Facility: Limerick 1 & 2 Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

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Initial Conditions:
100% power, EOL, Unit 2 in refueling, OPCON 5

Turnover:
Standard turnover, number of components OOS for all scenarios, D12 Diesel Generator running unloaded at rated speed for run-in following cylinder liner replacement. Synchronize and load D12 Diesel Generator per RT-6-092-312-1, D12 Diesel Generator Run-In, beginning at Step 4.5.28.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP	Perform Loaded Run-In on D12 Diesel Generator
2	N/A	R-RO	100 MWe Load Reduction For Minimum Generation Emergency
3	MHP450	C-BOP, TS-SRO	HPCI Inadvertent Startup
4	MCN078C MRR507A	C-RO, TS-SRO	Condensate Pump C Trips, RRP A Fails to Runback
5	MPR020B	I-RO TS0SRO	APRM Channel 2 Fails to 96%
6	MRD016F MRP029B MRP407C MSL196B MSL196C MRD024	M	2 Control Rods Scram, ATWS, 1A SLC Pump Spurious Stop, B & C SLC Squib Valves Fail to Open, RDCS Failure – Inability to Drive Rods
7	MEH104B OR Bkrs	M	Main Turbine Trip, Transfer Failure of Unit Aux Buses 11 and 12
8	MRC457B MRC458	I-BOP	RCIC Flow Controller Fails Low in Automatic with Subsequent RCIC Turbine Trip

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

SCENARIO SUMMARY

The BOP will synchronize and load Diesel D12 to 700kW following a cylinder liner replacement IAW RT-6-092-312-1, D12 Diesel Generator Run-In, beginning at Step 4.5.28.

After D12 load is stable at 700 kw, the Power System Director will call to request a main generator load decrease of 100 MWe due to a Minimum Generation Emergency. The crew will lower power IAW GP-5, Steady State Operations, Attachment 1, Section 1 and OP-AB-300-1003, BWR Reactivity Maneuver Guidance.

HPCI will inadvertently start up after the plant is stable at the new lower power level. Power will rise but not to an automatic trip setpoint. Digital feedwater control system will reduce main feedwater flow to maintain RPV level. The crew will recognize the initiation signal is not valid and will isolate HPCI per S55.2.A, HPCI Shutdown From Automatic or Manual Initiation, Step 4.4. The SRO will determine HPCI is INOPERABLE and enter TS LCO 3.5.1.c.1 Action c.1 (14 days). HPCI Steam Line Outboard Isolation HV-55-1F003 will fail as-is (closed) after isolation, such that HPCI cannot be unisolated by the crew later in the scenario.

Condensate Pump C RFP will trip on motor overcurrent relay actuation, initiating a recirc pump runback to 42% speed on < 3 condensate pumps running with feed flow > 80.3%. RRP A will fail to runback. The RO will recognize the failure to runback and manually reduce RRP A speed. The SRO will identify operation outside of TS LCO 3.4.1.3.b and direct manual reduction of RRP A flow per TS LCO 3.4.1.3.b Action a to restore recirc loop flow mismatch to within limits within 2 hours.

APRM Channel 2 will fail upscale from current value to 96% over approximately 2 minutes. The crew will respond IAW alarm response procedures, determine the channel is failed and bypass the channel. The SRO will reference TS 3.3.1 and 3.3.6.

Two control rods will spuriously scram. The crew will respond per ON-104, Control Rod Problems, Section 2.3 and initiate a manual scram. A failure of RPS and ARI will prevent the scram. The crew will respond per T-101 and T-117 to lower reactor power. RO will insert rods. After some motion, rods will stop inserting due to a rod control system failure. The crew will lower reactor power by lowering RPV level to between minus (-)50 and minus (-) 186 inches (TAF is – 161 inches).

When power is reduced by lowered RPV level, the main turbine will trip and both Unit Aux Buses 11 and 12 will fail to transfer to alternate power. Overrides on Unit Aux Bus alternate power breaker handswitches will prevent manually re-energizing these buses. The BOP will attempt to start RCIC and determine the RCIC speed controller has failed low in automatic, requiring flow control in manual. After establishing flow with RCIC, the RCIC turbine trips.

Crew will determine unable to be restore and maintain level > -186" and transition to T-112 to perform an emergency blowdown.

The scenario will be terminated when RPV pressure is < 75 psig and RPV level is controlled IAW T-117.

SIMULATOR SETUP

1. Reset simulator to 100% power EOL. Align equipment per turnover sheet.
2. Event 2: 100 MWe Load Reduction For Minimum Generation Emergency
   No malfunctions required
3. Event 3: HPCI Inadvertent Startup
   Insert MHP450 on Manual Trigger 3
4. Event 4: Condensate Pump C Trips, RRP A Fails to Runback
   Insert MCN078C and MRR507A on Manual Trigger 4
5. Event 5: APRM Channel 2 Fails to 96%
   Insert MPR020B at 96% on Manual Trigger 5
6. Event 6: 2 Control Rods Scram, ATWS, 1A SLC Pump Spurious Stop, B & C SLC Squib Valves Fail to Open, RDCS Failure – Inability to Drive Rods

   Insert MRD016F, MRP029B, MRP407C, MSL196B, MSL196C and MRD024 on Manual Trigger 6
7. Event 7: Main Turbine Trip, Transfer Failure of Unit Aux Buses 11 and 12
   Override breaker handswitches to prevent auto transfer. Insert MEH104B on Manual Trigger 7.
8. Event 8: RCIC Flow Controller Fails Low in Automatic with Subsequent RCIC Turbine Trip
   Insert MRC457B on Manual Trigger 7. **Booth operator to insert MRC458 <u>after</u> applicant has established RCIC flow with controller in MANUAL.**

CRITICAL TASKS

1. T-117.1 Inhibit automatic ADS.
   Standard: Prevent automatic initiation of ADS.

2. T-117.1 Terminate and prevent injection into the RPV.
   Standard: RPV level lowered below -50" by Terminating and Preventing injection into the RPV per T-270.

3. T-117.3 Perform emergency blowdown per T-112.
   Standard: When RPV level cannot be maintained above -186 inches and injection into the RPV (except from boron injection systems, CRD, and RCIC) has been terminated and prevented, 5 SRV's are opened.

Op-Test No.: 1 Scenario No.: 1 Event No.: 1

Event Description: Perform Loaded Run-In on D12 Diesel Generator

Time	Position	Applicant's Actions or Behavior
	SRO	Direct BOP to continue with diesel generator run-in procedure.
	BOP	Obtains copy of RT-6-092-312-1, D12 Diesel Generator Run
	BOP	PLACE 125-11607/SS, DIESEL GEN 12, SYNC, to "ON," using Sync Switch handle.
	BOP	VERIFY Synchroscope is rotating with both lights fully bright at 180° AND off at 0°.
		NOTE Next two steps verify controls operating properly. Change in D/G frequency can be observed by change in Synchroscope (SYSTEM) speed. Change in D/G voltage can be observed by change in Synchronizing Incoming Voltmeter (INCOMING). (Ref 6.5)
	BOP	OBSERVE change in D/G frequency by placing 165 BG501/CS, SPEED GOVERNOR, to "RAISE" AND to "LOWER."
	BOP	OBSERVE change in D/G voltage by placing 170 BG502/CS, VOLTAGE REGULATOR, to "RAISE" AND to "LOWER."
		NOTE Next step adjusts D/G frequency slightly faster than D12 Safeguard Bus frequency.

Op-Test No.: 1 Scenario No.: 1 Event No.: 1

Event Description: Perform Loaded Run-In on D12 Diesel Generator

Time	Position	Applicant's Actions or Behavior
	BOP	ADJUST 165-BG501/CS, SPEED GOVERNOR, so Synchroscope is rotating slowly in FAST (CW) direction.
	BOP	ADJUST 170-BG502/CS, VOLTAGE REGULATOR, so INCOMING Voltage is slightly higher than RUNNING Voltage.
		WARNING WHEN synchronizing, THEN extreme care is needed since excessive voltage/phase difference will cause equipment damage OR personnel injury.
	BOP	WHEN Synchroscope is within 3 ° before 12 o'clock position rotating slowly in FAST (CW) direction, THEN CLOSE 152-11607, GENERATOR Bkr.
		CAUTION KVAR's are to be maintained less than 75% KW to prevent generator winding overheating AND exceeding 0.8 rated power factor.
	BOP	Immediately RAISE load to 200 - 300 KW by placing 165-BG501/CS, SPEED GOVERNOR, to "RAISE."
	BOP	RAISE reactive load to 100 - 150 KVAR by placing 170-BG502/CS, VOLTAGE REGULATOR, to "RAISE."
	BOP	PLACE 125-11607/SS, DIESEL GEN 12, SYNC, to "OFF."
		IF performing other plant testing AND Safeguard Bus needs to be transferred, THEN PERFORM transfer of Safeguard Bus per S92.6.A, Transfer Of A 4kv Safeguard Bus From 101 Safeguard Feed To 201 Safeguard Feed And Vice Versa. [*APPLICANT SHOULD NOT PERFORM THIS STEP.*]

Op-Test No.: 1 Scenario No.: 1 Event No.: 1

Event Description: Perform Loaded Run-In on D12 Diesel Generator

Time	Position	Applicant's Actions or Behavior
		CAUTION Rapid loading during testing will subject diesel generator to unnecessary stresses.
	BOP	Gradually RAISE load at a rate of less than or equal to 350 KW/minute to 650 - 750 KW (25% of Full Load) by adjusting 165-BG501/CS, SPEED GOVERNOR AND MAINTAIN reactive load (KVAR) less than or equal to 75% of KW, using 170-BG502/CS, VOLTAGE REGULATOR at panel 1BC661.
	BOP	WHEN 650 - 750 KW is obtained, THEN START stopwatch.
		CAUTION Hot water is present at vents. Appropriate personal protective equipment AND Tygon tubing must be used.
	BOP	OPEN AND CLOSE 11-1390B, JACKET WATER HEAT EXCHANGER SHELL VENT, AND 92-1607B, AIR COOLER VENT, to ensure any trapped air is vented from the Jacket Water/Air Cooler Coolant Systems. [*DIRECTS EO ACTION*]
	BOP	IF Jacket Water Expansion Tank Level is low, THEN OPEN 20-1132B, "Jacket Water Expansion Tank Manual Fill Valve," to fill tank to within 2 inches of top AND THEN CLOSE 20-1132B. [*DIRECTS EO ACTION*]

Examiner Note

Proceed to the next event when diesel load is stable at the target load value between 650 and 750 KW.

Op-Test No.: 1 Scenario No.: 1 Event No.: 2

Event Description: 100 MWe Load Reduction For Minimum Generation Emergency

Time	Position	Applicant's Actions or Behavior
	SRO	Refer to GP-5, Steady State Operations, Attachment 1, Planned / Intentional Rx Power Maneuvers Between 90% and 100%
	SRO	Informs crew of PSD request and directs a power reduction of 100MWe IAW GP-5, Attachment 1
		NOTES 1. Power System Director should be notified of all Rx power changes. IF possible, THEN notification should be made prior to the change in Rx power. 2 A rapid reduction in Rx power may cause level swell in the Steam Seal Evaporator causing HV-07-*57, S.S.E. Cond M/U Shutoff Vlv (SUP), to close. This valve will not reopen automatically. 3 Rx power reductions should be conducted in accordance with one of the following, unless directed otherwise by Reactor Engineering: • Reactor Maneuvering Shutdown Instructions • OP-AB-300-1003, BWR Reactivity Maneuver Guidance • Reactor Maneuvering Special Instructions
		CAUTION A Reactor Engineer must be present to monitor core performance during control rod manipulations, except during the following activities: • Reactor Maneuvering Shutdown Instructions • ST-6-107-760-*, Control Rod Exercise (CM-3) • As allowed by OP-AB-300-1003, BWR Reactivity Maneuver Guidance
	SRO / RO	DETERMINE targeted Rx power level for intended drop in Rx power. [*Determines reactor power must be reduced approximately 10%.*]
	SRO	NOTIFY Power Team of power reduction and obtain E-DART Ticket number 803-6530 (610-765-6530)

Op-Test No.: 1 Scenario No.: 1 Event No.: 2

Event Description: 100 MWe Load Reduction For Minimum Generation Emergency

Time	Position	Applicant's Actions or Behavior
	SRO	REDUCE Rx power, as required, in accordance with one of the following, unless directed otherwise by Reactor Engineering Otherwise, MARK this step N/A. • Reactor Maneuvering Shutdown Instructions • OP-AB-300-1003, BWR Reactivity Maneuver Guidance • Reactor Maneuvering Special Instructions [*Directs RO to reduce power using BWR Reactivity Maneuver Guidance*]
	RO	Lowers Rx Recirc flow by reducing output of both RRP speed controllers, while maintaining
	SRO / RO	On a continuing basis during Rx power reduction, OBSERVE the following: • APRMs - lowering • Recirc flow - lowering • Steam flow - lowering • RPV level - normal • FW flow - lowering
	SRO BOP	MONITOR BOP [*balance of plant*] during drop in Rx power.
	SRO BOP	ENSURE EHC Load Set is maintained greater than 100% as indicated on PMS computer point E*651.
	SRO	REQUEST a new P-1 edit.

