When RPV level control is in manual or when directed by the Chief Examiner, insert event trigger #5 to cause a loss of offsite power with a concurrent failure of the No. 12 EDG to start.
	SRO <i>Phone Talker</i>	Notify the Transmission System Operator of the LONOP Condition <u>and</u> determine the status of offsite power. (C.4-B.9.02.B) <i>If notified of the Loss of Offsite Power and questioned about status report that "Transmission System Operator acknowledges the loss of off-site power at Monticello, Grid status is normal. The problem appears to be in your subyard and further investigation will be performed".</i>
	SRO	Enter C.5-1100, RPV CONTROL.
	SRO	Verify: <ul style="list-style-type: none"> • Reactor Scram • All rods in to at least 04
	SRO	Check Detail 'A' for instrument limits.
	SRO	Verify no instrument limits have been exceeded.
	SRO	Directs RO/BOP to restore and maintain RPV water level +9 to +48 inches using: <ul style="list-style-type: none"> • RCIC • CRD (C.5-3204 – RPV MAKEUP WITH CRD) • HPCI • SBLC <p>NOTE: If RCIC is manually started ensure event trigger #7 automatically inserts to cause RCIC overspeed trip.</p> <p>NOTE: If HPCI is manually started ensure event trigger #6 automatically inserts to cause HPCI steam line break.</p>

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	SRO	Ascertain that RPV water level cannot be restored and maintained > +9 inches.
	SRO	Direct BOP operator to inhibit ADS. NOTE: ADS may have been inhibited per step 1 if the ADS timer started.
	SRO	Modify RPV water level band to maintain level >-126 inches.
	SRO	Direct RO to inject with SBLC per C.5-3203 – USE OF ALTERNATE INJECTION SYSTEMS FOR RPV MAKEUP
	SRO	Ascertain that RPV level cannot be maintained >-126 inches.
	SRO	Proceed to Step 2 in C.5-1100. (RPV CONTROL)
	SRO	Direct BOP operator to start Div 1 LPCI and Core Spray pumps (if not already running) such that a minimum of two (2) injection subsystems are running.
	SRO	Verify two or more injection subsystems lined up.
	SRO	Determine RPV level has dropped to -126 inches.
	SRO	Verify <u>any</u> injection source lined up with pump running.
	SRO	Enters C.5-2002 – EMERGENCY RPV DEPRESSURIZATION, before water level drops to -149 inches, while continuing on in 1100 step 5.
	SRO	C.5-2002 – EMERGENCY RPV DEPRESSURIZATION
	SRO	Verify all rods inserted.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	SRO	Verify drywell pressure >2 psig.
	SRO	Determine Core Spray and LPCI injection IS required for core cooling and leave pumps running.
	SRO	Verify Torus level >-5.9 ft.
	SRO Critical Step	Direct BOP operator to open 3 ADS valves.
	SRO	Continue C.5-1100 RPV CONTROL
	SRO	Verify 1 Core Spray and 1 RHR pump available.
	SRO	Verify injection to the RPV with running injection systems.
	SRO	When RPV level can be restored and maintained above -126 inches then return to C.5-1100 step 1.
	SRO	Modify level band to restore and maintain RPV water level +9 to +48 inches.
	SRO	Direct Core Spray and LPCI injection be prevented, as necessary, to maintain water level per C.5-3205 – TERMINATE AND PREVENT.
	RO	Carry out actions of C.4.A “REACTOR SCRAM”
	RO	Determine all control rods are inserted to or beyond position 04.
	RO	Place the reactor mode switch in SHUTDOWN.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	RO	Notify Shift Supervision.
	RO	Verify that the Recirc pumps have tripped.
	RO	Control Reactor water level between +9" and +48".
	RO <i>Simulator Operator</i>	Verify HPCI or RCIC initiate to restore and control Reactor water level. Note: RCIC must be started manually and HPCI may be started manually prior to automatic initiation at -47 inches. NOTE: Verify that RCIC trips on overspeed (Trigger #7) and HPCI steam line rupture occurs (Trigger #6) on start of RCIC and HPCI.
	RO	Insert SRM and IRM detectors.
	RO	Verify the Scram Discharge Vent and Drain Valves close.
	RO <i>Phone Talker</i>	Direct the TBO to verify proper operation of the EDG SW pumps and verify EDG room ventilation is operating properly. <i>If contacted as TBO to verify proper operation of EDG SW pumps and EDG room ventilation acknowledge direction, no further communication is necessary.</i>
	RO	Enter C.5-3204 "RPV MAKEUP WITH CRD"
	RO	Verify 11 CRD pump is available.
	RO	Verify CRD is not being used to insert control rods.
	RO	Verifies RBCCW flow established to CRD pumps. Note to examiner: This step cannot be accomplished until the BOP operator completes the applicable steps of C.4-H RESTORATION OF PLANT LOADS

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	RO	Direct the RBO to: <ul style="list-style-type: none"> • Verify CLOSED CRD-168. • Verify OPEN CRD-8. • Verify OPEN CRD-30. • Close CRD 7-1.
	<i>Phone Talker</i>	<i>When directed as RBO to perform the following:</i> <ul style="list-style-type: none"> • <i>Verify CLOSED CRD-168</i> • <i>Verify OPEN CRD-8</i> • <i>Verify OPEN CRD-30</i> • <i>Close CRD 7-1 & CRD 7-2</i> <i>After approximately 2 minutes report that you have accomplished the above listed items.</i>
	RO	Locate Part E of procedure C.5-3203 – USE OF ALTERNATE INJECTION SYSTEMS FOR RPV MAKEUP.
	RO	Verify No. 11 (A) SBLC pump is available.
	RO	Query the CRS as to the desired SBLC suction source: (either is permissible) <ul style="list-style-type: none"> • Boron Tank or • Demin Water
	RO	If directed to use the boron tank suction, perform the following:
	RO	Verify SBLC in standby readiness.
	RO	Start 11 or 12 SBLC pump from CO5.
	RO	Place HS 11A-S1 on CO5 to SYS 1 or SYS 2.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	RO <i>Phone Talker</i>	Direct the RBO to attempt to fill the SBLC tank with any of the following: <ul style="list-style-type: none"> • Demin Water • Condensate Service Water • Fire System <p><i>If directed as RBO to attempt to fill the SBLC tank, wait approximately 2 minutes and report that valves have been repositioned.</i></p>
	RO	If directed to line up Demin water to the SBLC suction, perform the following
	RO	Direct the RBO to CLOSE XP-1.
	RO	Direct the RBO to OPEN DM-56.
	<i>Phone Talker</i>	<i>If directed to line up Demin water to fill the SBLC tank, wait approximately 2 minutes and report that valve XP-1 is closed and valve DM-56 is open.</i>
	RO	Start 11 or 12 SBLC pump from CO5.
	RO	Place HS 11A-S1 on CO5 to SYS 1 or SYS 2.
	BOP	Carry out actions of C.4.A "REACTOR SCRAM"
	BOP	Verify 8N4 and 8N5 are open.
	BOP	Verify the Turbine is tripped.
	BOP	Verify the Turbine-Generator field breaker is OPEN.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior																					
	BOP	Carry out actions of C.4-B.9.2.B "LOSS OF NORMAL OFFSITE POWER"																					
	BOP	Notify Shift Supervision.																					
	BOP	Place the following C-08 switches in the position noted. Control <table border="0"> <thead> <tr> <th><u>Switch</u></th> <th><u>Breaker</u></th> <th><u>Position</u></th> </tr> </thead> <tbody> <tr> <td>152-301/CS</td> <td>2R XFMR SEC TO 13 BUS</td> <td>NORMAL AFTER TRIP</td> </tr> <tr> <td>152-101/CS</td> <td>2R XFMR SEC TO 11 BUS</td> <td>NORMAL ATER TRIP</td> </tr> <tr> <td>152-201/CS</td> <td>2R XFMR SEC TO 12 BUS</td> <td>NORMAL AFTER TRIP</td> </tr> <tr> <td>152-401/CS</td> <td>2R XFMR SEC TO 14 BUS</td> <td>NORMAL AFTER TRIP</td> </tr> <tr> <td>52-209/CS</td> <td>101/102 LC TIE ACB 52-908</td> <td>PULL-TO-LOCK</td> </tr> <tr> <td>52-908/CS</td> <td>109/102 LC TIE ACB 52-908</td> <td>PULL-TO-LOCK</td> </tr> </tbody> </table>	<u>Switch</u>	<u>Breaker</u>	<u>Position</u>	152-301/CS	2R XFMR SEC TO 13 BUS	NORMAL AFTER TRIP	152-101/CS	2R XFMR SEC TO 11 BUS	NORMAL ATER TRIP	152-201/CS	2R XFMR SEC TO 12 BUS	NORMAL AFTER TRIP	152-401/CS	2R XFMR SEC TO 14 BUS	NORMAL AFTER TRIP	52-209/CS	101/102 LC TIE ACB 52-908	PULL-TO-LOCK	52-908/CS	109/102 LC TIE ACB 52-908	PULL-TO-LOCK
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	BOP	Verify 1AR Voltmeter indicates zero volts.																					
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	BOP	If Bus 16 is de-energized perform the following:																					
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Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior									
	BOP	<p>Place the following control switches on C-08 in the position noted.</p> <table border="1"> <thead> <tr> <th>Control Switch</th> <th>Breaker</th> <th>Position</th> </tr> </thead> <tbody> <tr> <td>152-610/CS</td> <td>1AR TRANS TO 16 BUS</td> <td>PULL-TO-LOCK</td> </tr> <tr> <td>152-602/CS</td> <td>12 STDBY DG TO BUS 16</td> <td>PULL-TO-LOCK</td> </tr> </tbody> </table>	Control Switch	Breaker	Position	152-610/CS	1AR TRANS TO 16 BUS	PULL-TO-LOCK	152-602/CS	12 STDBY DG TO BUS 16	PULL-TO-LOCK
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152-610/CS	1AR TRANS TO 16 BUS	PULL-TO-LOCK									
152-602/CS	12 STDBY DG TO BUS 16	PULL-TO-LOCK									
	BOP <i>Phone Talker</i>	<p>Initiate an investigation to determine the status of the No. 12 EDG.</p> <p><i>If contacted as System Engineer or the Turbine Building Operator to investigate the cause of the failure of No. 12 EDG to start, report that you will investigate the problem.</i></p> <p><i>Wait approximately 3 minutes and then call back to the control room and state "There are no indications of a problem and the diesel appears to be in a proper standby condition and is ready to start."</i></p>									
	BOP	Place DG2/CS, 12 EDG CS, in PTL.									
	BOP	Place 152-602/CS in PTL.									

