

Scenario A

SHIFT TURNOVER SHEET

UNIT 1 PLANT CONDITIONS:

- OPCON 1
- 95% Reactor Power

INOPERABLE / OUT OF SERVICE EQUIPMENT:

- During surveillance testing, I&C has determined that the "A" Chlorine Detector has failed downscale. The required regulatory action (Technical Specification) has not been identified for this failed instrument

ACTIVITIES PLANNED FOR THIS SHIFT:

- Determine required regulatory action for the failed "A" Chlorine Detector

Facility: LGS Scenario No.: A Op-Test No.: _____

Examiners: _____ Operators: _____

Description: This scenario will begin with the CRS required to evaluate Technical Specifications for the failure of a single chlorine detector. The crew will then be requested by the Power System Director to raise reactive load on the generator to 250 MVAR. At approximately 200 MVAR, a loss of isophase bus cooling will occur. The crew is expected to enter and execute ON-101, and will be required to reduce power until generator output current is less than 20,000 amps. During the power reduction, an SRV will fail open. The crew is expected to enter and execute OT-114, and the crew will be required to scram the reactor. The reactor will fail to scram, and the crew must implement T-101 and T-117 to mitigate the ATWS. T-117 will require the crew to intentionally lower level twice (to below -50 inches, and to -161 inches). After the second lowering of level, when the crew has stabilized level in the band of -186 to -161 inches, the scenario may be terminated.

Initial Conditions: 95% Power, OPCON 1, "A" Chlorine Detector is failed downscale

Turnover: 95% power, OPCON 1. During surveillance testing, I&C has determined that the "A" chlorine detector has failed downscale. The required regulatory action (Technical Specification) has not been identified for this failed instrument.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(PRO/CRS)	Raise Main Generator Reactive Load
2	118 SERVICES, I-5	C(PRO/CRS)	Loss of Isophase Bus cooling due to loss of power to running fan, and failure of the standby fan
2	N/A	R (ALL)	Power reduction to less than 20,000 amps generator output
3	MAD141C MAD141B	I (ALL)	SRV fails open electrically, and sticks open
4	MRP029C MRP407C	M (ALL)	ATWS (electrical)
4	MSL559	C (SRO/RO)	Standby Liquid Control Rupture
4	MCR411B	C (ALL)	CRD Flow Control Valve fails closed

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

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> ■ Perform OTM 7.1 Checklist
	<ul style="list-style-type: none"> ■ Reset Simulator to IC-52
	<ul style="list-style-type: none"> ■ Take out of FREEZE and ensure the following: <ul style="list-style-type: none"> - Reactor power is approximately 95% - "A" chlorine detector is downscale - All other annunciator windows are clear
	<ul style="list-style-type: none"> ■ Load Scenario "2001 LOT NRC Scenario A" from floppy disk labeled "2001 LOT NRC SCENARIOS" using A: drive and ensure the following malfunctions are loaded: <ul style="list-style-type: none"> • AI78-016A chlorine detector failed downscale (active immediately) • MAD141B, "1E" SRV fails stuck (active immediately) • MSL559, SLC injection line rupture inside the drywell (active immediately) • MRP029C, RPS fails to scram channel "A" (active immediately) • MRP407C, Both RRCS divisions ARI fails to initiate (active immediately) • Annunciator window I-5 on 118 SERVICES (UNIT 1 ISOPHASE BUS COOLER TROUBLE) to "ON" (active three minutes after trigger 1 – generator reactive load output reaches 200 MVAR) • MAD141C, "1E" SRV fails open electrically (active one minute after trigger 2 - main generator current less than 25,000 amps) • MCR411B, Control rod drive flow control valve "B" fails closed (active 10 minutes after trigger 3 – reactor mode switch to shutdown)
	<ul style="list-style-type: none"> ■ Reset any annunciators that should not be present

B. INSTRUCTIONS FOR SIMULATOR OPERATOR**EVENT 1: RAISE MAIN GENERATOR REACTIVE LOAD TO 250 MVAR**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ After the crew takes the shift and determines the Tech. Spec. action for the failed chlorine instrument, provide the crew with a phone call from the Power System Director requesting LGS Unit 1 to raise reactive load output to 250 MVAR. ■ Ensure trigger 1 activates when reactive load is increased above 200 MVAR

EVENT 2: LOSS OF ISOPHASE BUS COOLING / POWER REDUCTION TO LESS THAN 20,000 GENERATOR AMPS

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If Floor Supervisor/Equipment Operator are contacted, respond 3 minutes later that the running isophase bus cooler fan ("A") has lost power, and the standby fan ("B") has failed to automatically start. You are continuing to attempt to start the "B" fan. ■ If WWM / I&C / Floor Supervisor are contacted for investigation, inform crew a TRT (Troubleshooting, Rework, and Testing) form will be generated and routed to the MCR for approval.