Op-Test No.: 1 Scenario No.: 1 Event No.: 2

Event Description: 100 MWe Load Reduction For Minimum Generation Emergency

Time	Position	Applicant's Actions or Behavior
	SRO	VERIFY (APRM-%CTP) listed on the P-1 edit are between –2.0 to 2.0. IF any (APRM-%CTP) are not within these limits, THEN CHECK (APRM-%CTP) with either a new P-1 OR an NSS03, Core Power And Flow Log. IF (APRM-%CTP) still outside prescribed limits, THEN PERFORM ST-6-107-887-*, APRM Gain Determination And Auto Adjustment OR ST-6-107-888-*, Manual APRM Gain Adjustment. [*Confirms APRM-%CTP between limits.*]
	SRO	VERIFY scram margin is > 9.0%. IF scram margin is < 9.0%, THEN NOTIFY Reactor Engineering for rod pattern adjustment. [*Confirms scram margin >9%*]
	SRO	Inform Power System Director of completion of power maneuver.
Examiner Note **Proceed to the next event**		

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: HPCI Inadvertent Startup

Time	Position	Applicant's Actions or Behavior
	CREW	The crew will observe annunciators : • (113 B-5) CORE SPRAY LINE INTERNAL BREAK • (107 H-2) REACTOR HI / LO LEVEL
	SRO BOP	Refer to alarm response procedures.
	SRO	PER ARC-MCR-107-H2, REACTOR HI/LO LEVEL : 1. IF Reactor water level is low and unexpected or unexplained, THEN enter OT-100, Reactor Low Level. 2. IF Reactor water level is high and unexpected or unexplained, THEN enter OT-110, Reactor High Level. **[*SRO will enter OT-110.*]** 3. Refer to LGS Emergency Plan Annex, Table 3-1.

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: HPCI Inadvertent Startup

Time	Position	Applicant's Actions or Behavior
	SRO BOP	PER ARC-MCR-113-B5, CORE SPRAY LINE INTERNAL BREAK : NOTE Alarm designed to indicate failure of one of the core spray loop piping between the vessel penetration AND the core shroud penetration. Normal rated power shroud/annulus dP is 7.5 psid. A valid value of greater than +1.3 or less than -3.8 psid indicates a failure of the core spray piping outside the shroud. A value of greater than +7.5 psid or less than -10.0 psid indicates a failure of the core spray piping outside the vessel. A failure between the vessel AND containment would be measured by the containment leakage detection systems. This instrument loop is very noisy due to the condensation of steam inside the core spray piping AND also sensing pressures inside the shroud. Spurious alarms that immediately clear should NOT be considered valid. 1. Inform Shift Supervision. 2. IF signal is valid AND dP is greater than +1.3 psid, THEN declare 'A' Core Spray loop INOPERABLE due to a pipe break AND consider a normal plant shutdown per GP-3. 3. IF signal is valid AND dP is less than -3.8 psid, THEN declare 'B' Core Spray loop INOPERABLE due to a pipe break AND consider a normal plant shutdown per GP-3. 4. IF containment parameters indicate a LOCA, THEN perform a rapid plant shutdown per GP-4. 5. Refer to Tech Spec 3.5.1. 6. Request I&C verify proper functioning of PDT-052-1N056. [***BOP should inform SRO of alarm and refer to alarm response. BOP and SRO will determine the alarm is due to HPCI pump running and NOT indicative of a pipe break.***]
	BOP	Recognize HPCI pump is running and injecting with no valid initiation signal.
	RO	Should observe a small power rise.

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: HPCI Inadvertent Startup

Time	Position	Applicant's Actions or Behavior
	SRO	[***OT-110, Steps 3.1 thru 3.7 are not applicable to the situation. SRO will utilize Step 3.8, shown below, to stop HPCI injection.***] PREVENT injection from other systems not required to assure adequate core cooling.
	SRO	Order HPCI isolation per S55.2.A, HPCI Shutdown From Automatic or Manual Initiation.
		[***Procedure S55.2.A Actions :***] IF HPCI Initiation Signal is present as indicated by white SEAL IN light Lit AND can not be reset, THEN GO TO step 4.4.
	BOP	DEPRESS AND RELEASE HPCI Manual Isolation (ISOLATION) pushbutton.
	BOP	VERIFY HV-55-*F003, "HPCI Steam Line Outboard Isolation" (OUTBOARD), closes.
	BOP	VERIFY HPCI turbine comes to rest as indicated by SI 56 *61, "HPCI Turbine Speed" (S).
Booth Operator Note **Insert Malfunction MHP446B to fail HPCI Steam Line Outboard Isolation HV-55-1F003 as-is (closed) after isolation, such that HPCI cannot be unisolated by the crew later in the scenario.**		
	BOP	COLLECT Turbine (*0-S211) reservoir oil sample per MAG CG-502-2, Lubrication Program Guide, after components come to rest, AND REQUEST Chemistry perform moisture analysis of oil sample. CM-1 [***BOP will direct field activity to collect oil sample for Chemistry analysis.***]

Op-Test No.: 1 Scenario No.: 1 Event No.: 3

Event Description: HPCI Inadvertent Startup

Time	Position	Applicant's Actions or Behavior
	BOP	ENSURE *0P216, "Barometric Condenser Vacuum Pump" (VACUUM PUMP), operating.
	BOP	ENSURE *0P213, "Auxiliary Oil Pump" (AUX OIL PUMP), operating. [***No further steps can be performed in S55.2.A because initiation signal is not reset.***]
	SRO	Contact maintenance department to begin troubleshooting and repair.
	SRO	Refers to Tech Specs. Announces HPCI INOPERABLE. Enters TS LCO 3.5.1.c.1 Action c.1 (14 days).

Examiner Note

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 4

Event Description: Condensate Pump C Trips, RRP A Fails to Runback

Time	Position	Applicant's Actions or Behavior
	Crew	Respond to numerous annunciators: 104 G1 CONDENSATE PUMP MOTOR OVERLOAD 104 G2 CONDENSATE PUMP BREAKER TRIP 104 D4 CONDENSATE PUMPS DISCHARGE HEADER LO PRESS 107 D5 FWLCS TROUBLE 112 C4 1B RECIRC FLOW LIMIT **Note to examiners:** 111 C4, 1A RECIRC FLOW LIMIT should actuate on condensate pump trip but will not actuate because of concurrent failure of 1A auto runback.
	BOP	Report trip of 'C' Condensate Pump
	RO	Report 1A Recirc Pump is not running back.
	SRO RO	Place 1A Recirc Pump Speed Controller in MANUAL. Lower speed to 42%. *[per OP-LG-108-101-1001, "Simple Quick Acts / Transient Acts", Transient Act 3.2.3 and 3.2.10 and per TS LCO 3.4.1.3.b, Action b]*
	SRO	Enters TS LCO 3.4.1.3.b Action b for restoring recirc loop flow mismatch to within limits within 2 hours.
	SRO	Inform management and PSD of plant status.

Examiner Note:

Proceed to the next event

Op-Test No.: 1 Scenario No.: 1 Event No.: 5

Event Description: APRM Channel 2 Fails to 96%

Time	Position	Applicant's Actions or Behavior
	Crew	Acknowledge numerous annunciators.
	RO BOP	Refer to alarm response procedures. **108 A-5 OPRM / APRM TROUBLE**: 1. Determine in which channel APRM/OPRM Trouble condition is present. 2. Before bypassing APRM channel, verify compliance with TS 3.3.1, pertaining to Reactor Protection System Instrumentation AND TS 3.3.6, pertaining to Control Rod Block Instrumentation. 3. Place affected APRM channel in "BYPASS" with SSV permission. 4. IF all other APRM/OPRM channels are reading normal, THEN contact I&C to determine fault in APRM/OPRM channel AND repair.

Op-Test No.: 1 Scenario No.: 1 Event No.: 5

Event Description: APRM Channel 2 Fails to 96%

Time	Position	Applicant's Actions or Behavior
	RO BOP	Refer to alarm response procedures. **108 B-3 APRM UPSCALE TRIP / INOP** 1. At APRM Operator Display Assemblies (ODAs) on Panel 10C603 determine APRM channel(s) causing Upscale Trip/INOP condition as follows: • Message "TRIP" (inverse video) appears in display header of each ODA whose associated channel has an active APRM HI-HI/INOP OR OPRM Upscale Trip condition • Message "INOP-CAL" OR "INOP-SET"(inverse video) appears in display header of each ODA whose associated chassis Key Lock Mode Switch is in "INOP" position • "TRIP STATUS" screens display status of active trip outputs from associated channel (an "*" indicates trip signal present) NOTE: Timely performance of Step 2 will reduce the likelihood of a full scram by eliminating a single point vulnerability exposure. 2. IF one APRM channel has Upscale Trip/INOP condition, THEN place APRM channel in "BYPASS" with SSV permission. 3. IF all other APRM channels are reading normal, THEN contact I&C to determine fault with APRM channel AND repair. 4. IF Rx Power is rising, THEN refer to OT-104, Unexpected/ Unexplained Positive Or Negative Reactivity Insertion.

Op-Test No.: 1 Scenario No.: 1 Event No.: 5

Event Description: APRM Channel 2 Fails to 96%

Time	Position	Applicant's Actions or Behavior
	RO BOP	Refer to alarm response procedures. **108 B-4 APRM UPSCALE** 1. At APRM Operator Display Assemblies (ODAs) on Panel 10C603 determine APRM channel(s) causing Upscale Alarm condition as follows: • Message "ALARM" (inverse video) appears in display header of each ODA whose associated channel has an active APRM HI OR OPRM Pre-Trip Alarm condition • "TRIP STATUS" screens display status of active alarm outputs from associated channel (an "*" indicates alarm signal present) NOTE: Timely performance of Step 2 will reduce the likelihood of a full scram by eliminating a single point vulnerability exposure. 2. IF one APRM channel has Upscale Alarm condition, THEN place upscale APRM channel in "BYPASS" with SSV permission. 3. IF all other APRM channels are reading normal, THEN contact I&C to determine fault with APRM channel AND repair. 4. IF Rx Power is rising, THEN refer to OT-104, Unexpected/ Unexplained Positive Or Negative Reactivity Insertion.
	RO BOP	Refer to alarm response procedures. **108 F-3 ROD OUT BLOCK** 1. IF cause of Rod Block is RDCS INOP, THEN reset Rod Drive control cabinet per S73.0.F, Resetting the Rod Drive Control System. 2. Refer to S73.0.B, identifying rod block inputs to the Reactor Manual Control System.
	SRO	Reference TS 3.3.1 and 3.3.6.
Examiner Note: **Proceed to the next event**		

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description: 2 Control Rods Scram, ATWS, 1A SLC Pump Spurious Stop, B & C SLC Squib Valves Fail to Open, RDCS Failure – Inability to Drive Rods