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	BOP	Directs Turbine building operator to press both local ENGINE STOP pushbuttons on C-94 simultaneously.
	BOP	When the report that 12 Diesel appears to be ready to be started, operator may attempt to start 12 Diesel. <ol style="list-style-type: none"> 1. Places 152-602/CS in AUTO 2. Places DG2/CS in START
	<i>Simulator Operator</i>	<i>If BOP operator starts 12 Diesel. Allow Diesel to be started and place on the bus then trip the Diesel.</i>
	BOP	Determines 12 EDG trips after starting and reports to the CRS.
	BOP	Verify a Service Water Pump is running. NOTE: No. 11 Service Water Pump breaker remains closed therefore #11 Service Water Pump will automatically restart when power is restored to Bus #15.
	BOP	Start an RBCCW Pump. NOTE: RBCCW will trip and must be restarted after power is restored via the EDGs.
	BOP	CRD Pumps will trip and must be restarted after power is restored via the EDGs. NOTE: CRD Pumps will trip and must be restarted after power is restored using C.4-H. This procedure is showed on page 21.

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior														
	BOP	Place the following switches on C-06 in the position noted. <table border="0"> <thead> <tr> <th><u>Control Switch</u></th> <th><u>Position</u></th> </tr> </thead> <tbody> <tr> <td>11 REACTOR FEED PUMP P-2A</td> <td>STOP</td> </tr> <tr> <td>12 REACTOR FEED PUMP P-2B</td> <td>STOP</td> </tr> <tr> <td>11 CONDENSATE PUMP P-1A</td> <td>STOP</td> </tr> <tr> <td>12 CONDENSATE PUMP P-1B</td> <td>STOP</td> </tr> <tr> <td>11 CIRC WATER PUMP P-100A</td> <td>TRIP S/D</td> </tr> <tr> <td>12 CIRC WATER PUMP P-100B</td> <td>TRIP S/D</td> </tr> </tbody> </table>	<u>Control Switch</u>	<u>Position</u>	11 REACTOR FEED PUMP P-2A	STOP	12 REACTOR FEED PUMP P-2B	STOP	11 CONDENSATE PUMP P-1A	STOP	12 CONDENSATE PUMP P-1B	STOP	11 CIRC WATER PUMP P-100A	TRIP S/D	12 CIRC WATER PUMP P-100B	TRIP S/D
<u>Control Switch</u>	<u>Position</u>															
11 REACTOR FEED PUMP P-2A	STOP															
12 REACTOR FEED PUMP P-2B	STOP															
11 CONDENSATE PUMP P-1A	STOP															
12 CONDENSATE PUMP P-1B	STOP															
11 CIRC WATER PUMP P-100A	TRIP S/D															
12 CIRC WATER PUMP P-100B	TRIP S/D															
	BOP	Restore Drywell Cooling as conditions allow.														
	BOP	Drywell Cooling fans will trip on the ECCS load shed. NOTE: Drywell Cooling fans will restart but the fan dampers must be opened.														
	BOP	Verify the Emergency Diesel Generators meet the following load limitations during the performance of procedure. <table border="0"> <thead> <tr> <th><u>2500 KW</u></th> <th><u>2750 KW</u></th> <th><u>3050 KW</u></th> </tr> </thead> <tbody> <tr> <td>Continuous</td> <td>2000 hrs</td> <td>30 min</td> </tr> </tbody> </table>	<u>2500 KW</u>	<u>2750 KW</u>	<u>3050 KW</u>	Continuous	2000 hrs	30 min								
<u>2500 KW</u>	<u>2750 KW</u>	<u>3050 KW</u>														
Continuous	2000 hrs	30 min														
	BOP	Verify start of the Emergency Seal Oil Pump.														
	BOP	Start the Turning Gear Oil Pump.														
	BOP <i>Phone Talker</i>	Direct the TBO to verify proper operation of #13 Diesel Generator. <i>When directed as the TBO to verify proper operation of the No. 13 EDG wait 4 minutes and reply, "The No. 13 EDG is operating properly."</i>														

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	BOP	C.4-H, Part C, Step 6, Div. I ECCS Load Shed bypass. NOTE: When high drywell pressure (+2 psig) is reached an ECCS load shed will occur which trips operating Service Water, RBCCW, CRD pumps and Drywell Cooling fans. Part C, step 6, of C.4-H "RESTORATION OF PLANT LOADS" must be performed to restore Div. I loads. Personnel availability may preclude entering C.4-H until EOP Containment Control (1200 series) actions are complete.
	BOP	Place 11 Instrument and Service Air Compressor to OFF.
	BOP	Place 11 Service Water Pump handswitch 52-305/CS in STOP.
	BOP	Place 11 RBCCW Pump P-6A handswitch 42-3318/CS in STOP.
	BOP	Verify "A" CGCS Containment isolation switches CS-1A & CS-2A are in close. (Panel C-291A)
	BOP	Place Drywell Fan control switches 42-3312/CS (V-RF-1) and 42-3313/CS (V-RF-3) in OFF.
	BOP	Boot contacts 7-8 on Relay 14A-K1A. (Div. I Bypass)
	BOP	Start loads as necessary (see attached procedures).
	BOP	11 Service Water Pump per steps 1 – 10 of B.08.01.01-05.D.1
	BOP	11 RBCCW Pump per steps 1 – 14 of B.02.05-05.D.1
	BOP	11 Instrument & Service Air Compressors per steps 1 – 16 of B.08.04.01-05.D.1

Event Description: After the crew has manual control of both FWRVs, or if the reactor scrams, then a loss of off-site power with a failure of the No. 12 EDG to start will occur. The crew will need to take level control actions through the use of HPCI, RCIC, CRD and SBLC.

Time	Position	Actions or Behavior
	BOP	11 and 13 Drywell Fans per steps 1 – 10 of B.08.16-05.D.1
	BOP	11CRD Pump per steps 1 – 15 of B.01.03-05.D.1
	BOP	Place switches 2E-S7A & 2E-S7B on CO3 to INHIBIT.
	BOP	Place hand switches on CO3 for RHR and Core Spray pumps to START as directed. _____ 11 RHR PUMP (HS 10A-S2A) _____ 13 RHR PUMP (HS 10A-S3A) _____ 11 CORE SPRAY (HS 14A-S5A)
	BOP	Verifies No. 11 EDG meets the following load limitations during the performance of procedure C.4-B.9.02.B. <u>2500 KW</u> <u>2750 KW</u> <u>3050 KW</u> Continuous 2000 hrs 30 min
	BOP Critical Step	Place hand switches for A, C & D SRVs to OPEN.
	BOP	Verify 3 SRVs are open.

Notes:

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	SRO	Acknowledge Annunciator 5-B-28 "DRYWELL HI PRESS SCRAM TRIP"
	SRO	Confirm Drywell high pressure as indicated on PR-2994 (CO4) and SPDS
	SRO	Enter C.5-1200 PRIMARY CONTAINMENT CONTROL.
	SRO	Determine Drywell pressure >2 psig
	SRO	Go to step 17
	SRO	Verify Torus level <14.1 ft and Torus pressure >2 psig.
	SRO Critical Step	Direct BOP operator to start Torus spray per C.5-3502 – CONTAINMENT SPRAY. NOTE: If it is determined that RHR pumps are needed for core cooling, Torus spray will not be initiated until RPV level is restored.
	SRO	Determine Drywell pressure >12 psig.
	SRO	Verify within Fig. N, DW SPRAY LIMIT (SPDS 79)
	SRO	Verify Torus level below 4.3 ft.
	SRO	Verify Recirc Pumps have tripped

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	SRO	Direct BOP operator to place DW COOLING FAN CONTROL SWITCHES in OFF.
	SRO Critical Step	Direct BOP operator to start Drywell spray per C.5-3502. NOTE: Drywell spray will not be initiated until RPV level is restored.
	SRO	Direct BOP operator to stop Torus spray if Torus pressure drops below 2 psig.
	SRO	Direct BOP operator to stop Drywell spray if Drywell pressure drops below 2 psig.
	SRO	Direct BOP operator to start all available DW cooling per C.5-3503 – DEFEAT DRYWELL COOLER TRIPS
	SRO	Maintain Torus level –4.0 to +3.0 inches
	SRO	Determine that Torus level can be maintained <+4.3 ft and >-3.3 ft. (steps 15 & 19)
	SRO	Determine that Torus temperature cannot be maintained <90 deg F.
	SRO	Direct BOP operator to place Torus cooling in service. NOTE: If it is determined that RHR pumps are needed for core cooling, Torus Cooling will not be initiated until RPV water level is restored.
	SRO	Direct BOP operator to perform procedure C.5-3501 – H2/O2 ANALYZER OPERATION, as time permits.
	BOP Critical Step	Start Div 1 Torus Spray per C.5-3502 – CONTAINMENT SPRAY, Part A.

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	BOP	Place CONTAINMENT SPRAY 2/3 CORE HEIGHT BYPASS switch to MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY/COOLING LPCI INITIATION BYPASS switch to BYPASS.
	BOP	Open MO-2006.
	BOP	Open MO-2010.
	BOP	Throttle open MO-2008.
	BOP	Verify closed, if necessary: <ul style="list-style-type: none"> • MO-2012 • MO-2013
	BOP	Verify CV-1728 controller set at 20%.
	BOP	Close MO-2002.
	BOP	Place 11 and 13 RHRSW PUMPS LPCI AND ECCS LOAD SHED MANUAL OVERRIDE switch to MANUAL OVERRIDE.
	BOP	Place 11 or 13 RHRSW Pump in PTL.
	BOP	Start 11 or 13 RHRSW Pump. Note: Operator will start the Pump that was NOT previously placed in PTL.
	BOP	Adjust RHRSW flow using CV-1728.

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control..