Time	Position	Applicant's Actions or Behavior
	RO	Observes 108 F-4 ROD DRIFT alarm. Notes 2 control rods scrammed. Informs SRO.
	SRO	Enters ON-104, Control Rod Problems, Section 2.3. **IF** more than one control rod inadvertently scrams, **THEN** manually SCRAM the reactor **AND** PLACE Mode Switch in "SHUTDOWN" **AND** ENTER T-100, **OR** T-101, as applicable. Orders a reactor scram.
	RO	Depresses scram pushbuttons. Takes Mode Switch to Shutdown. Reports reactor not scrammed.
	RO	Inserts SRMs AND IRMs (RC-6)
	SRO	Enters T-101, RPV Control, on "SCRAM condition with power above 4% or unknown". Directs 'T' procedure activities.
	RO	Manually initiates RRCS and ARI (RC/Q-5).
	BOP	Ensures recirc runback to minimum (RC/Q-8).
	RO	Insert rods manually with the RWM bypassed (RC/Q-12) **Booth operator: Insert MRD024 to stop rod motion AFTER RO has inserted rods a few notches.**

Op-Test No.: 1 Scenario No.: 1 Event No.: 6

Event Description: 2 Control Rods Scram, ATWS, 1A SLC Pump Spurious Stop, B & C SLC Squib Valves Fail to Open, RDCS Failure – Inability to Drive Rods

Time	Position	Applicant's Actions or Behavior
	SRO	Calls out procedures for electrical ATWS – T-215, T-216 (RC/Q-13).
	SRO RO	Attempts SLC injection. Determines SLC will not inject (RC/Q-16). SRO directs T-212 (RC/Q-20).
CT	BOP	Inhibits auto ADS (RC/Q-19 or LQ-3). **CRITICAL TASK (T-117.1)**
	SRO	Enters T-117, Level / Power Control (RC/L-2).
CT	RO BOP	Terminate and prevent per T-270, except Boron, RCIC and CRD (LQ-5). BOP: Ensures HPCI isolated, ensures LP ECCS is off, calls Field Supervisor to prevent auto start of ECCS. RO: Terminates and prevents feedwater injection. **CRITICAL TASK (T-117.7)**
	BOP/RO	Lower level and control - 60 to -100 inches (LQ-5).
	BOP/RO	Lower level and control > - 186 inches (LQ-17).
	BOP	[In T-101]: Control RPV pressure 990 - 1096 with EHC (RC/P-4).
	SRO	Directs T-221 to ensure MSIVs open (RC/P-9).

PROCEED TO THE NEXT EVENT WHEN LEVEL HAS REDUCED POWER.

Op-Test No.: 1 Scenario No.: 1 Event No.: 7

Event Description: Main Turbine Trip, Transfer Failure of Unit Aux Buses 11 and 12

Time	Position	Applicant's Actions or Behavior
	Crew	Determine turbine has tripped and condenser is unavailable. Not successful in attempt to feed with RCIC (see next event).
	SRO	Recognize unable to restore and maintain level > - 186 inches. Enters T-112, Emergency Blowdown (T-117, LQ-19).
	SRO	Exit T-101, RC/P leg only (EB-4).
	SRO	Direct T-270 (EB-6).
CT	BOP	Open all 5 ADS valves. **CRITICAL TASK (T-117.3)**

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RPV PRESSURE IS < 75 PSIG**
- **LEVEL IS CONTROLLED IAW T-117**

Op-Test No.: 1 Scenario No.: 1 Event No.: 8

Event Description: RCIC Flow Controller Fails Low in Automatic with Subsequent RCIC Turbine Trip

Time	Position	Applicant's Actions or Behavior
	BOP	Observes RCIC PUMP LO FLOW alarm (116 B3) and RCIC turbine not running at normal speed. Identifies flow controller output at minimum in auto.
	BOP	Places RCIC flow controller in manual and raises flow.
	BOP	Determines RCIC turbine has tripped.
	BOP	Refers to ARC-MCR-116-A1: 1. Check RCIC status board for cause of annunciator 2. Refer to Tech. Spec. 3/4.7.3 3. IF trip units caused alarm, THEN reset trip. 4. Dispatch Operator to investigate problem. 5. IF further investigation is required, THEN contact I&C.
	BOP	Dispatches EO to investigate,
	BOP	Informs SRO.

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RPV PRESSURE IS < 75 PSIG**
- **LEVEL IS CONTROLLED IAW T-117**

Facility: Limerick 1 & 2 Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
Unit 1 at 70% power. Unit 2 is at 100% power.

Turnover:
Standard turnover, number of components OOS for all scenarios. Component xxx expected to be returned to service within the hour. Fuel handling is in progress in Unit 1 Spent Fuel Pool. Shift orders are to perform a rod pattern adjustment.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R-RO	Perform Rod Pattern Adjustment
2	MRD016B	C-RO TS-SRO	Control Rod XX-YY Drifts Out
3	MCU195B MRP027B	C-RO C-BOP TS-SRO	RPS Channel B Breaker Trip, RWCU Fails to Isolate
4	MRR433B MRR434B OR F023B	C-RO C-BOP	RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is
5	MRR441	M	Steam Leak in Drywell
6	MED261 MED263A MED263C	M	Loss of Offsite Power, D11 and D13 Lockouts
7	MHP447A MHP449	C-BOP	HPCI Aux Oil Pump Auto Start Failure and Turbine Trip Following Manual Start

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

SCENARIO SUMMARY

The crew will assume the watch and perform a rod pattern adjustment.

Control Rod XX-YY will continue to drift out after rod pull. The crew will respond IAW ON-104, Control Rod Problems, Section 2.2 and will fully insert the drifting rod. Reactor engineering will direct insertion of the adjacent 3 control rods to maintain symmetry. The CRS will address Tech Specs.

RPS Channel B will lose power due to the trip of Breaker #13 on 120VAC Distribution Panel 1BY160. A half-scram and a half-NSSSS isolation will occur. The following valves will close :

- Loop B DW Chill WaterIsolations
- RRP Seal Cooling Valves HV13-108 &HV13-111
- Division II and IV CASS Valves
- PCIG Compressor Suction Valve HV59-102

RWCU Isolation Valve HV44-1F004 should close, however it will remain open due to failing as-is. The crew should respond per alarm response procedure. The crew will identify the failure of RWCU to isolate and will isolate RWCU by closing the other isolation valve, HV44-1F001. GP-8 and GP-8.5 will be utilized to clear the isolation signals and restore instrument gas and drywell cooling. The CRS will determine affected TS LCOs (isolation actuation instrumentation, and PCIV TS 3.6.3). Power will be restored when electricians replace the power supply breaker at 1BY160 Distribution Panel. Following power restoration, systems (RWCU, RRP Seal Cooling) will be restored to normal.

RRP B lower seal will fail. The crew will respond IAW ARC-MCR-112-A1, identify the problem, determine the leak rate and refer to Leakage TS 3.4.3.2. After 5 minutes, the upper seal will fail, resulting in approximately 60 gpm leakrate and increasing DW pressure and temperature (OT101 for high drywell pressure). The crew will commence a GP-4 shutdown and, if necessary, scram the reactor before reaching 1.68 psig in the drywell. The RRP should be stopped and isolated IAW S43.2.A, Shutdown of a Recirculation Pump. The RRP Suction Valve will fail as-is partially stroked closed. Drywell pressure and temperature will continue to increase. The crew will scram the reactor per OT-101, High Drywell Pressure.

Crew will enter T-101 on low RPV level. They will subsequently re-enter T-101 and enter T-102 on high drywell pressure at > 1.68 psig.

A loss of offsite power (E-1020) occurs following RCIC start and water level control. It results in lockouts on D11 and D13 Buses. RCIC and CRD can be started for injection. Division 2 RHR and Core Spray will be available on Diesel Generators. The crew will initiate suppression pool spray for pressure and temperature control. The leak will increase beyond RCIC and CRD capacity. HPCI will fail to auto start and the turbine will trip shortly following manual startup. It cannot be recovered. A rapid depressurization will be required on PSP curve to inject with low pressure ECCS systems.

The scenario will be terminated when the reactor is depressurized and level is restored to between +12.5 and +54 inches and actions of T-102 have been performed to address containment control.

SIMULATOR SETUP

1. Reset simulator to 70% power. Align equipment per turnover sheet.
2. Event 2: Control Rod XX-YY Drifts Out
   Insert MRD016B for Rod XX-YY
3. Event 3: RPS Channel B Breaker Trip, RWCU Fails to Isolate
   Insert MCU195B – no TD, MRP027B – 1 sec TD, both on Manual Trigger 3
4. Event 4: RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is
   Insert MRR433B – no TD, MRR434B – 5 min TD, Override HV43-1F023 handswitch to PTS – triggered on TD off of handswitch being taken to CLOSE (such that valve fails in position partially closed – to prevent leak from being isolated
5. Event 5: Steam Leak in Drywell
   Insert MRR441 on Manual Trigger 5
6. Event 6: Loss of Offsite Power, D11 and D13 Lockouts
   Insert MED261, MED263A and MED263C on Manual Trigger 6
7. Event 7: HPCI Aux Oil Pump Auto Start Failure and Turbine Trip Following Manual Start
   Insert MHP447A on Manual Trigger 5, MHP449 – 10 sec TD - on trigger of HV55-1F001 green position light out

CRITICAL TASKS

1. ON-104.2 Drifting control rod is fully inserted.
   Standard: After it is determined that a control rod has drifted out from its original position, a continuous insert signal is applied until the control rod is at or beyond position.

2. T-102.2 Perform emergency blowdown per T-112.
   Standard: When Suppression Pool Pressure cannot be maintained below the Pressure Suppression Pressure (PC/P-3) curve and before Drywell pressure exceeds 55 psig, open 5 SRV's.

3. T-112.2 Restore RPV level above -161 inches.
   Standard: When Reactor pressure permits, inject with all available low pressure ECCS, to restore RPV level above -161".

Op-Test No.: 1 Scenario No.: 2 Event No.: 1

Event Description: Perform Rod Pattern Adjustment

Time	Position	Applicant's Actions or Behavior
	SRO	Directs RO to perform rod pattern adjustment.
	RO	Commences rod pattern adjustment per RE guidance. Performs moves in accordance with IAW S73.1.A, Normal Operation of the Reactor Manual Control System, Section 4.2 4.2.1 REVIEW Attachment 1 AND VERIFY the control rod to be withdrawn is not channel bow susceptible. 4.2.2 SELECT the control rod to be withdrawn at *0-C603, "Reactor Control Console." 4.2.3 VERIFY correct rod position is indicated on Four Rod Display. 4.2.4 ENSURE drive water pressure is 255 to 265 psid, as indicated on PDI-46-*R602, "Drive Water Differential Pressure Indicator." 4.2.5 PRESS WITHDRAW pushbutton at *0-C603.
	RO	**NOTE** WHEN WITHDRAW pushbutton is depressed,THEN the proper light sequence is: 1. INSERT light Lit AND THEN extinguishes after approximately 0.6 seconds. 2. WITHDRAW light Lit AND THEN extinguishes after approximately 1.5 seconds. 3. SETTLE light Lit AND THEN extinguishes after approximately 6.1 seconds. 4.2.6 VERIFY proper RDCS light sequence. 4.2.7 IF control rod fails to reposition, THEN GO TO Section 4.4. 4.2.8 VERIFY CR has been withdrawn one notch position at Four Rod Display. 4.2.9 IF control rod is positioned to notch position 48, THEN PERFORM an over travel check per ST-6-107-730-*, Control Rod Coupling Check.

Op-Test No.: 1 Scenario No.: 2 Event No.: 1

Event Description: Perform Rod Pattern Adjustment

Time	Position	Applicant's Actions or Behavior
CONTROL ROD WILL DRIFT OUT AFTER WITHDRAW DEMAND IS REMOVED.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Control Rod XX-YY Drifts Out

Time	Position	Applicant's Actions or Behavior
	RO	Acknowledge ROD DRIFT alarm. Informs SRO.
	RO	Refers to ARC-MCR-108-F4, ROD DRIFT: Refer to ON-104, Control Rod Problems, OT-104, Unexpected/Unexplained Positive or Negative Reactivity Insertion, AND to Tech Spec 3.1.3.6 pertaining to control rod drive coupling for actions/limitations due to rod drift.
	SRO	Enters OT-104. 2.0 IMMEDIATE OPERATOR ACTIONS 2.1 REDUCE Rx power in accordance with GP-5 Appendix 2, Planned Rx Maneuvering Without Shutdown, Section 3.1, Reducing Rx Power AND Reactor Maneuvering Shutdown Instructions, to maintain Rx power at OR below initial pre-transient level. [*SRO orders insertion of control rod.*]
	SRO	3.0 FOLLOW-UP ACTIONS **NOTES** Conditional IF...THEN steps that are not applicable AND steps to be skipped per direction of the IF...THEN step shall be marked N/A AND initialed. 3.1 IF all four Oscillation Power Range Monitor (OPRM) channels are inoperable due to common mode failure per TS Table 3.3.1-1 ACTION 10.a, THEN PERFORM the following. Otherwise, MARK this step N/A. [*SRO marks this step N/A*]

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Control Rod XX-YY Drifts Out

Time	Position	Applicant's Actions or Behavior
	SRO	**NOTES** Conditional IF...THEN steps that are not applicable AND steps to be skipped per direction of the IF...THEN step shall be marked N/A AND initialed. 3.2 DETERMINE correct Power/Flow Map for given plant conditions. • ATTACHMENT 2 (All Feedwater Heaters In Service) • ATTACHMENT 3 (Any Feedwater Heater Out Of Service) [*SRO chooses Attachment 2*]
	SRO RO	*3.3* DETERMINE Core Flow.
		3.4 VERIFY plant is operating in an authorized region of Power/Flow Map.
	SRO	**CAUTION** Restarting a Recirc Pump is not an acceptable means of raising flow. 3.5 IF RESTRICTED REGION ... is entered ... 3.6 IF operating in SLO ... 3.7 IF SLC injects into RPV ... 3.8 IF MSL Monitor High alarm annunciates ... [*Steps are N/A*]
	SRO	3.9 DETERMINE cause of positive OR negative reactivity insertion: [*SRO selects "Control Rod Position"*]

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Control Rod XX-YY Drifts Out

Time	Position	Applicant's Actions or Behavior
	SRO	3.12 PERFORM the following for an indication of positive reactivity insertion: 3.12.1 DEMAND a Control Rod Position Report AND REVIEW data for unexpected change in control rod position(s). 1. IF reactivity insertion was caused by control rod problems, THEN ENTER ON-104, Control Rod Problems AND EXECUTE concurrently. 3.12.9 DEMAND a P-1 edit AND DETERMINE whether a Thermal Limit violation exists. 3.12.10 IF any Thermal Limit violations exist ... [*SRO declares ON-104 entry and demands P-1 edi, no thermal violations exist*]
	SRO	Enters ON-104, Control Rod Problems
	SRO RO	2.2 CONTROL ROD(S) DRIFT OUT 2.2.1 NOTIFY Shift Supervision.

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Control Rod XX-YY Drifts Out

Time	Position	Applicant's Actions or Behavior
CT	RO	2.2.2 STOP all control rod motion demands. 2.2.3 APPLY continuous control rod insert signal to drifting rod until fully inserted. 1. IF control rod drifts out after fully inserted,THEN REAPPLY continuous control rod insert signal as necessary to maintain control rod fully inserted. **CRITICAL TASK (ON-104.2)**
	SRO RO BOP	2.2.4 IF more than one control rod drifts out ... [*Step is N/A*] 2.2.5 GO TO Flowchart on Attachment 2 AND CONSULT Tech Spec 3.1.3.1. 2.2.6 Reactor power > RWM low power setpt? [*Answers YES*] 2.2.12 Control rod going in [*Answers YES*] 2.2.19 Maintain continuous control rod insert signal to drifting rod as necessary to maintain rod full in. Isolate affected rod from its HCU as follows: (A) Close affected CRDs 47-*-01 valve (B) Close affected CRDs 47-*-02 valve (C) Release insert pushbutton. If affected rod begins to drift out while isolated then continue at step 2.2.14 [*Maintains continuous insert signal and directs fiele to close valves, then releases insert pushbutton.*]
	SRO BOP	2.2.20 Demand P-1 edit. 2.2.21 Any thermal limit > 1.0 [*Answers NO*] 2.2.22 Return to ON-104, Step 2.2.25

Op-Test No.: 1 Scenario No.: 2 Event No.: 2

Event Description: Control Rod XX-YY Drifts Out

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	2.2.25 ISOLATION/MANUAL SCRAM OF ROD DRIFTING OUT 1. ISOLATE the effected CRD from its HCU as follows after CR fully inserted: a. CLOSE affected CRD's 47-*-01 valve. b. CLOSE affected CRD's 47-*-02 valve AND RELEASE INSERT pushbutton. 2. IF control rod begins to drift while isolated, THEN quickly ENSURE control rod unisolated as follows ... IF not, GO TO step 2.2.25.9. 9. DECLARE control rod inoperable, AND PERFORM actions required by Tech Spec 3.1.3.1. 11. CONTACT Engineering Duty Manager.

END OF EVENT 2. PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
	CREW	The crew will observe multiple annunciators on 107, 112 and 114 alarm boards.
	SRO RO BOP	PER ARC-MCR-112-F4, RWCU SYSTEM ISOLATED : 1. Verify RWCU system isolation. ***[RO/BOP will determine required isolation did NOT occur and will manually close HV44-1F004.]*** 2. IF isolation is unexpected, verify no SLC pump is operating. 3. IF SBLC is running THEN enter OT-104. ***[N/A]*** 4. IF CRD purge flow to 1A RWCU pump is aligned, THEN ENSURE a flowpath to the reactor (HV-44-1F042) exists to relieve CRD system pressure. ***[N/A]*** 5. Refer to S44.0.A AND GP-8 for isolation signals. ***[Refers to GP-8]*** 6. IF performing Rx Heat up/Cooldown ST re-evaluate temp data collection. ***[N/A]*** 7. Notify Chemistry to perform ST-5-041-810-1 as necessary to ensure Tech Spec compliance. ***[Notifies chemsitry.]***
	SRO BOP	PER ARC-MCR-114-G2(3), 1A (B) DRYWELL INSTR GAS TROUBLE : 1. Check adequate pressure (>96 psi) from 1A(B) Inst Gas Compressor using PI-59-123A(B). ***[RO/BOP will determine PCIG Compressor Suction Valve HV59-102 has closed.]*** 2. Dispatch Operator to check local control panel 1A(B)C217 to determine cause of compressor trip AND dryer overload. 3. IF low receiver pressure, THEN place HSS-059-111A(B) to ON to increase pressure OR locate/isolate leakage. ***[N/A]*** 4. IF compressor capacity is in doubt, THEN perform RT-6-059-310-1. ***[N/A]***

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
	SRO	Enters GP-8 and GP-8.5 to address inadvertent isolations.
	SRO	**GP-8, Primary And Secondary Containment Isolation Verification And Reset** 3.1 WHEN an isolation signal is received, THEN ENSURE associated automatic equipment operation is verified as appropriate OR not appropriate.
	SRO	3.2 **Automatic Actuations by Isolation Signal** 3.2.1 IF the isolation signal is known, THEN USE GP-8.1 to identify the following: 1. Equipment that automatically isolates 2. Instrument channels 3. Appropriate reset 4. Applicable bypass
	SRO	3.5 **Isolation Bypass** 3.5.1 WHEN Isolation Bypass is required, THEN REFER TO GP-8.4 for outlines of bypass procedures as identified in GP-8.1 AND GP-8.4 can be used to determine valves affected by each bypass.

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
	SRO	3.6 **Isolation Bypass of Crucial Systems** 3.6.1 WHEN Isolation Bypass of crucial systems is required THEN REFER TO GP-8.5 for outline of bypass procedure for systems crucial to plant operation. **NOTE** GP-8.5 includes the following systems AND components: • Instrument Gas • Drywell Chilled Water • Reactor Enclosure Cooling Water • Bypass Barrier Block and Vent Valves • H2/02 AnalyzersAND Post-LOCA Recombiners
	SRO	3.7 IF only the isolation group is known, THEN REFER TO Attachment 1 for a mechanism to determine the cause of isolation AND how to reset.
	SRO	**GP-8.5, Isolation Bypass of Crucial Systems** 3.0 PROCEDURE **NOTE**: IF one OR more of the following conditions are met THEN bypassing of containment isolation interlocks may be performed: 1. as directed by TRIP procedures 2. To protect the health and safety of the public per 10CFR50.54(x). 3. Per OM-L-3.2 AND OM-L-3.3, in the event of an emergency not covered by approved procedures, actions shall be taken to minimize personnel injury AND damage to the facility, and to protect the health and safety of the public. 4. IF an inadvertent isolation signal exists, THEN in accordance with Tech. Spec. 3.6.3 action statement, the automatic valve isolation capability is inoperable. ***[Determines bypassing may be performed.]***

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
		3.1 Instrument Gas Bypass (Group VIIA - Isol. Signals C, H, S) 3.2.1 Once bypass logic is completed, valve handswitches used to make up logic may be repositioned. 3.2.1 IF an Inboard Isolation has occurred ... **[*No inboard isolation*]** 3.1.3 IF an Outboard Isolation has occurred THEN perform the next step to bypass the isolation signals for: ▪ HV-59-102 PCIG Compressor Suction (OUTBOARD) ▪ HV-59-129B PCIG B Header Supply (DRYWELL B) 1. Position switches as listed: HSS-57-191B BYPASS HV-59-102 CLOSE HV-59-129B CLOSE **[*Positions switches*]** 2. The following valves have also had their isolation signals bypassed: • HV-57-105 S/P Exhaust to REECE Filter (SUPP POOL EXH BYPASS (INBD)) • HV-57-111 D/W Exhaust to REECE Filter (DRYWELL EXH BYPASS (INBD))

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
	SRO BOP	3.2 Drywell Chilled Water Bypass (Group VIIIA - Isol. Signals C, H) 3.2.1 IF DWCW Head Tank HI/LO Alarm (PMS Point G532) is "NORMAL" OR DWCW Pump suction pressure is greater than 35 psig as read on PI-087-109A(B) (local PI at pumps) THEN perform the following: Otherwise do not bypass the isolation.. 3.2.2 IF an Inboard Isolation has occurred THEN perform the next step to bypass the isolation signals for: • HV-87-128 A D/W Chilled Water Supply (LOOP A) • HV-87-129 A D/W Chilled Water Return (LOOP A) • HV-87-122 B D/W Chilled Water Supply (LOOP B) • HV-87-123 B D/W Chilled Water Return (LOOP B) **[*No inboard isolation*]** 1. Position HS-87-115 in BYPASS. 2. No other valves have had their isolation signals bypassed. 3.2.3 IF an Outboard Isolation has occurred THEN perform the next step to bypass the isolation signals for: • HV-87-120A A D/W Chilled Water Supply (LOOP A) • HV-87-121A A D/W Chilled Water Return (LOOP A) • HV-87-120B B D/W Chilled Water Supply (LOOP B) • HV-87-121B B D/W Chilled Water Return (LOOP B) 1. Position HS-87-116 in BYPASS. **[*Positions switch*]** 2. No other valves have had their isolation signals bypassed.
	Crew	Contacts maintenance to troubleshoot.
	SRO	Refers to TS LCOs for isolation actuation instrumentation and PCIVs (3.6.3)

Op-Test No.: 1 Scenario No.: 2 Event No.: 3

Event Description: RPS Channel B Breaker Trip, RWCU Fails to Isolate

Time	Position	Applicant's Actions or Behavior
		Booth Operator
		After RWCU is isolated and PCIG and DWCW are restored, then call control room. Inform SRO that 1BY160 Breaker #13 has been replaced and can be re-closed to energize the circuit. Remove Malfunction MRP027B to simulate re-closing the breaker.
		END OF EVENT 3. PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is

Time	Position	Applicant's Actions or Behavior
	SRO BOP RO	Refers to ARC-MCR-112-A1, 1B RECIRC PUMP SEAL STAGE HI/LOW FLOW: 1. Check #1 AND #2 seal cavity pressure. 2. Check both #1 and #2 seal cavity temperatures. 3. Monitor seal pressure and temperatures on an increased frequency. 4. Monitor drywell pressure AND temperature. 5. Monitor Rx coolant leak detection instrumentation to quantify leakage. 6. Refer to T.S. 3.4.3.2 Rx Coolant system leakage.
	SRO RO BOP	Refers to ARC-MCR-112-A2, 1B RECIRC PUMP SEAL LEAKAGE HI FLOW: 1. Check #1 AND #2 seal cavity pressure. 2. Check #1 and #2 seal cavity temperatures on an increased frequency AND refer to S43.0.D (Section 4.5). 3. Monitor seal pressure AND temperature. 4. Monitor drywell pressure AND temperature. 5. Monitor Rx coolant leak detection instrumentation to quantify leakage. 6. Refer to T.S. 3.4.3.2 Rx Coolant system leakage. 7. Check flow at FISH-43-101B, located on El. 253, Area 16, Rm 402.
	SRO	Enters OT-101, High Drywell Pressure
	SRO	2.0 IMMEDIATE OPERATOR ACTIONS 2.1 MAXIMIZE Drywell cooling. TERMINATE Containment inerting. **[*N/A*]** IF scram condition occurs, THEN ENTER T-101 AND T-102 AND EXECUTE concurrently.