Time	Position	Actions or Behavior
	BOP	Verify MO-2002 closed.
	BOP	Place DW COOLING FAN CONTROL SWITCHES in OFF.
	BOP Critical Step	Start Div 1 Drywell Spray per C.5-3502 – CONTAINMENT SPRAY, Part C.
	BOP	Place CONTAINMENT SPRAY 2/3 CORE HEIGHT BYPASS switch to MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY/COOLING LPCI INITIATION BYPASS switch to BYPASS.
	BOP	Open MO-2020.
	BOP	Open MO-2022.
	BOP	Verify closed MO-2008.
	BOP	Verify closed, if necessary: <ul style="list-style-type: none"> • MO-2012 • MO-2013
	BOP	Verify CV-1728 controller set at 20%.
	BOP	Close MO-2002.
	BOP	Place 11 and 13 RHRSW PUMPS LPCI AND ECCS LOAD SHED MANUAL OVERRIDE switch to MANUAL OVERRIDE.

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	BOP	Place 11 or 13 RHRSW Pump in PTL.
	BOP	Start 11 or 13 RHRSW Pump.
	BOP	Adjust RHRSW flow using CV-1728.
	BOP	Verify MO-2002 closed.
	BOP	Stops Torus spray if Torus pressure drops below 2 psig.
	BOP	Close MO-2010.
	BOP	Stops Drywell spray if Drywell pressure drops below 2 psig.
	BOP	Close MO-2020.
	BOP	Close MO-2022.
	BOP	Perform procedure C.5-3503 – DEFEAT DRYWELL COOLER TRIPS
	BOP	Place all DW cooling fan control switches to OFF.
	BOP	OPEN knife switch KS3100 (behind panel C25).
	BOP	Verify FAN INLET DAMPER control switches in AUTO (C25).
	BOP	Place DW cooling fan control switch in ON.

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	BOP	OPEN associated discharge dampers for started fans.
	BOP	Perform procedure B.03.04-05.H.3 – TRANSFERRING “A” RHR FROM LPCI TO TORUS COOLING UNDER LOSS OF NORMAL OFF-SITE POWER CONDITIONS DURING ABNORMAL AND EMERGENCY CONDITIONS.
	BOP	Verify CV-1728 controller is set at 20%.
	BOP	Verify 11 and 13 RHRSW PUMPS LPCI AND ECCS LOAD SHED MANUAL OVERRIDE switch is in MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY 2/3 CORE HEIGHT BYPASS switch to MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY/COOLING LPCI INITIATION BYPASS switch to BYPASS.
	BOP	Verify closed MO-2002.
	BOP	Verify 11 or 13 RHR Pump in PTL.
	BOP	Verify 11 or 13 RHRSW Pump is running.
	BOP	Adjust RHRSW flow to approximately 3500 gpm using CV-1728.
	BOP	Partially open MO-2008 by holding handswitch to OPEN for 8 seconds.

Event Description: When HPCI starts a steam line rupture from the HPCI system will occur. This will prevent HPCI from injecting into the reactor. If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required. In addition to the HPCI steam line break, a small Recirc line break will occur simultaneously to help cause drywell pressure and temperature to rise. The crew will need to prioritize the needs of the low pressure systems for core cooling and containment control.

Time	Position	Actions or Behavior
	BOP	Open MO-2006.
	BOP	Close MO-2012 or MO-2013 while throttling open MO-2008 to maintain approximately 4000 gpm total flow.
	BOP	Verify MO-2002 closed.
	BOP <i>Phone Talker</i>	Verify V-AC-5 in operation. <i>If directed as RBO to verify V-AC-5 is in operation then wait 2 minutes and report, "V-AC-5 is operating normally".</i>
	BOP	Perform C.5-3501 – H2/O2 ANALYZER OPERATION.

Notes:

Event Description: If RCIC is manually started it will trip on overspeed. This will result in reactor water level continuing to lower until a blowdown is required.

Time	Position	Actions or Behavior
	SRO	May direct RCIC be started manually.
	SRO	Acknowledges that RCIC tripped on overspeed.
	BOP	If directed to manually start RCIC, perform the following:
	BOP	Verify flow controller in AUTO and set at 80%.
	BOP	OPEN MO-2096, RCIC Cooling Water Supply valve.
	BOP	Place P-211 (RCIC Barometric condenser Vacuum Pump Handswitch 13A-S15, in the START position.
	BOP	OPEN CV-2104, RCIC Pump Minimum Flow Valve
	BOP	Open the following: <ul style="list-style-type: none"> a. MO-2107, RCIC Pump Disch Inbd valve. b. MO-2106, RCIC Pump Disch Otbd vave
	BOP	Open MO-2078, RCIC Turbine Steam Supply valve.
		Note to examiner: The following steps are not per the procedure but may be required depending on how Recirc was secured in Event #3.
	BOP	Opens the following valves. <ul style="list-style-type: none"> • MO-2075 • MO-2080
	BOP	Verify the following valves are closed: <ul style="list-style-type: none"> a. CV-2848 and CV-2849, RCIC Cond Pump Discharge to CRW b. CV-2082A and CV-2082B, RCIC Steam Line Drain to Main Condenser
	BOP	Verify SI-7321, RCIC Turbine Speed Indicator is increasing, indicating that unit is rolling
	BOP	Verify AO-13-22, RCIC Injection Testable Ckv, is open
	BOP	Verify RCIC pump flow is maintained at desired level.
	BOP	Determines RCIC trips on overspeed and informs the CRS.

Termination Point:

- Low pressure systems are injecting into the RPV.
- RPV level is above the top of active fuel.
- At the discretion of the Lead Evaluator.

Classification:

Classification: Guideline 4 (Reactor Coolant Leak); Site Area Emergency

Event Description: The Main Turbine has been placed in service by the previous shift. The crew will take the shift and then place the Main Generator in service.

Time	Position	Actions or Behavior
	SRO	Direct the BOP Operator to synchronize the Main Generator to the grid.
	SRO	Acknowledge that Main Generator has been synchronized to the grid.
	RO	Monitoring plant parameters and may act as Peer Checker
	BOP	Place the synchronizing switch for 8N4 or 8N5 in ON and verify the following: (8N4SS or 8N5SS) (PROCEDURE C.1, STEP VII.C.5)
	BOP	Synchronizer pointer is moving. (Synchronizing meter CO8)
	BOP	Synchronizing Voltmeters and sensing lights are activated. (Running and Incoming voltage meters CO8) (White sensing lights below synchronizing meter CO8)
	BOP	Using the Speed Load Changer control switch, ADJUST generator speed until synchronous pointer rotation of one revolution in 30 – 120 seconds is achieved.
	BOP	Verify Generator Voltage is between 20.9 KV and 23.1 KV. (Main Generator voltage meter CO8)
	BOP	Using the Manual Voltage Adjust control switch, ADJUST incoming voltage to match running voltage. (Running and Incoming voltage meters CO8)
	BOP	Verify the synchroscope makes at least two complete revolutions.
	BOP	Load the Main Generator by performing the following:
	BOP	Verify the synchroscope pointer is in the GREEN band.

Event Description: The Main Turbine has been placed in service by the previous shift. The crew will take the shift and then place the Main Generator in service.

Time	Position	Actions or Behavior
	BOP	Place either 8N4 or 8N5 control switch to close for approx. 1 sec. (Closed indication for the output breaker is indicated by RED lamp indication above the breaker and generator load present)
	BOP	If the selected output breaker does not close place the breaker control switch to TRIP and return to step 1 above.
	BOP <i>Phone Talker</i>	If the selected output breaker does not close on the second attempt, DO NOT reset the breaker and notify System Engineer. <i>If contacted as System Engineering because the output breaker will not close state that you will investigate. Wait 1 minute than contact the control room and state that you could not find anything wrong and that you have received permission to attempt a third time.</i>
	Chief Examiner	NOTE: If the breaker does not close the second time, the operator will stop attempting and contact the system engineer to investigate. System engineer will allow another attempt.
	BOP	Place the SPEED LOAD CHANGER to RAISE and increase load to approximately 30 Mwe. (HS SLCM CO8)
	BOP	Verify phase-to-phase voltages are approx. equal. (HS VS1 CO8) (Main Generator voltage meter CO8)
	BOP	Verify phase-to-phase currents are approx. equal. (3 Generator Amperage meters CO8)
	BOP	Place synchroscope to OFF and remove handle from switch.
	BOP	LOG in the Control Room log.
	BOP <i>Phone Talker</i>	Direct TBO to locally inspect the No. 1 Generator Transformer area and 345KV disconnects. <i>If directed as the TBO to inspect the No. 1 Generator Transformer area and 345KV disconnects wait 2 minutes and report back that everything appears normal.</i>

Event Description: The Main Turbine has been placed in service by the previous shift. The crew will take the shift and then place the Main Generator in service.

Time	Position	Actions or Behavior
	BOP	Place the other output breaker synchronizing switch to ON and verify.
	BOP	Incoming and Running voltmeters are matched.
	BOP	Synchroscope indicated frequency is matched.
	BOP	CLOSE the selected output breaker. (8N4/CS or 8N5/CS)
	BOP	Verify phase-to-phase voltages are approx. equal. (HS VS1 CO8) (Main Generator voltage meter CO8)
	BOP	Verify phase-to-phase currents are approx. equal. (3 Generator Amperage meters CO8)
	BOP	Place synchroscope to OFF and remove handle from switch.
	BOP	LOG in the Control Room log.
	BOP <i>Phone Talker</i>	Notify the Transmission System Operator. <i>If notified as Transmission System Operator of Generator synchronization, acknowledge report.</i>
	BOP	CLOSE the following valves: <ul style="list-style-type: none"> • MO-1197 (HS 1197 CO7) • MO-1184 (HS 1184 CO7) • MO-1185 (HS 1185 CO7) • MO-1186 (HS 1186 CO7) • MO-1187 (HS 1187 CO7) • MO-1180 (HS-1180 CO7) • MO-1181 (HS-1181 CO7) • MO-1182 (HS-1182 CO7) • MO-1183 (HS-1183 CO7)

Event Description: The Main Turbine has been placed in service by the previous shift. The crew will take the shift and then place the Main Generator in service.