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is

Time	Position	Applicant's Actions or Behavior
	SRO	3.0 FOLLOW-UP ACTIONS 3.1 IF source of high Drywell pressure can not be eliminated through this procedure AND Drywell pressure is rising toward 1.68 psig, THEN PERFORM rapid plant shutdown per GP-4.
	SRO	Enters GP-4.
	SRO	3.1 TRANSFER house loads to startup buses in accordance with S91.6.B, Transferring House Loads To S/U Buses. ***[Directs BOP to transfer house loads.]***

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**[PER S91.6.B]:** IF transferring 11(12) AUX BUS to the 10(20) S/U BUS, THEN PERFORM the following: 1. PLACE 225-10102(06)/SS, "Sync Switch," to "ON." 2. VERIFY INCOMING AND RUNNING voltmeter read approximately 110V. NOTE: 10 Startup Bus Voltage may be adjusted per S35.0.J, No. 10 Transformer Tap Changer Control (Remote) AND 20 Startup Bus Voltage may be adjusted per S35.0.H, #20 Regulating Transformer Tap Change Control (Remote-Hand). 3. IF INCOMING/RUNNING voltages differ by greater than 8 volts, THEN ADJUST Startup Bus Voltage to obtain less than 8 volts difference. 4. CLOSE AND HOLD 252-10102(06)/CS, 10/11(20/12) FEED. NOTE: With the Offsite Source Breaker closed and its handswitch in the "Normal After Close" position, the Aux Feed Breaker will auto-open. 5. WHEN 252-10102(06)/CS, 10/11(20/12) FEED, indicates closed, THEN RELEASE 252-10102/CS. 6. VERIFY 252-10113(213)/CS, AUX FEED, open. 7. PLACE 225-10102(06)/SS, "Sync Switch," to "OFF." 8. ENSURE 252-10113(213)/CS, AUX FEED, in "NORMAL AFTER TRIP."
	RO BOP	[GP-4] 3.2 REDUCE Rx Recirculation System flow to minimum.
	SRO RO	3.2.1 WHEN core flow reduces to nominal 60%, THEN immediately manually SCRAM Rx AND ENTER T-100, Scram/Scram Recovery OR T-101, RPV Control, as applicable.

Op-Test No.: 1 Scenario No.: 2 Event No.: 4

Event Description: RRP 1B Lower Seal Failure, Followed By Upper Seal Failure, RRP Suction Valve Fails As-Is

Time	Position	Applicant's Actions or Behavior
	RO	3.3 ENSURE Reactor Mode Switch is locked in "SHUTDOWN" within one hour following Rx scram AND key is in possession of Shift Supervision (SSV).
	SRO	3.6 NOTIFY Chemistry to perform the following Surveillance Tests (STs) as required:
	SRO RO BOP	[OT-101] 3.2 VERIFY automatic conditions [***for 1.68 psig DW pressure***]: • Scram • HPCI Initiation • Various NSSSS Isolation (PCIG, DWCW, RE HVAC, SGTS, RERS Isolation) • Cntmt Leak Detector
	SRO RO BOP	[OT-101] 3.5 IF both seals on a Recirc. Pump have failed, THEN: 3.5.1 TRIP applicable pump. **[*Trips 1B RRP*]** 3.5.2 CLOSE pump discharge valve HV-43-*F031A(B), DISCHARGE A(B).CLOSE seal purge valve HV-46-*15A(B), SEAL PURGE. **[*Closes 115B seal purge*]** 3.5.3 CLOSE pump suction valve HV-43-*F023A(B), SUCTION A(B). **[*Closes F023B suction valve*]** 3.5.4 ENTER OT-112. **[*Enters OT-112*]**

END OF EVENT 4. PROCEED TO THE NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 5

Event Description: Steam Leak in Drywell

Time	Position	Applicant's Actions or Behavior
	SRO	Enters T-101 on "low RPV level below +12.5" or unknown" following manual reactor scram on GP-4 shutdown. Directs 'T' procedure activities.
	SRO	Enters T-101 on "DW press above 1.68 psig".
	RO	Inserts SRMs AND IRMs (RC-6)
	BOP	Ensure turbine trip and gen lockout (RC/Q-2).
	RO	Restore AND maintain RPV level between +12.5" AND +54" (RC/L-4).
	BOP	Depressurize RPV within 100°F/hr using ST-6-107-640-* bypassing PCIG Isol logic per GP-8 as necessary (RC/P-16).
	SRO	Enters T-102 on "DW press above 1.68 psig".
	BOP	Spray Supp Pool per T-225 (PC/P-5).
	SRO	Re-enter T-102 on "DW temp above 145°F".
	BOP	Maximize DW cooling bypassing isol per GP-8 as necessary (DW/T-5).

PROCEED TO NEXT EVENT.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: Loss of Offsite Power, D11 and D13 Lockouts

Time	Position	Applicant's Actions or Behavior
CT	BOP	Open all 5 ADS valves. **CRITICAL TASK (T-117.3)**
	Crew	Recognizes loss of offsite power.
	SRO	Enters E-1020, Loss of Offsite Power.
	BOP	2.1 VERIFY Diesel Generators running AND Safeguard Switchgear energized.
	BOP	2.4 IF either Unit's condenser is not available, THEN CLOSE MSIV's for appropriate UNIT. **[*Closes MSIVs*]**
	BOP	Starts RCIC (T-101, RC/L-4)
	SRO	WHEN safe side of Curve PC/P-3 CANNOT be maintained, THEN Enter T-112 and execute concurrently (PC/P-11/12). Enters T-112 from T-102, PC/P-12.
	SRO	Exit T-101, RC/P leg only (EB-4).
	SRO BOP	IF low press ECCS auto starts, THEN prevent injection from those Core Spray AND LPCI pumps NOT required for core cooling.
CT	BOP	Open all 5 ADS valves. **CRITICAL TASK (T-102.2)**

Op-Test No.: 1 Scenario No.: 2 Event No.: 6

Event Description: Loss of Offsite Power, D11 and D13 Lockouts

Time	Position	Applicant's Actions or Behavior
CT	BOP	Restores RPV level above -161 inches. **CRITICAL TASK (T-112.2)**
	BOP	Controls LPCI injection flow to maintain level between +12.5 and +54 inches. **Examiner Note: Level may momentarily exceed +54 inches on the blowdown and injection, but applicant is expected to control flow to prevent severe overfill.**

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RPV IS DEPRESSURIZED**
- **LEVEL IS RESTORED TO BETWEEN +12.5 AND +54 INCHES**
- **T-102 CONTAINMENT CONTROL ACTIONS COMPLETE**

Op-Test No.: 1 Scenario No.: 2 Event No.: 7

Event Description: HPCI Aux Oil Pump Auto Start Failure and Turbine Trip Following Manual Start

Time	Position	Applicant's Actions or Behavior
	BOP	Observes HPCI does not auto start on demand.
	BOP	Starts HPCI Aux Oil Pump
	BOP	Observes HPCI turbine startup
		Examiner Note: HPCI turbine will trip shortly after aux oil pump is started. It cannot be recovered.
	BOP	Reports turbine tripped

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RPV IS DEPRESSURIZED**
- **LEVEL IS RESTORED TO BETWEEN +12.5 AND +54 INCHES**
- **T-102 CONTAINMENT CONTROL ACTIONS COMPLETE**

Facility: Limerick 1 & 2 Scenario No.: 3 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions:
Unit 1 at 50% power, EOL. Unit 2 is at 100% power.

Turnover:
Standard turnover, number of components OOS for all scenarios. Shift orders are to place the C RFP in service and then continue with rod withdrawal to raise power to 75%.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP	Start C Reactor Feed Pump
2	N/A	R-RO	Raise Power to 75%
3	MRD016D	C-RO TS-SRO	Stuck Control Rod XX-YY
4	MED282C	C-BOP TS-SRO	Loss of Div III DC
5	MSW488B	C-BOP	Service Water Pump B Trip
6	MAD145E MRP029B	C-BOP C-RO	An SRV Fails Open, Manual Reactor Scram Requires ARI
7	MVI231D OR 112/E5 MMS067	M	Instrument Line Break in Drywell
8	MPC257	M	RHR Pump Suppression Pool Suction Line Rupture

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

SCENARIO SUMMARY

The crew has orders to start the third RFP and then continue rod withdrawal to raise power to 75%. The BOP will start up the C RFP IAW S06.1.C, Placing a Standby RFP in Service.

After the feed pump is in service, the RO will commence raising power by withdrawing control rods.

When power change has been observed, a control rod sticks. The crew will respond per the alarm response procedures and S.73.1.A, Normal Operation Of The Reactor Manual Control System. The rod will be able to move after CRD pressure is raised. The SRO will refer to Tech Specs.

A loss of Division III DC will occur, impacting operability of RHR C, CS C, CR Chiller OA, DW Chiller A, CRD A and Div III Breakers. Crew will respond by swapping CRD pumps and CR Chillers IAW E-1FC. The CRS will address Tech Specs 3.5.1.a, 3.5.1.b, 3.8.2.1, and 3.8.3.1 (limiting 8 hr LCO).

The B Service Water Pump trips on motor overload. Crew will respond per S10.7.A, Abnormal Service System Operation. The BOP will start the standby service water pump per S10.6.A.

SRV 'J' fails open on mechanical drift of lift setpoint and then valve sticks open. The crew will respond IAW OT-114, Inadvertent Opening of a Relief Valve. The BOP will reduce pressure set to 900 psig to attempt SRV reseat. Actions will not reseat SRV. The crew will initiate suppression pool cooling and perform a GP-4 shutdown. Manual scram pushbuttons and mode switch will not shutdown reactor. Scram will be initiated per T-101 using ARI.

Immediately following the scram, an instrument line will break. Drywell pressure and temperature will increase. The crew will enter T-101 and T-102 and initiate a cooldown.

The 1B RHR Pump suction line will rupture, resulting in pump room flooding from the suppression pool and lowering suppression pool level. The crew will stop RHR Pumps B and D and isolate the leak by closing RHR Pump 1B Suction Valve F004B. Suppression pool spray will be initiated with the A loop of RHR per T-102.

The scenario will be terminated after the RHR suction line leak has been isolated and suppression pool sprays are in service from the other loop.

SIMULATOR SETUP

1. Reset simulator to 50% power. Align equipment per turnover sheet.
2. Events 1 & 2: Start C Reactor Feed Pump, Raise Power to 75%
   No malfunctions required
3. Event 3: Stuck Control Rod XX-YY
   Insert MRD016D
4. Event 4: Loss of Div III DC
   Insert MED282C on Manual Trigger 4
5. Event 5: Service Water Pump B Trip
   Insert MSW488B on Manual Trigger 5
6. Event 6: An SRV Fails Open, Manual Reactor Scram Requires ARI
   Insert MAD145E and MRP029B on Manual Trigger 6
7. Event 7: Instrument Line Break in Drywell
   Insert MVI231D, MMS067 and overrride 112 E5 OFF, all on Manual Trigger 5
8. Event 8: RHR Pump Suppression Pool Suction Line Rupture
   Insert MPC257 at 30,000 gpm severity on Manual Trigger 8

CRITICAL TASKS

1. T-101.7 Manually scram the reactor.
   Standard: When any T-101 entry condition has been exceeded, the reactor is manually scrammed.

2. T-103.4 Isolate systems discharging into area.
   Standard: After it is determined that Secondary Containment temperature, radiation, or water levels cannot be restored and maintained below MNO value of Table SCC-1, systems known to be discharging into the area are isolated before MSO value of Table SCC-2 is exceeded.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Start C Reactor Feed Pump

Time	Position	Applicant's Actions or Behavior
	SRO	Directs BOP to place standby RFP 1C in service IAW S06.1.C, Section 4.2.3, Placing Second/Third RFP in Service [*using FWLCS semi automatic sequences*]
	BOP	**NOTE** IF third RFP is being placed IN SERVICE, THEN a Reactor Operator must be stationed at panel 10C602, Recirc Pump Controls, in the event a Rx power reduction in accordance with OT-100, Reactor Low Level, is required. **CAUTION** Operating below 25% power with more than one RFP IN SERVICE may cause severe RFP suction header piping movement. 1. ENSURE the following: **NOTE** RFPT is adequately warmed when either of the following conditions exist: • RFPT has been IN STANDBY for greater than 60 minutes AND lube oil cooler outlet temperature between 110 to 120 °F • Following trip/shutdown, RFPT has been on Turning Gear for less than two hours with steam seals applied AND lube oil cooler outlet temperature between 110 to 120 °F • Oncoming RFPT has been adequately warmed. • HV-006-108A(B,C), "1A(B,C) RFP Disch Vlv" (FEED DISCH A(B,C)), is closed for oncoming RFP. • HIC-006-106A(B,C), "A(B,C) RFP Min Flow Control" (FLOW), in "AUTO" for oncoming RFP.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Start C Reactor Feed Pump

Time	Position	Applicant's Actions or Behavior
	BOP	2. IF third RFP is being placed IN SERVICE, THEN PERFORM the following: a. REFER TO current P-1 edit AND VERIFY FLLLP value is < 0.92. b. ACCESS screen FWLC_01, Process Overview, at FWLCS Operator Station. c. SELECT blue bordered box next to "Reset" in FLLLP < 0.92 Dialog Box until it is outlined in white AND then release. d. SELECT "Activate" (D4) Dialog Key (at bottom of screen) AND VERIFY box next to "Reset" in FLLLP < 0.92 Dialog Box turns solid blue with a white circle in center.
	BOP	3. PLACE FIC-M1-1R601A(B,C), "A(B,C) RFPT Speed Controller" (FEED PUMP A(B, C), S), in "AUTO" for oncoming RFP.
	BOP	4. ENSURE LIC-006-138 "A FEEDWTR STARTUP LVL" (START UP BYPASS) in "AUTO".
	BOP	**NOTE** Steps 4.2.3.5 through 4.2.3.8 initiate "Start A(B,C) RFP" sequence from FWLCS Operator Station. 5. ACCESS screen FWLC_07, Automatic Sequences, at FWLCS Operator Station.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Start C Reactor Feed Pump

Time	Position	Applicant's Actions or Behavior
	BOP	**NOTE** 1. Prerequisite conditions for "Start A(B,C) RFP" sequence are located in the uppermost text box of ATTACHMENT 1(2,3). 2. All prerequisite conditions must be met for "READY" box to be solid green. SSV notification is required if prerequisite conditions can not be met. 6. ENSURE "READY" box to left of "Start A(B,C) RFP" sequence is solid green.
	BOP	7. SELECT blue bordered box next to "Start A(B,C) RFP" sequence until it is outlined in white AND then release.
	BOP	8. SELECT "Start" (D4) Dialog Key (at bottom of screen).
	BOP	9. VERIFY the following on screen FWLC_07, Automatic Sequences, at FWLCS Operator Station: • Box next to "Start A(B,C) RFP" sequence turns solid blue. • Step Number AND Title appears next to blue box of "Start A(B,C) RFP" sequence.
		NOTE 1. Placing a RFP IN SERVICE may initiate a minor Rx power change due to rise in core inlet subcooling caused by lack of initial FW heating. (Ref. 5.10) 2. Indicated RFP flow rate less than 0.6×10^6 lbm/hr is considered to be instrument noise AND is ignored by PMS in the calculation of CTP. Actual RFP flow to RPV must be maintained greater than 0.6×10^6 lbm/hr to ensure a valid CTP calculation. 3. Placing a Standby RFP IN SERVICE will result in individual RFP flows that are unmatched. Subsequent steps in this procedure section to equalize flow will match individual RFP flows and may result in minimum flow valve automatic position changes.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Start C Reactor Feed Pump

Time	Position	Applicant's Actions or Behavior
	BOP	10. VERIFY the following automatic actions: a. HV-006-108A(B,C), "1A (B,C) RFP Disch Vlv" (DISCH A (B,C)), for oncoming RFP opens. b. Oncoming RFPT speed rises until oncoming RFP discharge pressure is nominal 10 psig below RPV pressure. c. WHEN oncoming RFP discharge pressure nominal 10 psig below RPV pressure, THEN oncoming RFPT speed slowly rises until oncoming RFP begins feeding RPV.
	BOP	11. VERIFY oncoming AND running RFP(s) are maintaining RPV level.
	BOP	12. ENSURE oncoming AND running RFP flows are within 0.5 Mlb/hr of each other using the Flow Equalizer in accordance with S06.0.E U/1, Feedwater Level Control And Reactor Feed Pump Control System Manipulation.
	BOP	13. IF Flow Equalizer was activated in Step 4.2.3.12, THEN DEACTIVATE Flow Equalizer in accordance with S06.0.E U/1, Feedwater Level Control And Reactor Feed Pump Control System Manipulation.
	BOP	14. WHEN oncoming RFP flow is greater than 0.6 x 10^6 lbm/hr as indicated on FI-006-1R604A(B,C), "A(B,C) RFP Discharge" (FEED, A(B,C), FL), THEN ENSURE PMS Computer Point K000 (k001, k002)indicates oncoming RFP flow is greater than 0.6 x 10^6 lbm/hr.
	BOP	15. IF PMS Computer Point K000NSS (K001NSS, K002NSS) was supplied a substitute value in accordance with RT-6-038-800-1, Critical Sensor Point Substitution, when oncoming RFP was shutdown, THEN RESTORE PMS Computer Point K000NSS (K001NSS, K002NSS) in accordance with RT-6-038-800-1, Critical Sensor Point Substitution for oncoming RFP.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1

Event Description: Start C Reactor Feed Pump

Time	Position	Applicant's Actions or Behavior
	BOP	16. IF low pressure (LP) FW heating is in service AND 6th FW Htr is to be placed in service, THEN PLACE 6th FW Htr in service in accordance with S02.1.A, Placing Of Feedwater Heaters In Service (Steam Side).
	BOP	17. ENSURE LIC-006-138 is in "AUTO".
	BOP	18. IF Rx power is greater than 35%, THEN REFER TO S06.8.H, Startup, Shutdown, And Operation Of The Hydrogen Water Chemistry System, for guidance in aligning Hydrogen Water Chemistry System.
	BOP	19. PLACE Seal Injection System for oncoming RFP in "AUTOMATIC" in accordance with S06.7.A, Reactor Feed Pump Seal Injection System Operating Modes.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2

Event Description: Raise Power to 75%

Time	Position	Applicant's Actions or Behavior
	SRO	Directs RO to commence rod withdrawal to raise power to 75%
	RO	Commences rod withdrawal IAW S73.1.A, Normal Operation of the Reactor Manual Control System, Section 4.2 4.2.1 REVIEW Attachment 1 AND VERIFY the control rod to be withdrawn is not channel bow susceptible. 4.2.2 SELECT the control rod to be withdrawn at *0-C603, "Reactor Control Console." 4.2.3 VERIFY correct rod position is indicated on Four Rod Display. 4.2.4 ENSURE drive water pressure is 255 to 265 psid, as indicated on PDI-46-*R602, "Drive Water Differential Pressure Indicator." 4.2.5 PRESS WITHDRAW pushbutton at *0-C603.
	RO	**NOTE** WHEN WITHDRAW pushbutton is depressed,THEN the proper light sequence is: 1. INSERT light Lit AND THEN extinguishes after approximately 0.6 seconds. 2. WITHDRAW light Lit AND THEN extinguishes after approximately 1.5 seconds. 3. SETTLE light Lit AND THEN extinguishes after approximately 6.1 seconds. 4.2.6 VERIFY proper RDCS light sequence. 4.2.7 IF control rod fails to reposition, THEN GO TO Section 4.4. 4.2.8 VERIFY control rod has been withdrawn one notch position at Four Rod Display. 4.2.9 IF control rod is positioned to notch position 48, THEN PERFORM an over travel check per ST-6-107-730-*, Control Rod Coupling Check.

Op-Test No.: 1 Scenario No.: 3 Event No.: 3

Event Description: Stuck Control Rod XX-YY

Time	Position	Applicant's Actions or Behavior
	RO	Identifies CR will not move. Informs SRO.
	SRO	Directs RO to attempt to move rod IAW S.73.1.A, Normal Operation Of The Reactor Manual Control System, Section 4.4, Failure of a Control Rod to Withdrawn (Non Channel Bow Rod)
	SRO	Refers to TS 3.1.3.1 for inoperable immovable rod.
	RO	Refers to S.73.1.A.
	RO	4.4.1 VERIFY no rod blocks exist. 4.4.2 NOTIFY Shift Supervision that control rod failed to move on a withdraw command. NOTE The purpose of step 4.4.3 is to purge airOR crud from the control rod drive mechanism. 4.4.3 IF control rod is at notch position 00, THEN DEPRESS AND HOLD the INSERT pushbutton for approximately 2 minutes OR until the insert flow stabilizes at the normal value. 4.4.4 ATTEMPT a single notch withdraw using WITHDRAW pushbutton.

Op-Test No.: 1 Scenario No.: 3 Event No.: 3

Event Description: Stuck Control Rod XX-YY

Time	Position	Applicant's Actions or Behavior
	RO	4.4.5 IF control rod fails to reposition in step 4.4.4, THEN PERFORM the following: NOTE The evaluation performed by Reactor Engineering must verify the triple notch will not violate any of the following: • Thermal limits·Rated core thermal power • Banked position withdraw sequence • Conservative approach to criticality OR the maintenance of a satisfactory reactor period 1. IF the control rod is capable of performing a triple notch THEN DIRECT Reactor Engineering to perform an evaluation of consequences of an inadvertent triple notch control rod withdrawal. 2. IF an inadvertent triple notch control rod withdrawal is permissible, OR IF control rod notch position is 46, THEN PERFORM the following: a. RAISE drive water pressure to 300 to 350 psid, as indicated on PDI-46-*R602, "Drive Water Differential Pressure Indicator." b. ATTEMPT a single notch withdraw using WITHDRAW pushbutton. c. IF control rod does not reposition, THEN ENTER ON-104, Control Rod Problems. Otherwise, CONTINUE. d. ENSURE drive water pressure is restored to 255 to 265 psid, as indicated on PDI-46-*R602. 4.4.6 VERIFY the control rod has moved one notch position at the Four Rod Display 4.4.7 IF control rod is positioned to notch position 48, THEN PERFORM an over travel check per ST-6-107-730-*, Control Rod Coupling Check.
END OF EVENT 3. PROCEED TO THE NEXT EVENT		