Time	Position	Actions or Behavior
	BOP	ZERO the No. 1 MAIN GENERATOR AMPLIDYNE VOLTAGE using the REGULATOR VOLTAGE ADJUST. (CS-70 CO8)
	BOP	Place the REGULATOR TRANSFER switch to AUTO. (243/CS CO8)
	BOP	Verify the white and red lights above the switch are ON.
	BOP <i>Phone Talker</i>	ADJUST MVAR loading per system dispatch. (CS-90 CO8) (MVAR digital display) <i>When contacted as Transmission System Operator to determine what MVAR loading should be maintained at, direct to maintain MVAR loading between +10 and +20 MVAR.</i>
	BOP	ZERO the No. 1 MAIN GENERATOR AMPLIDYNE VOLTAGE using the MANUAL VOLTAGE ADJUST. (CS-70 CO8)
	BOP	NOTE: The following steps place the Power System Stabilizer in service. These steps will not be completed. Verify the Automatic Voltage Regulator is in service. (white and red lights above the switch are ON) Verify the No. 1 MAIN GENERATOR AMPLIDYNE VOLTAGE meter is at ZERO. PRESS the Power System Stabilizer START button on CO8. Verify the RED light below the button is ON.
	BOP	Verify Exhaust Hood Temperature is < 125 deg F. (SPDS 654, Pt. TRB138 or TR-1717 Pts. 16 & 17)
	BOP	RAISE (slowly) the SPEED/LOAD CHANGER to increase generator load.
	BOP	Verify the SPEED/LOAD CHANGER is no longer controlling.

Op-Test No.

Scenario No. 3

Event No. 1

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Event Description: The Main Turbine has been placed in service by the previous shift. The crew will take the shift and then place the Main Generator in service.

Time	Position	Actions or Behavior
	BOP	RAISE the SPEED/LOAD CHANGER setpoint to the high speed stop (107%).
	BOP	SELECT SPDS Format 701 and monitor Generator Gross Rate of Change.
	BOP	Report to the SRO that the Main Generator has been synchronized to the grid.

Notes:

Event Description: The crew will increase Reactor power using control rods in accordance with the roller tape starting at Step 30 rod 14-39.

Time	Position	Actions or Behavior
	SRO <i>Phone Talker</i>	C.1.VIII – Power Ascension Verify outside air temperature is ≥ 32 deg. Verify Isophase Bus Blower in service. <i>If directed to verify that Isophase Bus Blower is in service report that the Isophase Bus Blower is in service.</i>
	SRO <i>Phone Talker</i>	Direct RBO to reduce RWCU flow to 140 GPM. <i>When directed to reduce RWCU flow to 140 gpm wait 2 minutes, verify that the Simulator Operator has reduced flow to 140 gpm, and then report that “RWCU flow has been reduce to 140 gpm”.</i>
	SRO	Reviews “Reactivity Adjustment Request” and determines that reactor power should be raised to 30% power using control rods per C.2-05 Power Operation – System Operation. <ul style="list-style-type: none"> • Direct the RO to commence Control Rod Withdrawal continuing at step 30, Control Rod 14-39.
	RO	Withdraws control rods in accordance with Ops Man B.05.05-05.E.1, Control Rod Movement. Place ROD SELECT POWER switch, 3A-S1, to ON. Press the appropriate ROD SELECT pushbutton (control rod 14-39, step 30). <i>NOTE: The control rod will move 1 notch in the indicated direction when the ROD MOVEMENT CONTROL switch is momentarily placed in ROD NOTCH OUT or ROD IN.</i> Momentarily place ROD MOVEMENT CONTROL switch, 3A-S2, to ROD OUT NOTCH or ROD IN to obtain desired rod movement.
	BOP	Monitor Plant Parameters

Notes:

Event Description: When directed by the chief examiner, the No. 11 CRD pump will trip. The OATC should start the standby CRD pump. The in-plant operator should find the breaker in the trip free position. System engineering will need to investigate to determine the cause of the problems with the pump.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #1: When directed by the Chief Examiner, insert event trigger #1 to cause a trip of No. 11 CRD pump.
	SRO	Acknowledges report of trip of No. 11 CRD pump.
	SRO	Directs OATC to perform actions of C.4-B.01.03.A, LOSS OF CRD PUMP FLOW.
	SRO <i>Phone Talker</i>	Notify Shift Supervision and System Engineer. <i>If directed as system engineering to investigate the cause of the trip, acknowledge the request; no further communication is necessary.</i>
	SRO	Acknowledge report of actions taken by RO.
	RO	Observes that No. 11 CRD pump tripped. <ul style="list-style-type: none"> • Red Lamp is OFF • CRDH system flow and pump discharge pressure has decreased to 0 as indicated on : <ul style="list-style-type: none"> ○ PI-3-302 Charging Water Header Pressure (C05) ○ FI-3-306 Cooling Water Header Flow (C05)
	RO	Acknowledge annunciators: <ul style="list-style-type: none"> • 5-B-17 – CHARGING WATER LOW PRESSURE • 5-B-25 – CRD PUMP 3-16A BREAKER TRIPPED • 5-B-26 – CRD PUMP 3-16A OL
	RO <i>Phone Talker</i>	Directs in-plant operator to investigate No. 11 CRD pump. <i>If dispatched as RBO to No.11 CRD pump, wait 2 minutes and report that “The No. 11 CRD pump motor seems to be hot.”</i> <i>If dispatched as the TBO, wait 2 minutes and report that “ACB-152-506 overcurrent flag is dropped.”</i>

Event Description: When directed by the chief examiner, the No. 11 CRD pump will trip. The OATC should start the standby CRD pump. The in-plant operator should find the breaker in the trip free position. System engineering will need to investigate to determine the cause of the problems with the pump.

Time	Position	Actions or Behavior
	RO	Starts #12 CRD Pump. (HS-3B-S4B to START)
	RO	Verify #12 CRD Pump Starts <ul style="list-style-type: none"> • (#12 CRD Pump breaker indication – Green lamp OFF, Red lamp ON) • (PI-3-302 Charging Water Header Pressure - CO5) • (FI-3-306 Cooling Water Header Flow - CO5)
	<i>Phone Talker</i>	<i>If dispatched as RBO to check the No. 12 CRD Pump for proper operation wait 2 minutes and report, "The No. 12 CRD Pump is operating properly."</i>
	RO	Verify required action per C.4-B.01.03.A, LOSS OF CRD PUMP FLOW, are complete.
	RO	Report actions taken for trip of CRD Pump to SRO.
	BOP	Monitoring plant parameters and may act as Peer Checker.

Notes:

Event Description: A high temperature will be experienced on Steam Packing Exhauster K-3A. This will require the operator to start Steam Packing Exhauster K-3B and establish vacuum and then shutdown Steam packing Exhauster K-3A.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #3: When actions for trip of No. 11 CRD pump are complete or when directed by the Chief Examiner, insert event trigger #3 to cause high motor temperatures on steam packing exhauster K-3A.
	SRO	Acknowledge report of 7-A-28, "STM PKG EXH K3A & K3B BLWR MTR HI TEMP".
	SRO	Acknowledge report of action taken for Steam Packing Exhauster trouble.
	RO	Monitor plant parameters.
	BOP	Acknowledge annunciator 7-A-28 STM PKG EXH K3A & K3B BLWR MTR HI TEMP.
	BOP	Consult ARP 7-A-28
	BOP	Determine Steam Packing Exhauster K-3A is in service.
	BOP	START Steam Packing Exhauster K-3B. (HS 42-2122/CS to RUN CO7)
	BOP	ADJUST K-3B outlet valve MO-1049 to establish 10" H ₂ O as indicated on PI-1220, STEAM PACKING EXH VAC. (HS-1049 CO7)
	BOP	STOP Steam Packing Exhauster K-3A. (HS 3122/CS to OFF CO7)
	BOP	CLOSE K-3A outlet valve MO-1048. (HS-1048 to CLOSE CO7)
	BOP	Notify Shift Supervision and Plant Electrician.
	Phone Talker	<i>If called as Plant Electrician to look at Steam Packing Exhauster K-3A acknowledge report and state that you will have somebody look at it as soon as possible.</i>

Notes:

Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	Simulator Operator	<p>TRG #5: When actions for high temperature on the Steam Packing Exhauster are complete or when directed by the Chief Examiner, insert event trigger #5 to initiate the following:</p> <ul style="list-style-type: none"> • Earthquake • Operational Basis Earthquake • Design Basis Earthquake after a 45 second time delay • Lockout of 4160 VAC Bus 13 <p>NOTE: When trigger #5 is inserted shake the procedure/form file cabinet for 5 seconds. When the Design Basis Earthquake alarms, 45 seconds after initiation of the event, shake the file cabinet again for 5 seconds.</p>
	SRO	Acknowledge report of annunciators.
	SRO <i>Phone Talker</i>	<p>Determine a Design Basis Earthquake has occurred. (Prairie Island could be called if further clarification is desired).</p> <p><i>If called as Prairie Island to confirm the earthquake reply "an earthquake has been confirmed".</i></p>
	<i>Chief Examiner</i>	NOTE: C.4.K Immediate Reactor Shutdown may be entered but is not required.
	SRO	Direct the RO to manually scram the reactor.
	RO	Depress REACTOR SCRAM 'A' and 'B' pushbuttons. (5A-S3A and 5A-S3B)

Op-Test No.

Scenario No. 3

Event No. 5 & 6

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Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	RO	Carry out actions of C.4.A "REACTOR SCRAM"
	RO	Determine all control rods are inserted to or beyond position 04.
	RO	Place the reactor mode switch in SHUTDOWN.
	RO	Notify Shift Supervision.
	RO	Verify that the Recirc pumps are at minimum speed.
	RO	Control Reactor water level between +9" and +48" with Cond & Feed.
	RO	Place CV-6-13 (low flow valve) in AUTO. Note: Operator may decide this shouldn't be done because of the reference line break.
	RO	Place CV-6-13 controller setpoint to 15 to 20 inches.
	RO	Verify CV-6-13 is closed when RPV level reaches 15 to 20 inches.
	RO	Insert SRM and IRM detectors.
	RO	Switch APRM/IRM recorders to IRM.
	RO	Monitor power by ranging down the IRMs to maintain indication on scale.
	RO	Verify the Scram Discharge Vent and Drain Valves close.

Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	BOP	Acknowledge annunciators: <ul style="list-style-type: none"> 6-C-8, EARTHQUAKE 6-C-13, OPERATIONAL BASIS EARTHQUAKE
	BOP	Consult ARPs 6-C-8 & 6-C-13.
	BOP	Verify actuation of the Accelerograph Recording System. (Contacting system engineering is an option)
	BOP	Enter C.4-B.5.14A, EARTHQUAKE NOTE: Annunciator 6-C-18 will occur 45 seconds after initial earthquake annunciators (6-C-8 & 6-C-13).
	BOP	Acknowledge annunciator 6-C-18, DESIGN BASIS EARTHQUAKE.
	BOP	Announce over the paging system that a Reactor scram has occurred. (C.4.A)
	BOP	Carry out actions of C.4.A, "REACTOR SCRAM"
	BOP	When Generator power is ~ 0 Mwe OPEN 8N4 and 8N5. (CO8)

Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	BOP	TRIP the Turbine (Turbine emergency trip switch – CO7)
	BOP	Verify that Turbine-Generator field breaker is OPEN. (CO8)
	BOP	STOP the amplidyne. (Regulator Transfer Switch to OFF – CO8)
	BOP	START the Turbine Auxiliary Oil Pump. (CO7) NOTE: Turbine Aux Oil Pump electrical reset is required for start. (C.4.H)
	BOP	Enter the following procedure: <ul style="list-style-type: none"> • C.4-B.09.06.B, LOSS OF BUS 13 OR BUS 14 <ul style="list-style-type: none"> • C.4-B.01.03.A, LOSS OF CRD PUMP FLOW • C.4-B.06.04.A, DECREASED CIRCULATING WATER FLOW • C.4-B.06.03.A, DECREASING CONDENSER VACUUM • C.4-B.09.06.C, LOSS OF BUS 15 OR BUS 16 • C.4-B.09.07.A, LOSS OF POWER TO LC-101 OR ITS MCC'S • C.4-B.09.07.C, LOSS OF POWER TO LC-103 OR ITS MCC'S • C.4-B.09.07.E, LOSS OF POWER TO LC-107 OR MCC-114 • C.4-B.09.07.G, LOSS OF POWER TO LC-109 OR ITS MCC'S
	BOP	Per ARP 8-B-11 NO 13 4160V BUS LOCKOUT
	BOP	Verify #15 4160V bus has transferred to 1AR. (152-511 breaker indication - Red OFF, Green ON - CO8) (#15 bus voltage indication - CO8)
	BOP	Verify #11 & #12 Emergency Diesel Generators have started. (#11 & #12 EDG voltage indication - CO8)
	BOP	Verify LC-107 transfer to LC-108.

Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	BOP	Per C.4-B.09.06.B, LOSS OF BUS 13 OR BUS 14:
	BOP	OPEN ACB 52-901 (52-901/CS – CO8)
	BOP	Place 52-908/SS SYNC 109 CTR SEC ACB to ON – CO8
	BOP	CLOSE ACB 52-908 109/102 LOAD CTR TIE ACB (52-908/CS – CO8)
	BOP	Verify MO-1850 “11 Cir Wtr Pump P-100 Discharge Valve” has closed. (Bkr indicating lamps – CO6) <u>NOTE: MO-1850 will begin to automatically close when power is restored to LC-109.</u>
	BOP	C.4-B.06.04.A, DECREASED CIRCULATING WATER FLOW
	BOP	Place #11 Circulating Water Pump control switch to SHUTDOWN. (152-305/CS – CO6)
	BOP	C.4-B.06.03.A, DECREASING CONDENSER VACUUM
	BOP	Monitor LP Turbine exhaust pressures per SPDS 656.
	BOP	C.4-B.09.06.C, LOSS OF BUS 15 OR BUS 16
	BOP	Determine that Bus 15 is being powered by 1AR. (152-511 breaker indication - Red OFF, Green ON - CO8) (#15 bus voltage indication - CO8)

Event Description: A Design Basis Earthquake will be felt which will cause a lockout of Bus 13. The Reactor will be manually scrammed and mitigative actions will be taken for the scram and the Bus 13 lockout.

Time	Position	Actions or Behavior
	BOP	Consider shutdown of #11 & #12 Emergency Diesel Generators.
	BOP	C.4-B.09.07.A, LOSS OF POWER TO LC-101 OR ITS MCC'S
	BOP	No action required – LC-101 re-powered automatically.
	BOP	C.4-B.09.07.C, LOSS OF POWER TO LC-103 OR ITS MCC'S
	BOP	Monitor system operation for RBCCW, Stator Cooling, Drywell Ventilation, Service Water and Hydrogen Seal Oil.
	BOP	C.4-B.09.07.E, LOSS OF POWER TO LC-107 OR MCC-114
	BOP	Determine crosstie between LC-107 and LC-108 is closed. (Indicated by control room lighting restored)
	BOP	C.4-B.09.07.G, LOSS OF POWER TO LC-109 OR ITS MCC'S
	BOP	No action required – LC-109 re-powered when breaker 52-908 was closed.

Notes:

Event Description: A reference line break will occur on the “A” side followed by a break in the “B” side after approximately 4 minutes. This will cause a loss of all level indication, which will drive the crew into C.5-2006, RPV FLOODING. Emergency Depressurization will be accomplished and then water injected to flood the vessel.

Time	Position	Actions or Behavior
	Simulator Operator	<p>TRG #6: When directed by the Chief Examiner, insert event trigger #6 to cause the following to occur:</p> <ul style="list-style-type: none"> • Rupture of RPV Instrumentation Line ‘A’ immediately. • Failure of the Wide Range Level Transmitter after 1 minute. • Rupture of RPV Instrumentation Line ‘B’ after 5 minutes.
	Chief Examiner	<p>NOTE: “B” side level instruments will fail 4 minutes after the “A” side. “B” side instruments will fail as drywell pressure approaches +2 psig requiring entry into C.5-1100.</p>
	SRO	Acknowledge report of annunciators.
	SRO	<p>Verify RPV water level is known per:</p> <ul style="list-style-type: none"> • SPDS (Display 051) • LI-6-52B and LI-2-3-85A.
	SRO	Enter C.5-1100, RPV CONTROL (Entry condition +2 psig drywell pressure)
	SRO	<p>Verify:</p> <ul style="list-style-type: none"> • Reactor scram • All rods in to at least 04
	SRO	Verify RPV water level instrument limits have not been exceeded.
	SRO Critical Step	Determine RPV water level is unknown
	SRO	Leave C.5-1100 – RPV CONTROL
	SRO	Enter C.5-2006 – RPV FLOODING at step 24
	SRO	Determine Torus level is above –5.9 ft.

Event Description: At the completion of Event No. 5&6 or at the direction of the Chief Examiner, A reference line break will occur on the "A" side followed by a break in the "B" side after approximately 4 minutes. This will cause a loss of all level indication which will drive the crew into C.5-2006, RPV FLOODING.

Time	Position	Actions or Behavior
	SRO Critical Step	Direct BOP operator to open 3 ADS valves.
	SRO	Verify 3 ADS valves are open.
	SRO	Direct BOP operator to close the: <ul style="list-style-type: none"> • MSIVs • Main Steam Line Drains • RCIC steam isolation valves • HPIC steam isolation valves
	SRO Critical Step	Directs BOP and RO to inject to the RPV. May direct use of one or more of the following: <ul style="list-style-type: none"> • Condensate/Feedwater (O.K to defeat the high level trip.) • LPCI • Core Spray • CRD
	SRO	Inject until 3 SRVs are verified OPEN and RPV pressure at least 50 psi above DW pressure, but low as possible.
	SRO	Confirm Drywell high pressure as indicated on PR-2994 (CO4) and SPDS
	SRO	Enter C.5-1200 PRIMARY CONTAINMENT CONTROL (Entry Condition +2 psig Drywell pressure).
	SRO	Determine Drywell pressure >2 psig
	SRO	Go to step 17
	SRO	Verify Torus level <14.1 ft and Torus pressure >2 psig.

Event Description: At the completion of Event No. 5&6 or at the direction of the Chief Examiner, A reference line break will occur on the "A" side followed by a break in the "B" side after approximately 4 minutes. This will cause a loss of all level indication which will drive the crew into C.5-2006, RPV FLOODING.

Time	Position	Actions or Behavior
	SRO	Direct BOP operator to start Torus spray per C.5-3502. NOTE: If it is determined that RHR pumps are needed for core cooling, Torus spray will not be initiated until RPV level is restored.
	SRO	Direct BOP operator to stop Torus spray if Torus pressure drops below 2 psig.
	SRO	Direct BOP operator to start all available DW cooling per C.5-3503
	SRO	Maintain Torus level -4.0 to +3.0 inches
	SRO	Determine that Torus level can be maintained <+4.3 ft and >-3.3 ft. (steps 15 & 19)
	SRO	Direct BOP operator to perform procedure C.5-3501 H2/02 ANALYZER OPERATION as time permits.
	RO	Acknowledge annunciator 5-B-24 "REACTOR WATER LEVEL HI/LO".
	RO	Consult ARP 5-B-24 "REACTOR WATER LEVEL HI/LO".
	RO	Report annunciator 5-B-24 to SRO
	RO	Determine LI-6-52A and LI-2-3-85B have failed upscale. (CO5)
	RO	Verify LI-6-52B and LI-2-3-85A indicates correctly. (CO5)
	RO	Determine Reactor Feed Pump trip has occurred on high RPV level and cannot be re-started.

Event Description: At the completion of Event No. 5&6 or at the direction of the Chief Examiner, A reference line break will occur on the "A" side followed by a break in the "B" side after approximately 4 minutes. This will cause a loss of all level indication which will drive the crew into C.5-2006, RPV FLOODING.

Time	Position	Actions or Behavior
	BOP Critical Step	Place hand switches for A, C & D SRVs to OPEN.
	BOP	Determine ADS valves opened. (amber lamps on CO3 for "A", "C" & "D" SRVs illuminated)
	BOP	Place MSIV handswitches to CLOSE. (C-03) (HS 16A-S1A – 16A-S1D) (HS 16A-S2A – 16A-S2D)
	BOP	CLOSE MO-2373. (C-03) (Main Steam Line Drain) (HS 16A-S5)
	BOP	CLOSE MO-2374. (C03) (Main Steam Line Drain) (HS 16A-S6)
	BOP	CLOSE MO-2075. (C-04) (RCIC Isolation) (HS 13A-S1)
	BOP	CLOSE MO-2076. (C-04) (RCIC Isolation) (HS 13A-S3)
	BOP	CLOSE MO-2034. (C-03) (HPCI Isolation) (HS 23A-S2)
	BOP	CLOSE MO-2035. (C-03) (HPCI Isolation) (HS 23A-S3)
	BOP Critical Step	Reports injection from Core Spray A & B and LPCI.
	BOP	Verify 3 SRVs are OPEN after floodup is complete by SRV open AMBER lamps ON and RPV pressure increasing as indicated by Recirculation Pump Seal pressure.
	BOP	Remove Core Spray & LPCI injection as directed.