Op-Test No.: 1 Scenario No.: 3 Event No.: 4

Event Description: Loss of Div III DC

Time	Position	Applicant's Actions or Behavior
		A loss of Division III DC will occur, impacting operability of RHR C, CS C, CR Chiller OA, DW Chiller A, CRD A and Div III Breakers. Crew will respond by swapping CRD pumps and CR Chillers IAW E-1FC. The CRS will address Tech Specs 3.5.1.a, 3.5.1.b, 3.8.2.1, and 3.8.3.1 (limiting 8 hr LCO). MED282C
	Crew	Acknowledge numerous Div III DC related alarms. Identify loss of CRD pump, DW Chiller A, and CR Chiller OA. Identify cause as loss of Div III DC.
	SRO	Enters E-1FC, Loss Of Division III Safeguard 125 VDC Bus 1FC.
	BOP	**CAUTION** 1. HV-87-102A, "1A Drywell Chilled Water Discharge Valve," fails closed on loss of 10Y201. 2. IF 1AK111, "1A Drywell Chiller," (CHILLER A) OR OAK112, "Cont. End. Chiller" (CHILLER A) is running,THEN they will not trip AND tripping locally may be required to prevent damage from occurring. IF required, THEN locally TRIP 1AK111, "1A Drywell Chiller" (CHILLER A) by manually tripping D13 BUS-08 Bkr. IF required, THEN locally TRIP 0AK112, "Cont. Encl. Chiller" (CHILLER A) by manually tripping D13 BUS-10 Bkr. IF required, THEN START 1BK111, "1B Drywell Chiller," (CHILLER B) in accordance with S87.1.A, Startup Of Drywell Chilled Water System. ENSURE 0BK112, "Cont. Encl. Chiller" (CHILLER B) AND Control Enclosure HVAC System Loop B Fans are running. ***[Orders 1A Chiller tripped locally, starts 1B DW Chiller]***
	BOP	2.5 Manually INITIATE Main Control Room Chlorine Isolation in accordance with S78.8.A, Manual Initiations Of Control Room Radition Or Chlorine/Toxic Chemical Isolation.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4

Event Description: Loss of Div III DC

Time	Position	Applicant's Actions or Behavior
		2.6 REFER TO GP-8, Primary and Secondary Containment Isolation Verification and Reset (Green Reset AND RESET MSIV Isolation Logic, as required.
	SRO	FOLLOW UP ACTIONS REFER TO LGS Emergency Plan Annex, Table 3-1. **NOTE** 1. The following can not be startedOR tripped from MCR: • 0A MCR Chiller • 1A D/W Chiller • 1A CRD • 1C RHR • 1C Core Spray Pp 2. DIV 3 ADS (Aux Equip Room and MCR panel 10C626) can not be activated. 3. Loss of BUS 1FC results in a loss of instrument panel 10Y201. NOTIFY appropriate personnel to troubleshoot problem prior to restoring power as required.
	BOP	**NOTE** Loss of 10Y201 trips AAND C Aux BoilersAND 1A RWCU Pump due to loss of control power. CHECK 1CD103, "Division III Safeguard 125V DC Battery Charger," for proper operation in accordance with S95.9.A, Routine Inspection Of Station Batteries And Chargers." **NOTE** A North StackAND 1A South Stack Rad Monitors are disabled due to loss of 10Y201. REFER TO RMMS for loss of a North Stack AND 1A South Stack Rad Monitors.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4

Event Description: Loss of Div III DC

Time	Position	Applicant's Actions or Behavior
	SRO	USE Load Analysis to identify affected BUS 1FC AND 10Y201 Loads AND TAKE appropriate LCO actions as follows: REFER TO Unit 1 Tech. Spec. 3.8.2, DC Source, AND determine appropriate actions. REFER TO Unit 2 Tech. Spec. 3.8.3, Onsite Power Distribution Systems, AND determine appropriate action.
		IF Unit 1 RWCU system is out of service due to 1A RWCU Pump trip, THEN REFER TO Unit 1 Tech Spec 3.4.4 AND NOTIFY Chemistry for alternate reactor coolant conductivity sampling.
		CLEAR all faults AND Trips in memory of TIS-25-101C, "NUMAC Leak Detection Monitor."
	SRO	Refer to Tech Specs 3.5.1.a, 3.5.1.b, 3.8.2.1, and 3.8.3.1. Identify 3.8.3.1 as the limiting 8 hour LCO.
END OF EVENT 4. PROCEED TO THE NEXT EVENT		

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Service Water Pump B Trip

Time	Position	Applicant's Actions or Behavior
		The B Service Water Pump trips on motor overload. Crew will respond per S10.7.A, Abnormal Service System Operation. The BOP will start the standby service water pump. MSW488B
	Crew	Acknowledge and respond to alarms. Identify Service Water Pump 1B tripped.
	BOP	ARC-MCR-118-E1, 1B SERVICE WATER PUMP BREAKER TRIP: 1. Dispatch Operator to 122 Plant Services Switchgear to investigate breaker trip condition AND reset relay targets on breaker. 2. Start Backup SW pump 1AP502 OR 1CP502.
	SRO	Enters S10.7.A, Abnormal Service System Operation, Section 4.2, System Flow Reduction to Support One Pump Operation.
	SRO	Directs BOP to start the standby SW pump IAW S10.6.A, Swapping Operating Service Water Pumps.
	SRO BOP	**[Per S10.7.A]:** 4.2.1 MONITOR both running SW pump dP via local indication. ***[Field reports 93 psid pump differential]*** 4.2.2 SELECT loads marked (x) for the appropriate Circ Water Temp from ATTACHMENT 1 initially, unless otherwise directed by SSVN, to achieve the expected required system flow reduction OR until nominally 117 -119 psid is achieved on each pump. ***[CW temp 82°F, uses middle column on Att 1]*** 4.2.3 CHECK with SSV AND ADJUST additional loads as required to maintain Unit. ***[SRO is expected to concur on adjusting cooling to loads as selected on Att. 1]***
	BOP	1. CLOSE 10-*013B(A), "RECW Heat Exchanger SW Outlet Valve," to valve out spare RECW Heat Exchanger.

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Service Water Pump B Trip

Time	Position	Applicant's Actions or Behavior
	BOP	2. CLOSE 13-*011B(A), "RECW Heat Exchanger Outlet Valve," to valve out spare RECW Heat Exchanger.
	BOP	3. THROTTLE 10-*077A(B), "RECW Htx SW Inlet," for in-service RECW heat exchanger AND MONITOR RECW heat exchanger outlet temp to ensure temperature does not exceed 100°F.
		NOTE 1. TECW Train unavailability limits can be obtained from TECW System Manager. 2. Actions making systems unavailable should be entered into Ops Logs. 4. IF TECW train unavailability limits will not be exceeded, THEN CLOSE 10-*033A(B), "TECW Htx SW Outlet Valve," to valve out spare TECW Heat Exchanger Otherwise, MARK this step N/A. **[*TECW System Manager reports unavailability limits WILL be exceeded. SRO marks the step N/A.*]**

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Service Water Pump B Trip

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**[Per S10.7.A]:** 6. SECURE Fuel Pool SW Booster pumps per S10.8.A, Fuel Pool Service Water Booster Pump Startup, Normal Operation, And Shutdown, AND MONITOR fuel pool temperature to ensure temperature does not exceed 135°F. **[Per S10.8.A]:** 4.6.1 IF the pump being shutdown is desired to windmill, THEN 10-*145A(B,C), "Fuel Pool SW Booster PP Discharge," will remain open. Otherwise, CLOSE 10-*145A(B,C), "Fuel Pool SW Booster PP Discharge ," for the desired pump. 4.6.2 STOP *A(B,C)P212, "Fuel Pool SW Booster Pump" (PUMP). 4.6.3 ENSURE 10-*137A(B,C), "Fuel Pool Heat Exchanger SW Outlet Valve," open for each heat exchanger to be placed in service. 4.6.4 CLOSE 10-*137A(B,C), "Fuel Pool SW Heat Exchanger Outlet Valve," for the heat exchanger to be removed from service. 4.6.5 THROTTLE 10-*136A(B,C), "Fuel Pool Heat Exchanger SW Inlet Valve," to maintain the following: • FPCC Heat Exchanger inlet temperature from 70 EF to 125 EF using TE-53-*10 "Fuel Pool Htx Inlet" on XI-36-*01(2) at panel *0C614. • Pump delta pressure between 21 to 30 psid. 4.6.6 IF required, THEN REPEAT this section to secure remaining Fuel Pool SW Booster pumps.
	BOP RO	**[Per S10.7.A]:** 7. CLOSE TV-C-010-*51B(A), "Drywell Chiller Service Water Supply," OR 10-*110A(B), "SW Inlet to Drywell Chiller Valve," to secure flow to the non-operating Drywell Chiller. 8. PERFORM the following on operating chiller: a. THROTTLE TV-C-010-*51A(B), "Drywell Chiller Service Water Supply," OR 10-*110A(B), "SW Inlet to Drywell Chiller." b. MAINTAIN condenser pressure below 180 psi.

Op-Test No.: 1 Scenario No.: 3 Event No.: 5

Event Description: Service Water Pump B Trip

Time	Position	Applicant's Actions or Behavior
	BOP	9. SECURE condenser area AND condensate pump room unit coolers as required (100 gpm per unit cooler) AND MONITOR temperatures. 10. THROTTLE 10-*022, "Recombiner After Cond SW Inlet," AND MAINTAIN offgas outlet temperature below 200°F on BOP DAS Monitor XR-036-*01(2) point TE-10-*15.
	BOP	**[Per S10.6.A]:** 4.3 PERFORM the following checks at idle *A(B,C)P502, "Service Water Pump," to be started: **[*Communicates with EO*]** 4.4 CLOSE idle 10-*040A(B,C), "SW Pump Discharge." 4.5 PERFORM the following sequence to open idle 10-*045A(B,C), "SW Pump Discharge Check Valve": **[*Coordinates with EO to vent pump locally*]** **CAUTION** 1. IF SW Pump discharge valve is not opened within three minutes after pump start,THEN pump overheating resulting in pump case distortion may occur. 2. IF SW pump discharge valve is not fully opened (i.e. is left throttled), THEN damage to valve may occur. 4.6 START idle *A(B,C)P502, "SW Pump" (PUMP), at *0C655. 4.6 Fully OPEN 10-*040A(B,C), "SW Pump Discharge." **[*Field operator opens discharge valve*]** 4.7 CLOSE 10-*310 (*309, *308), after discharge check valve opens. 4.8 VERIFY motor current for started pump less than 300 amps.
END OF EVENT 5. PROCEED TO EVENT 6		

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
		SRV 'J' fails open on mechanical drift of lift setpoint and then valve sticks open. The crew will respond IAW OT-114, Inadvertent Opening of a Relief Valve. The BOP will reduce pressure set to 900 psig to attempt SRV reseat. Actions will not reseat SRV. The crew will initiate suppression pool cooling and perform a GP-4 shutdown. Manual scram pushbuttons and mode switch will not shutdown reactor. Scram will be initiated per T-101 using ARI. MAD145E
	CREW	Respond to alarms.
	SRO BOP RO	ARC-MCR-110-B1, SRV / HEAD VENT VALVE LEAKING: 1. Check XI-36-101 OR XI-36-102 under the SRV mimic on 10C614 for cause of alarm. 2. IF an SRV is leaking, THEN refer to OT-114, Inadvertent Opening of a Relief Valve. 3. IF head vent line caused alarm, THEN verify head vent valves HV-41-1F001, 2 are closed. 4. Refer to RT-6-041-490-1, Attachment 2: SRV Leakage Determination, Monitoring Process.
	SRO BOP RO	ARC-MCR-110-B2, SAFETY RELIEF VALVE OPEN: 1. Check SRV indication on 10C626 to determine which SRV has lifted. 2. IF the SRV opening was inadvertent, THEN refer to OT-114, Inadvertent Opening of a Relief Valve. 3. Check for loss of power to 1AY185 ckt 2.
	SRO	Enters OT-114, Inadvertent Opening of a Relief Valve.
	SRO BOP	2.0 IMMEDIATE OPERATOR ACTIONS 2.1 PLACE both loops of Suppression Pool cooling in service.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**[Per S51.8.A, Suppression Pool Cooling Operation (Startup And Shutdown) And Level Control]:** START selected RHR Service Water loop per S12.1.A, RHR Service Water System Startup. **[Per S12.1.A]:** 4.1.4 OPEN HV-51-*F014A(B), HEAT EXCHANGER INLET. 4.1.5 Throttle OPEN HV-51-*F068A(B) for 18 to 20 seconds. 4.2 MANUAL START OF RHRSW **CAUTION** 1. IF (*A) HV-51-*F068A(B) is allowed to go full open during one pump per loop operationTHEN runout of RHRSW Pump may occur. 2. Starting a pump more than twice in one hour may damage pump motor. 4.2.1 START 0A(B,C,D)V543, Spray Pond Room Fan as follows: 1. IF 'A' Loop pump (0A(C)-P506) is to be placed in service, THEN ENSURE 0A-V543 OR 0C-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681. 2. IF 'B' Loop pump (0B(D)-P506) is to be placed in service, THEN ENSURE 0B-V543 OR 0D-V543, Spray Pond Pump Room Fans, in "RUN" at 00C681. 4.2.2 START 0A(B,C,D)P506, PUMP. 4.2.3 IF not directed by SE-10 to operate RHRSW, THEN THROTTLE HV-51-*F068A(B) to the maximum obtainable position without exceeding 11,000 gpm on FI-51-*R602A(B) while maintaining pump disch pressure (PI-12-001A-1(B)) between 75 psig to 85 psig. 4.1.12 Verify [amps < 92, disch press > 75 but < 120 psig.] 4.2.13 Notify chemistry