Notes:

Event Description: At the completion of Event No. 5&6 or at the direction of the Chief Examiner, A reference line break will occur on the "A" side followed by a break in the "B" side after approximately 4 minutes. This will cause a loss of all level indication which will drive the crew into C.5-2006, RPV FLOODING.

Time	Position	Actions or Behavior
	BOP	Perform C.5-3502 Part A (B) for placing Torus Spray in service.
	BOP	Place CONTAINMENT SPRAY 2/3 CORE HEIGHT BYPASS switch to MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY/COOLING LPCI INITIATION BYPASS switch to BYPASS.
	BOP	Open MO-2006 (MO-2007).
	BOP	Open MO-2010 (MO-2011).
	BOP	Throttle open MO-2008 (MO-2009).
	BOP	Verify closed, if necessary: <ul style="list-style-type: none"> • MO-2012 • MO-2013
	BOP	Verify CV-1728 controller set at 20%.
	BOP	Close MO-2002 (MO-2003).
	BOP	Place 11 and 13 RHRSW PUMPS LPCI AND ECCS LOAD SHED MANUAL OVERRIDE switch to MANUAL OVERRIDE.
	BOP	Start 11 and/or 13 RHRSW Pump.
	BOP	Adjust RHRSW flow using CV-1728.
	BOP	Verify MO-2002 (MO-2003) closed.

Event Description: At the completion of Event No. 5&6 or at the direction of the Chief Examiner, A reference line break will occur on the "A" side followed by a break in the "B" side after approximately 4 minutes. This will cause a loss of all level indication which will drive the crew into C.5-2006, RPV FLOODING.

Time	Position	Actions or Behavior
	BOP	Locate procedure C.5-3503, Defeat Drywell Cooler Trips.
	BOP	Place all DW cooling switches to OFF (42-3312/CS, 42-4312/CS, 42-3313/CS, 42-4313/CS on C25)
	BOP	OPEN knife switch KS3100 (behind panel C25)
	BOP	Verify FAN INLET DAMPER control switches in AUTO (C25)
	BOP	Place DW cooling fan control switch in ON. (42-3312/CS, 42-4312/CS, 42-3313/CS, 42-4313/CS on C25)
	BOP	OPEN associated discharge dampers for started fans.
	BOP	Locate C.5-3501 – H2/O2 ANALYZER OPERATION <ul style="list-style-type: none"> • Perform as time allows.

Notes:

Termination Point:

- 3 SRVs open
- RPV flooded to the Main Steam Lines.
- Upon approval of Chief Examiner

Classification:

Site Area Emergency – Guideline 22 (Earthquake)

Event Description: The crew will take the duty with the plant at 100% reactor power. HPCI has been inoperable for the past 5 days for repairs. The off-going crew is in the progress of performing procedure 0255-06-IA-1 to complete the PMT requirements to restore HPCI to operable status. The next step in the procedure is to secure Torus cooling. The off-going crew has secured 'A' RHR from Torus Cooling. The crew should secure the 'B' loop of Torus Cooling.

Time	Position	Actions or Behavior
	SRO	Directs the BOP operator to secure 'B' RHR from Torus Cooling per B.03.04-05.F.2, TORUS COOLING MODE-SHUTDOWN.
	SRO	Exits LCO 3.5.A and declares both LPCI injection paths operable.
	SRO	Directs BOP operator to complete procedure 0255-06-IA-1.
	RO	Monitors plant parameters.
	BOP	Secures Torus Cooling on 'B' RHR per B.03.04-05.F.2.
	BOP	Slowly closes MO-2009 and holds control switch in close for 5 seconds after valve indicates closed.
	BOP	Closes MO-2007.
	BOP	Makes a plant announcement for securing 12 RHR Pump and to stand clear of the breaker in the upper 4kv room.
	BOP	Stops 12 RHR Pump and verifies min flow valves are closed.
	BOP	Verifies MO-2003 is open.
	BOP	Informs CRS that LCO 3.5.A can be exited.
	BOP	Makes a plant announcement for securing 12 RHRSW Pump and to stand clear of the breaker in the upper 4kv room.

Event Description: The crew will take the duty with the plant at 100% reactor power. HPCI has been inoperable for the past 5 days for repairs. The off-going crew is in the progress of performing procedure 0255-06-IA-1 to complete the PMT requirements to restore HPCI to operable status. The next step in the procedure is to secure Torus cooling. The off-going crew has secured 'A' RHR from Torus Cooling. The crew should secure the 'B' loop of Torus Cooling.

Time	Position	Actions or Behavior
	BOP	Stops 12 RHRSW Pump per B.08.01.03-05.F.1 (SHUTDOWN OF RHRSW LOOP).
	BOP <i>Phone Talker</i>	Verifies closed RHRSW-32. <i>When directed as the TBO to verify RHRSW-32 is closed wait 2 minutes and reply, "RHRSW-32 is closed".</i>
	BOP <i>Phone Talker</i>	Contacts Chemistry to inject Biocide if required. <i>When contacted as Chemistry to determine if Biocide injection is required reply, "Biocide injection is not required".</i>
	BOP	Adjusts DPIC-10-130A to 0 to close CV-1728.
	BOP	Stops the 12 RHRSW Pump.
	BOP <i>Phone Talker</i>	Directs TBO to verify no motor cooling water flow into floor drain. <i>When directed as TBO to perform step 7 and verify no motor cooling water flow into floor drain wait 2 minutes and reply, "B.08.01.03-05.F.1 Step 7 has been completed".</i>
	BOP <i>Phone Talker</i>	Notifies Shift Chemist to valve out 'B' RHR conductivity cell. <i>When directed as Shift Chemist to valve out 'B' RHR conductivity cell, acknowledge the order, wait 3 minutes and then reply, "The 'B' RHR conductivity cell is valved-out".</i>
	BOP	Vents high points and depressurizes per procedure 2145, RHR SYSTEM DISCHARGE VENTING.

Notes:

Event Description: No. 11 Service Water Pump will trip and No. 12 Service Water Pump will not automatically start. Operators will need to manually start No. 12 Service Water Pump.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #1: When directed by the Chief Examiner insert event trigger #1 to cause the 11 Service Water Pump to trip.
	SRO	Acknowledge report of 6-B-22, "SERVICE WATER HDR LOW PRESSURE".
	SRO	Acknowledge report of action taken for trip of No. 11 Service Water Pump.
	RO	Monitor plant parameters.
	BOP	Acknowledge annunciator 6-B-22, "SERVICE WATER HDR LOW PRESSURE".
	BOP	Report 6-B-22 to SRO
	BOP	Monitor Service Water System pressure. (PI-1535 CO6)
	BOP	Determine Service Water System pressure is low, #11 Service Water Pump has tripped and 12 Service Water Pump did not automatically start. (Indicating lights above HS 52-305CS & HS 52-405CS)
	BOP	Start #12 Service Water Pump. (HS 52-405CS to START)
	BOP	Verify #12 Service Water Pump starts and system pressure is restored. (Indicating lights above HS 52-405CS) (PI-1535 CO6)
	BOP	Verify actions per C.4-B.8.1.1.A, LOSS OF SERVICE WATER.
	BOP	Notify Shift Supervision.

Notes:

Event Description: After completion of the actions for a trip of No. 11 SW pump, channel 4 APRM will fail high causing a 1/2 trip of Channel "B" RPS scram logic. The OATC will need to insert a full 'B' 1/2 scram. An evaluation will need to be done to ensure Tech Specs is being complied with.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #2: When actions for a trip of No.11 SW pump are complete or when directed by the Chief Examiner, insert event trigger #2 to cause APRM channel 4 to fail full scale.
	SRO	Acknowledge report of annunciators
	SRO	Acknowledge failure of full RPS Bus 'B' 1/2 scram to occur.
	SRO	Acknowledge action taken in response to APRM failure.
	SRO	Determine APRM has failed due to equipment failure.
	SRO	Determines minimum number of APRM channels is not satisfied per Technical Specification, Section 3.2 – Table 3.2.3.
	SRO	Direct RO to insert a full RPS 'B' 1/2 scram.
	SRO	Notify System Engineer and I&C.
	Phone Talker	<i>If called as System Engineer about APRM Channel 4 failing high acknowledge report and state that you will begin an investigation of the problem.</i>
	RO	Acknowledge annunciators: <ul style="list-style-type: none"> • 5-A-3, ROD WITHDRAW BLOCK • 5-A-14, APRM HIGH • 5-A-30, APRM HI HI INOP CH 4, 5, 6 • 5-B-3, REACTOR NEUTRON MONITOR SCRAM TRIP • 5-B-5, REACTOR AUTO SCRAM CHANNEL B
	RO	Report annunciators to SRO
	RO	Determines that only RPS Bus 'B' Scram Lights 1 & 4 have de-energized and that the full 1/2 scram has not occurred.

Event Description: After completion of the actions for trip of No. 11 SW pump, channel 4 APRM will fail high causing a 1/2 trip of Channel "B" RPS scram logic. The OATC will need to insert a full 'B' 1/2 scram. An evaluation will need to be done to ensure Tech Specs is being complied with.

Time	Position	Actions or Behavior
	RO	Consult ARPs
	RO	Determine APRM #4 is indicating UPSCALE. (NR-7-46B CO5)
	RO	Determine Rod Block is actuated. (Annunciator 5-A-3 is in alarm)
	RO	Determine 'HI-HI' indicating lamp for APRM 4 on panel C37 is ON.
	RO	Determine remaining APRM channels are within expected range. (NR-7-46A –D CO5)
	RO <i>Phone Talker</i>	Notify Shift Supervision and I&C. <i>If called as I&C about APRM Channel 4 failing high and failure of a complete RPS Bus 'B' 1/2 scram, acknowledge report and state that somebody will begin to check it out as soon as possible.</i>
	RO Chief Examiner	Inserts a full 1/2 scram on RPS Bus 'B' by depressing the 'B' Scram Pushbutton. Note: Candidates may notice there was no noise for when the relays drop out as would be on a true scram signal. This can not be simulated. If this is a point of confusion, state that relays are deenergized.
	BOP	Monitors plant parameters and may act as a peer checker.

Notes:

Event Description: A Hotwell Low Level will be received due to the reject valve controller (CV-1093A & B) calling for 100% open. The controller will need to be placed in manual and the reject valve closed.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #8: When actions for APRM Channel 4 failing high are complete or when directed by the Chief Examiner, insert event trigger #8 to cause the hotwell reject level control valve to fail open.
	SRO	Acknowledge report of the following annunciator: <ul style="list-style-type: none"> 6-A-33, "CONDENSATE PUMP LOW DISCH PRESS"
	SRO	Acknowledge report of action taken on Hotwell Low Level.
	RO	Acknowledge annunciator 6-A-33, "CONDENSATE PUMP LOW DISCH PRESS".
	RO	Consult ARP 6-A-33
	RO	Verify adequate Hotwell level. (LR-1278 CO6) Note: Level will be decreasing. The reject valve will be full open and the Makeup valve will be opening slowly.
	RO	Monitor Reactor Feed Pump suction pressure. (PI-1120 & PI-1121 CO6) Note: RFT suction pressure will be lower than normal.
	RO <i>Phone Talker</i>	Contacts TBO to notify him of the problem and to investigate. <i>When contacted as TBO, acknowledge the order. Wait 2 minutes and if the candidate has not taken the controller for the Reject valve to manual yet state discharge pressure on the condensate pumps are low. If he has taken the controller to manual and the problem has corrected itself, state that you can not find anything wrong in the plant.</i>

Event Description: A Hotwell Low Level will be received due to the reject valve controller (CV-1093A & B) calling for 100% open. The controller will need to be placed in manual and the reject valve closed.

Time	Position	Actions or Behavior
	RO	Determines LC-1093, Hotwell Reject Level Controller, is calling for 100% open.
	RO	Places LC-1093 in MANUAL. Note: When controller is placed in manual, the valve will close.
	RO	Verify LC-1093 is closed.
	RO	Monitor Reactor Feed Pump suction pressure. (PI-1120 & PI-1121 CO6)
	RO	Notify Shift Supervision.
	RO	Contact I&C to correct controller problem.
	<i>Phone Talker</i>	<i>If contacted as I&C about controller CV-1093A & B failure acknowledge report, and state that it will be looked at very soon.</i>
	BOP	Monitor plant parameters and assist in following up on annunciators.

Notes:

Event Description: At the completion of actions Hotwell level failure, a trip of the No. 12 Circ Water pump will occur. This will cause condenser vacuum to start decreasing. The crew should enter the abnormal procedures for reduced circ water flow and lowering condenser vacuum. The CRS should direct the OATC to perform a rapid power reduction to aid in holding condenser vacuum. With Recirc reduced condenser vacuum will start to recover and power reduction can stop.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #3: When the actions for Hotwell level failure are complete or when directed by the Chief Examiner, insert event trigger #3 to cause a trip of the No. 12 Circ Water Pump.
	SRO	Acknowledges report of annunciators 6-C-10, CIRC WTR PP P-100B TRIP, 6-C-15, CIRC WTR PP P-100B OVERLOAD, and 5-B-46, CONDENSER LOW VACUUM.
	SRO	Directs BOP to perform C.4-B.06.04.A, DECREASED CIRCILATING WATER FLOW, and C.4-B.06.03.A, DECREASING CONDENSER VACUUM.
	SRO	Directs OATC to reduce Reactor Recirc flow per C.4-F, RAPID POWER REDUCTION.
	SRO	Notifies Shift Supervision.
	SRO <i>Phone Talker</i>	Notifies the System Engineer. <i>When contacted as the System Engineer to investigate the trip of the No. 12 Circ Water Pump acknowledge the order.</i>
	SRO <i>Phone Talker</i>	Directs the TBO to investigate the cause of the pump trip. <i>If contacted as TBO to investigate the cause of No. 12 Circ Water Pump trip wait 5 minutes and report, "I am unable to determine the cause of the No. 12 Circ Water Pump trip."</i>
	RO	Acknowledges annunciator 5-B-46, CONDENSER LOW VACUUM.
	RO	Reduces Recirc flow per C.4-F, RAPID POWER REDUCTION, as necessary, to control condenser vacuum.

Event Description: At the completion of actions for Hotwell level failure, a trip of the No. 12 Circ Water pump will occur. This will cause condenser vacuum to start decreasing. The crew should enter the abnormal procedures for reduced circ water flow and lowering condenser vacuum. The CRS should direct the OATC to perform a rapid power reduction to aid in holding condenser vacuum. With Recirc reduced condenser vacuum will start to recover and power reduction can stop.

Time	Position	Actions or Behavior
	RO	If core flow is < 32 Mlbm/hr then performs C.4-B.05.01.02.A, CONTROL OF NEUTRON FLUX OSCILLATIONS, concurrently. Note: The candidate may drive flow < 32 Mlbm/hr. However, it is anticipated that he will not.
	RO	Determines core flow is > 32 Mlbm/hr.
	RO	Notifies CRS of actions taken.
	BOP	Acknowledges annunciators 6-C-10, CIRC WTR PP P-100B TRIP, and 6-C-15, CIRC WTR PP P-100B OVERLOAD.
	BOP	Enters C.4-B.06.04.A, DECREASED CIRCILATING WATER FLOW.
	BOP	Places the control switch for the No. 12 Circ Water Pump in SHUTDOWN and verifies system valves automatically reposition.
	BOP	Monitors condenser d/p and circulating water condenser outlet temperature for air binding.
	BOP	Verifies that one cooling tower pump is shutdown and that cooling towers are aligned for one pump operation.
	BOP	Enters C.4-B.06.03.A, DECREASING CONDENSER VACUUM.
	BOP	Monitors LP turbine exhaust pressure on SPDS screen 656.
	BOP	Determines that neither LP turbine is in the ALERT region of Figure 1, TURBINE EXHAUST PRESSURE LIMITS. (after Recirc flow is reduced)

Notes:

Event Description: After the crew has performed the rapid power reduction and addressed the loss of the circ water pump, then a loss of turbine bearing oil header pressure will occur. Header pressure will slowly begin to lower and eventually cause a low pressure alarm. The BOP operator will respond to the annunciator procedure and start the AOP and TGOP. This will cause header pressure to begin to rise and reach approximately 35 psig. In-plant operators will report that there is a large lube oil rupture in the turbine building. The crew will decide that they will eventually lose oil pressure and should scram the reactor.

Time	Position	Actions or Behavior
	Simulator Operator	TRG #4: When the actions for trip of 12 Circ water pump are completed or when directed by the Chief Examiner, insert event trigger #4 to cause a rupture of the turbine bearing oil header.
	Phone Talker	<i>Two minutes after inserting event trigger #4, call the Control Room as the TBO and report that there is a large oil rupture near the Main Turbine.</i>
	SRO	Acknowledges report of annunciator 7-A-33, TURB BRG OIL LOW PRESSURE.
	SRO	Acknowledges report from BOP operator that turbine header pressure has been restored above 30 psig.
	SRO	Acknowledges report of annunciator 7-A-31, TURB LO TK T-40 LOW LEVEL
	SRO	Directs the OATC to scram the reactor per C.4-K, IMMEDIATE REACTOR SHUTDOWN.
	Chief Examiner	The plant will scram when the Turbine Stop valves lose enough oil pressure. The plant may scram prior to the manual scram being inserted.
	SRO	Notifies Shift Supervision and System Engineer.
	Phone Talker	<i>When contacted as System Engineer about turbine bearing oil header rupture, acknowledge the report. No further action is necessary.</i>
	RO	Monitors plant parameters.
	RO	May manually scram the reactor based on plant conditions or as directed by CRS.
		NOTE: If the crew does not manually scram the reactor and decides to shutdown the Turbine Generator per C.3, SHUTDOWN PROCEDURE, then the reactor will automatically scram due a loss of oil pressure to the TCVs and TSVs.

Event Description: After the crew has performed the rapid power reduction and addressed the loss of the circ water pump, then a loss of turbine bearing oil header pressure will occur. Header pressure will slowly begin to lower and eventually cause a low pressure alarm. The BOP operator will respond to the annunciator procedure and start the AOP and TGOP. This will cause header pressure to begin to rise and reach approximately 35 psig. In-plant operators will report that there is a large lube oil rupture in the turbine building. The crew will decide that they will eventually lose oil pressure and should scram the reactor.

Time	Position	Actions or Behavior
	RO	Reports reactor scram and all control rods not inserted to the CRS.
	BOP	Acknowledges annunciator 7-A-33, TURB BRG OIL LOW PRESSURE.
	BOP	Monitors turbine bearing oil header pressure on C-07 Panel.
	BOP	Determines that header pressure continues to lower and starts the following pumps: <ul style="list-style-type: none"> • Auxiliary Oil Pump • Turning Gear Oil Pump
	BOP	Determines that turbine bearing oil header pressure is restored above 30 psig.
	BOP	Acknowledges annunciator 7-A-31, TURB LO TK T-40 LOW LEVEL
	BOP	Monitors Turbine Generator bearing temperatures as indicated on TR-1730 (C20)
	BOP	Dispatches an operator to the turbine building to verify not leaks and proper system lineup.