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	BOP	**[Per S51.8.A]** ENSURE HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION), closed. ENSURE HV-51-*F006A(B), "Shutdown Cooling Suction" (SUCTION), closed ENSURE alignment of the following valves as indicated: • HV-51-*F047A(B) "RHR Heat Exchanger Shell Side Inlet"(INLET) - OPEN • HV-51-*F003A(B) "RHR Heat Exchanger Shell Side Outlet"(OUTLET) - OPEN • HV-51-*F004A(B) "Suppression Pool Suction"(SUCTION) - OPEN DISPATCH Equipment Operator to inspect breaker for Trips OR Flags prior to pump start unless a plant transient requires a start of pump. **[*Mark step as N/A*]** START *A(B)P202, RHR Pump (PUMP). OPEN HV-51-*F024A(B), "RHR Pump Full Flow Test Return" (SUPP POOL CLG), AND PERFORM the following: **NOTE** 1. Flow rate is throttled to less than 8500 gpm to prevent condensate transfer from entering Suppression Pool. 2. Throttling flow rates to less than 8000 gpm may induce cavitation OR damage to HV-51-*F024A(B). 1. MAINTAIN flow indicated on FI-51-*R603A(B), "RHR Loop Flow," between 8000 to 8500 gpm. 2. IF greater than 8500 gpm required to maximize cooling, THEN MINIMIZE amount of time to reduce amount of water added to Suppression Pool. CLOSE HV-C-51-*F048A(B), HEAT EXCH BYPASS.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	BOP	MONITOR Suppression Pool temperature on SPOTMOS OR TE-51-*04A(B,C,D) "RHR Pump A(B,C,D) Suction" on XI-36-*01(2) at panel *0C614 AND PERFORM the following: 1. MAINTAIN temperature below 90°F. 2. IF Suppression Pool temperature is below 65°F, THEN CONSIDER securing system. 3. IF RHRSW inlet temperature is above 56° F, AND Suppression pool temperature is lowered to within 3° F of RHRSW inlet temperature, THEN SECURE suppression pool cooling. 4. IF Suppression Pool temperature cannot be maintained below 90°F, THEN PLACE another RHR loop in service to provide additional cooling as directed by SSVN.
	SRO BOP RO	**[Per OT-114]:** 2.2 IF Suppression Pool temperature reaches 110 °F, THEN immediately PERFORM a rapid plant shutdown per GP-4 (Rapid Plant Shutdown to Hot Shutdown) AND PERFORM the following: 2.2.1 PLACE Mode Switch in "SHUTDOWN" AND ENTER T-100 OR T-101, as applicable AND T-102 AND EXECUTE concurrently. 3.0 FOLLOW-UP ACTIONS 3.1 CONFIRM SRV is stuck open by observing: • Generator load reduction OR bypass valve closure. • SRV/HEAD VENT VALVE LEAKING (*10-B-1) OR SAFETY RELIEF VALVE OPEN (*10-B-2) alarm. • Relief valve position lights. • Steam flow/Feed flow mismatch. • Rising Suppression Pool temperature. • Rising tailpipe temperature on XI-036-*01, "Primary Monitor BOP DAS" OR XI-036-*02, "Backup Monitor BOP DAS" under the SRV mimic on *0C614.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	BOP	3.2 REDUCE turbine inlet pressure to 900 psig. 3.2.1 DEPRESS the PRESSURE SETPOINT SELECTOR DECREASE pushbutton at panel *0C653. 3.2.2 MONITOR PI-01-*03 MN STM for 900 psig.
	SRO	3.3 IF Suppression Pool temperature is greater than or equal to 95°F, THEN PERFORM ST-6-060-390-*, "Suppression Pool Temperature Check" per Tech Spec. 4.6.2.1. 3.5 IF SRV remains open after turbine inlet pressure reaches 900 psig, THEN PERFORM rapid plant shutdown per GP-4, Rapid Plant Shutdown to Hot Shutdown.
	SRO	**NOTE** During rapid power reductions, a Main Steam Line Rad Monitor Hi alarm may annunciate due to elevated hydrogen concentrations. (CM-1) 3.6 IF Main Steam Line Rad Monitor Hi alarm annunciates, THEN ENTER T-103 AND ON-102 AND EXECUTE concurrently. (CM-1)

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	SRO BOP	**NOTE** IF SRV will not close during shutdown,THEN condensate injection must be controlled prior to reactor pressure decreasing below condensate discharge pressure to avoid flooding the vessel. This could result in SRV downcomer damage due to two-phase discharge. 3.7 IF SRV will not close, THEN PERFORM the following during shutdown: TRANSFER steam users to aux. steam as soon as possible. MINIMIZE unnecessary reactor feed pump operation. ENSURE condensate injection is controlled prior to depressurizing below condensate discharge pressure (nominal 600 psig) by closing the following valves as necessary: • HV-06-*08A(B,C), "RFP Discharge" (DISCH). • HV-06-*38A, "*A RFP Dis Shutoff Vlv Bypass". CONSIDER MSIV closure prior to exceeding cool down rate. ATTEMPT SRV closure by pulling fuses for the appropriate SRV using Attachment 1 for Unit 1, AND Attachment 2 for Unit 2.
	SRO	3.8 Within 2 hours of discharge of steam to the Suppression Chamber from any relief valve, PERFORM ST-6-060-760-* to cycle each downcomer vacuum breaker through at least one complete cycle of full travel.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	SRO BOP	[*Enters GP-4*] 3.1 TRANSFER house loads to startup buses in accordance with S91.6.B, Transferring House Loads To S/U Buses. PER S91.6.B IF transferring 11(12) AUX BUS to the 10(20) S/U BUS, THEN PERFORM the following: 1. PLACE 225-10102(06)/SS, "Sync Switch," to "ON." 2. VERIFY INCOMING AND RUNNING voltmeter read approximately 110V. NOTE: 10 Startup Bus Voltage may be adjusted per S35.0.J, No. 10 Transformer Tap Changer Control (Remote) AND 20 Startup Bus Voltage may be adjusted per S35.0.H, #20 Regulating Transformer Tap Change Control (Remote-Hand). 3. IF INCOMING/RUNNING voltages differ by greater than 8 volts, THEN ADJUST Startup Bus Voltage to obtain less than 8 volts difference. 4. CLOSE AND HOLD 252-10102(06)/CS, 10/11(20/12) FEED. NOTE: With the Offsite Source Breaker closed and its handswitch in the "Normal After Close" position, the Aux Feed Breaker will auto-open. 5. WHEN 252-10102(06)/CS, 10/11(20/12) FEED, indicates closed, THEN RELEASE 252-10102/CS. 6. VERIFY 252-10113(213)/CS, AUX FEED, open. 7. PLACE 225-10102(06)/SS, "Sync Switch," to "OFF." 8. ENSURE 252-10113(213)/CS, AUX FEED, in "NORMAL AFTER TRIP."
	RO BOP	[GP-4] 3.2 REDUCE Rx Recirculation System flow to minimum.

Op-Test No.: 1 Scenario No.: 3 Event No.: 6

Event Description: An SRV Fails Open, Manual Reactor Scram Requires ARI

Time	Position	Applicant's Actions or Behavior
	SRO RO	3.2.1 WHEN core flow reduces to nominal 60%, THEN immediately manually SCRAM Rx AND ENTER T-100, Scram/Scram Recovery OR T-101, RPV Control, as applicable.
	RO	3.3 ENSURE Reactor Mode Switch is locked in "SHUTDOWN" within one hour following Rx scram AND key is in possession of Shift Supervision (SSV).
	SRO	Enters T-101, RPV Control, on "SCRAM condition with power above 4% or unknown". Directs 'T' procedure activities.
	RO	Inserts SRMs AND IRMs (RC-6)
CT	RO	Manually initiate RRCS AND ensure ARI initiation (T-214 as necessary) (RC/Q-5) **CRITICAL TASK (T-101.7)**
	BOP	Ensure turbine trip AND gen lockout. Continue at step RC/Q-12 (RC/Q-4).
	SRO	Exits RC/Q leg.
	RO	Restore AND maintain RPV level between +12.5" AND +54" (RC/L-4).
	BOP	Depressurize RPV within 100°F/hr using ST-6-107-640-* bypassing PCIG Isol logic per GP-8 as necessary (RC/P-16).
PROCEED TO THE NEXT EVENT		

Op-Test No.: 1 Scenario No.: 3 Event No.: 7

Event Description: Instrument Line Break in Drywell

Time	Position	Applicant's Actions or Behavior
	SRO	Enters T-102 on "DW press above 1.68 psig".
	SRO	Enters OT-101, High Drywell Pressure (PC/P-1).
	BOP	Maximize DW cooling bypassing isol per GP-8 as necessary (DW/T-5).
	BOP RO	Align an RHR loop for drywell sprays.

Op-Test No.: 1 Scenario No.: 3 Event No.: 7

Event Description: Instrument Line Break in Drywell

Time	Position	Applicant's Actions or Behavior
	BOP	**[OT-101 Actions]:** 3.11 IF high Drywell pressure persists, THEN ISOLATE the following: 3.11.1 ENSURE the following Main Steam Line sample valves closed: • HV-41-*F084, DRAIN SAMPLE INBOARD • HV-41-*F085, DRAIN SAMPLE OUTBOARD 3.11.2 ENSURE the following Recirc. sample valves closed: • HV-43-*F019, INBOARD • HV-43-*F020, OUTBOARD 3.11.3 STOP RWCU System AND ENSURE the following valves closed: • HV-C-44-*F033 using HC-44-*R606, FL • HV-44-*F001, INBOARD • HV-44-*F004, OUTBOARD • HV-44-*F100, BOTTOM HEAD DRAIN • HV-44-*F105, INLET FLOW 3.11.4 ENSURE Main Steam Line drains closed: • HV-41-*F016, STEAM DRAINS INBOARD • HV-41-*F019, STEAM DRAINS OUTBOARD 3.11.5 WHEN time permits, THEN PERFORM S44.2.A.

PROCEED TO THE NEXT EVENT

Op-Test No.: 1 Scenario No.: 3 Event No.: 8

Event Description: RHR Pump Suppression Pool Suction Line Rupture

Time	Position	Applicant's Actions or Behavior
	SRO	Enter T-103, Secondary Containment Control, on "Room flooding alarm condition for areas in Table SCC-1".
Booth Operator: **Report back as EO, to inform Control Room of location of visually observed flooding.**		
CT	BOP	Isolate all systems discharging into area per T-250 unless required to suppress fire OR required to be operated by the TRIP procedure (SCC/L-4). Stops RHR Pumps B and D. Closes RHR Pump B and D Suction Valves F004B, F004D **CRITICAL TASK (T-103.4)**
	BOP	Spray Supp Pool per T-225 (PC/P-5). Aligns RHR Loop A for suppression pool spray.

TERMINATE THE SCENARIO WHEN ALL THE FOLLOWING ARE MET:

- **RHR B SUPPRESSION POOL SUCTION VALVE F004B IS CLOSED**
- **RHR A LOOP IS IN SERVICE PROVIDING SUPPRESSION POOL SPRAY**