Notes:

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	SRO	Acknowledges report of Reactor Scram and ATWS.
	SRO	Enter C.5-1100 RPV CONTROL (Entry Condition – Reactor power above 3% when scram required.
	SRO	Verify Reactor Scram has been initiated.
	SRO	Determine all rods ARE NOT in to at least 04.
	SRO	Determine the reactor WILL NOT stay shutdown under all conditions without boron.
	SRO	Leave C.5-1100 and Enter C.5-2007
	SRO	Enter C.5-2007 FAILURE TO SCRAM
	SRO Critical Step	Direct the BOP operator to inhibit ADS
	SRO Critical Step	Direct the BOP operator to prevent Core Spray injection per C.5-3205, TERMINATE AND PREVENT.
	SRO	Directs BOP operator to defeat RPV low water level MSIV isolation per C.5-3301.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
		<u>POWER LEG</u>
	SRO	Verify Mode switch in SHUTDOWN.
	SRO	Directs RO to run back Recirc to minimum.
	SRO	Directs RO to trip Recirc Pumps.
	SRO	Direct RO to actuate ATWS.
	SRO	Directs RO to insert control rods per C.5-3101.
		<u>PRESSURE LEG</u>
	SRO	Determine Drywell pressure is < 2 psig.
	SRO	Determine SRVs are not rapidly cycling.
	SRO	Consider LO-LO SET can stabilize RPV pressure.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
		<u>LEVEL LEG</u>
	SRO	Check Detail 'A' for instrument limits.
	SRO	Determine no instrument limits have been exceeded.
	SRO	Determine: <ul style="list-style-type: none"> • Reactor power above 3% • RPV water level >-33 inches
	SRO	Direct BOP operator to Terminate and Prevent HPCI, LPCI and Condensate and Feed per C.5-3205.
	SRO	Determine Reactor power is < 3%.
	SRO	Record final RPV level on line 3.
	SRO	Direct that RPV level be maintained between -149 inches and value recorded on line 3 with Condensate and Feedwater and RCIC.
	SRO	Enter C.5-1200 PRIMARY CONTAINMENT CONROL
		<u>TORUS TEMPERATURE STEP</u>
	SRO	Determine Torus temperature cannot be maintained < 90 deg f.
	SRO	Direct BOP operator to start all available torus cooling.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	SRO	Verify Reactor scram has occurred.
	SRO	Determine Torus temperature can be maintained below fig M, HEAT CAPACITY LIMIT. (SPDS 78)
	SRO	Direct BOP operator to perform procedure C.5-3501H2/O2 ANALYZER OPERATION as time permits.
	SRO	Acknowledges report from OATC that all rods are in.
	RO	Carry out actions of C.4.A "REACTOR SCRAM".
	RO	Determine if all control rods are inserted to or beyond position 04.
	RO	Place the reactor mode switch in SHUTDOWN.
	RO	Notify Shift Supervision.
	RO	Verify that the Recirc pumps have tripped.
	RO	Control Reactor water level between +9" and +48".
	RO	Verify Condensate and Feedwater and RCIC are used to restore and control Reactor water level.
	RO	Insert SRM and IRM detectors.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	RO	Verify the Scram Discharge Vent and Drain Valves close.
	RO <i>Phone Talker</i>	Direct the TBO to verify proper operation of the EDG SW pumps and verify EDG room ventilation is operating properly. <i>When directed as TBO to verify proper operation of the EDG SW pumps and verify EDG room ventilation is operating properly wait 4 minutes and reply "EDG SW Pumps and EDG Room Ventilation is operating properly".</i>
	RO	Refer to procedure B.05.06-05 ATWS SYSTEM MANUAL INITIATION (hard card) B MAN and ATWS D MAN (PB S-5B & S-5D) (CO5)
	RO	SET the arming collars of one pair of the following switches to the armed position and depress the pushbuttons: ATWS A MAN and ATWS C MAN (PB S-5A & S-5C) (CO5) OR ATWS B MAN and ATWS D MAN (PB S-5B & S-5D) (CO5)
	RO	Verify Recirc Pump MG Set generator field breakers have tripped. (Field breaker indicating lights – CO4)
	RO	Trip the MG set drive motors.
	RO	Place HS 2A-S1A to STOP (#11 MG set drive motor breaker)
	RO	Place HS 2A-S1B to STOP (#12 MG set drive motor breaker)
	RO	Determine Control Rods DO NOT insert.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	RO	Inserts control rods per C.5-3101, "ALTERNATE ROD INSERTION", Part C.
	RO	Determine Part C is appropriate.
	RO	Determine prerequisites are met: <ul style="list-style-type: none"> • CRD pump available (Breaker indication CO5) • Instrument air available (PI-1476 - CO6 or PR-1176 – CO7) • Reactor Building accessible.
	RO	Places RWM Owner Display Keylock Switch is in BYPASS.
	RO	Place FC-301 – CRD FLOW CONTROL STATION in MANUAL.
	RO	ADJUST FC-301 to 100%.
	RO	OPEN MO-3-20, DRIVE PRESSURE TO CRD.
	RO	CLOSE the following valves: <ul style="list-style-type: none"> • CRD-79-1, RV-7364A INLET (behind CRDH instrument rack) • CRD-79-2, RV-7364B INLET (behind CRDH instrument rack) • CRD-168, CRD PUMP BYPASS ISOL
	Phone Talker	<i>When directed as RBO to close CRD-79-1, CRD-79-2, and CRD-168, then wait 3 minutes and reply, "CRD 79-1, CRD 79-2, and CRD-168 are closed" or "Step 5 of part C of C.5-3101 is complete."</i>

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	RO	Establishes 400 psid drive pressure by throttling closed on MO-3-20.
	RO	Inserts control rods using RMCS.
	RO	Reports to the CRS of all rods in.
	BOP Critical Step	Places ADS INHIBIT switches 2E-S7A & 2E-S7B on CO3 to INHIBIT.
	BOP Critical Step	Prevents Core Spray per C.5-3205, "TERMINATE AND PREVENT", Part A.
	BOP	Places MO-1751 CS INJECTION BYPASS handswitch in BYPASS (14A-S16A).
	BOP	Closes MO-1751.
	BOP	Places No. 11 Core Spray Pump in PTL.
	BOP	Places MO-1752 CS INJECTION BYPASS handswitch in BYPASS (14A-S16B).
	BOP	Closes MO-1752.
	BOP	Places No. 12 Core Spray Pump in PTL.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	BOP	Defeat RPV low-low level isolation for MSIV closure per C.5-3301.
	BOP	Determines prerequisites are met. <ul style="list-style-type: none"> • Main condenser available • No fuel element failure • No steam line break
	BOP	Places the following switches in BYPASS (Panels C-15 and C-17): <ul style="list-style-type: none"> • 16A-S62A • 16A-S62C • 16A-S62B • 16A-S62D
	BOP	Maintain Reactor water level within band given by CRS using Condensate and Feed or RCIC.
	BOP	Terminate and Prevent Condensate and Feed, HPCI & LPCI per C.5-3205 TERMINATE AND PREVENT parts E, B & C.
		Part E
	BOP	Verify CLOSED CV-6-12A, A MAIN FW REG VALVE.
	BOP	Verify CLOSED CV-6-12B, B MAIN FW REG VALVE.
	BOP	Verify CLOSED CV-6-13, FW LOW FLOW REG VALVE.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
		<i>Part C</i>
	BOP	Determine HPCI is operating.
	BOP	Depress and hold the TURBINE TRIP pushbutton.
	BOP	Verify HPCI has stopped.
	BOP	Place AUX OIL PUMP in PULL-TO-LOCK.
	BOP	Wait 5 seconds after AUX OIL PUMP in placed PULL-TO-LOCK then release the HPCI TURBINE TRIP pushbutton.
	BOP	Verify HO-7 CLOSED.
		<u>Part B</u>
	BOP	OPEN knife switch 10A-S31A.
	BOP	OPEN knife switch 10A-S31B.
	BOP	CLOSE MO-2012.
	BOP	CLOSE MO-2013.

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	BOP	Perform procedure B.03.04-05.H.1(2) – TRANSFERRING ‘A’ (‘B’) RHR FROM LPCI TO TORUS COOLING WITH NORMAL OFF-SITE POWER AVAILABLE DURING ABNORMAL AND EMERGENCY CONDITIONS.
	BOP	Verify CV-1728 (CV-1729) controller is set at 20%.
	BOP	Place MO-2002 (MO-2003) bypass keylock switch in CLOSE.
	BOP	Place 11 and 13 (12 and 14) RHRSW PUMPS LPCI AND ECCS LOAD SHED MANUAL OVERRIDE switch in MANUAL OVERRIDE.
	BOP	Start No. 11 and/or No. 13 (No. 12 and/or No. 14) RHRSW Pump.
	BOP	Adjust RHRSW flow to approximately 3500 gpm using CV-1728 (CV-1729).
	BOP	Place CONTAINMENT SPRAY 2/3 CORE HEIGHT BYPASS switch to MANUAL OVERRIDE.
	BOP	Place CONTAINMENT SPRAY/COOLING LPCI INITIATION BYPASS switch to BYPASS.
	BOP	Partially open MO-2008 (MO-2009) by holding handswitch to OPEN for 8 seconds.
	BOP	Open MO-2006 (MO-2007).

Event Description: Because of the loss of turbine bearing oil header pressure a scram will occur. The crew will identify that all control rods have not inserted and will enter failure to scram procedure. Without any oil pressure the bypass valves will not open to relieve reactor pressure and with the turbine tripped all of the steam will dump into the Torus. Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power.

Time	Position	Actions or Behavior
	BOP	Close MO-2012 or MO-2013 while throttling open MO-2008 (MO-2009) to maintain approximately 4000 gpm total flow per pump.
	BOP	Verify MO-2002 (MO-2003) closed.
	BOP	Verify V-AC-5 (V-AC-4) in operation.
	BOP	Perform C.5-3501 – H2/O2 ANALYZER OPERATION, as time permits.

Notes:

Event Description: Torus temperature will eventually rise above 110°F forcing the crew to terminate and prevent to control reactor power. When directed to inject SBLC the first system selected by the OATC will not work (the pump will trip) however, the second SBLC system will work.

Time	Position	Actions or Behavior
	SRO Critical Step	Direct RO to inject SBLC.
	SRO	Acknowledge report that SBLC System No. 1 failed and that SBLC System No. 2 is injecting.
	RO	Injects SBLC per the hard card.
	RO	Place SLC system selector switch to SYS 1.
	RO	Determines SBLC SYS 1 did not actuate (green OFF pump light lit).
		NOTE: The simulator is setup such that the first SBLC Pump started will fail requiring the standby SBLC pump to start.
	RO Critical Step	Places SLC system selector switch to SYS 2.
	RO	Determines that SBLC SYS 2 did actuate.
	RO	System 2 SBLC Pump breaker indication – (Green- OFF, Red-ON CO5).
	RO	SBLC DISCHARGE PRESSURE reads slightly higher than reactor vessel pressure. (PI-11-65 CO5)
	RO	SBLC tank level decreasing. (LI-11-66)
	RO	Review procedure B.03.05-05 MANUAL INITIATION as time permits.

Termination Point:

- All control rods have been inserted.
- RPV level has been restored to the normal band.
- Primary containment parameters are being addressed.
- At the discretion of the Chief Examiner.

Classification:

Guideline 12 (Alert) RPS Failure