EVENT 3: "1E" SRV FAILS OPEN (ELECTRICALLY), GP-4 (RAPID PLANT SHUTDOWN TO HOT SHUTDOWN)

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If requested to pull fuses for "1E" SRV per OT-114, wait 7 minutes, then toggle remote function RAD208 to "OUT", then report to the MCR that the fuses have been pulled for the "1E" SRV per OT-114.
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support

**EVENT 4: ELECTRICAL ATWS / STANDBY LIQUID CONTROL RUPTURE /
CRD FLOW CONTROL VALVE FAILURE**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<p>■ If requested to perform the following T-200 procedures, then respond as follows:</p> <p>T-209 – this will not be performed during this scenario</p> <p>T-214 – wait 5 minutes, then report that T-214 has been performed in the AER</p> <p>T-215 – this will not be performed during this scenario</p> <p>T-216 – this will not be performed during this scenario</p> <p>T-221 – wait 11 minutes, then toggle Remote Function RTR051 to BYPASS. Then report to the MCR that T-221 has been completed in the AER.</p> <p>T-270 – wait 6 minutes, then load scenario “T-270 Terminate and Prevent.scn”, (located in Ops Training Scenarios, “Remotes” file). After the remote functions are all active, then report to the MCR that T-270 has been completed in the AER.</p>
	<p>■ If requested, after 6 minutes,</p> <p>Reset shunt trips per SE-10-1 by loading scenario “SE-10 Shunt Trip Reset.scn (located in Ops Training Scenarios, “Remotes” file). After the remote functions are all active, then report to the MCR that shunt trip resets have been completed per SE-10-1.</p> <p>Reset RHRSW Radiation Monitor and RE Area Rad Monitors by loading scenario RHRSW and ARM Resets.scn (located in Ops Training Scenarios, “Remotes” file), then report - RHRSW radiation monitors and RE ARMs have been reset.</p>
	<p>■ If WWM / Floor Supervisor / EO contacted to investigate failure Standby Liquid Control failure, wait 5 minutes, then report that there are no indications of a problem at the SLC skid on RE 283 elevation.</p>
	<p>■ If WWM / Floor Supervisor / EO contacted to investigate failure of the “1B” CRD flow control valve, then respond that there is a leak on the air line going into the “1B” CRD flow control valve.</p> <p>■ If requested to swap to the “1A” CRD flow control valve, then wait 5 more minutes, then toggle remote function RCR020 to “A”. Then report to the MCR that the “1A” CRD flow control valve has been placed in service.</p>

Op-Test No. _____

Scenario No. A Event No.: 1

Event Description:

Raise Main Generator Reactive Load to 250 MVAR

Time	Position	Applicant's Actions or Behavior
	CRS	Evaluate Tech Specs for the failed "A" Chlorine Detector, and determine that the inoperable chlorine detection subsystem must be restored to OPERABLE status within 7 days, or within the next 6 hours, initiate and maintain operation of at least one control room emergency filtration system subsystem in the chlorine isolation mode of operation.
	CRS	Evaluate the "Generator Capabilities at Various Hydrogen Pressures Curve", located in GP-5, Power Operation, to determine that the generator can supply 250 MVAR to the grid
	PRO	Raise generator reactive output to 250 MVAR using the Main Generator Auto Voltage Regulator potentiometer

Op-Test No. _____

Scenario No. A Event No.: 2

Event Description:

Loss of Isophase Bus Cooling

Time	Position	Applicant's Actions or Behavior
	PRO	Respond to Isophase Bus Cooler Trouble alarm
	CRS	Direct floor operators to investigate the Isophase Bus Cooler Trouble alarm
	CRS	Enter ON-101, Loss of Isophase Bus Cooling
	CRS	Direct the PRO to reduce generator reactive output to 0 MVAR
	PRO	Reduce generator reactive load to 0 MVAR using the Main Generator Auto Voltage Regulator potentiometer
	CRS	Direct power reduction to 20,000 generator amps
	RO/PRO	Reduce recirc. MG set speed to lower power to 90% per Reactor Maneuvering Shutdown Instructions
	RO	Insert control rods per RMSI to reduce power to 20,000 amps

Op-Test No. _____	Scenario No. <u> A </u>	Event No.: <u> 3 </u>
Event Description:		
<u>"1E" SRV Fails Open Electrically, OT-114 (Inadvertent Opening of a Relief Valve)</u>		
Time	Position	Applicant's Actions or Behavior
	CREW	Recognize and report "1E" SRV has lifted
	RO/PRO	Confirm SRV open using at least two of the following: <ul style="list-style-type: none"> • Generator load reduction OR bypass valve closure • SRV/HEAD VENT VALVE LEAKING (110 B-1) or SAFETY RELIEF VALVE OPEN (110 B-2) alarms • Relief valve position lights • Steam flow/Feed flow mismatch • Rising suppression pool temperature • Rising tailpipe temperature on XI-36-101(BOP DAS monitor) on 10C614
	CRS	Enter OT-114, Inadvertent Opening of a Relief Valve
	CRS	Direct the PRO to place 2 loops of suppression pool cooling in service
	PRO	Place 2 RHRSW pumps in service (one through each RHR HX)
	PRO	Start the "A" and "B" RHR pumps in the suppression pool cooling mode, establishing 8000-8500 gpm per pump
	CRS	Direct the RO to reduce turbine inlet pressure to 900 psig
	RO	Reduce turbine inlet pressure to 900 psig by reducing EHC pressure setpoint
	CRS	Enter GP-4, Rapid Plant Shutdown to Hot Shutdown
	CRS	Direct fuses for "1E" SRV pulled per OT-114
	CRS	Direct PRO to perform S91.6.B, to transfer house loads to offsite power
	PRO	Transfer house loads per S91.6.B
	CRS	Direct the RO/PRO to reduce recirc. MG set speed to minimum
	RO/PRO	Reduce recirc. MG set speed to minimum
	CRS	Direct the RO to scram the reactor at 50% core flow

Op-Test No. _____

Scenario No. A Event No.: 3

Event Description:

"1E" SRV Fails Open Electrically, OT-114 (Inadvertent Opening of a Relief Valve)

Time	Position	Applicant's Actions or Behavior
	RO	Manually scram the reactor using the RPS arm and depress pushbuttons
	RO	Recognize and report to the CRS that the reactor failed to scram

Op-Test No. _____

Scenario No. A Event No.: 4

Event Description:

Electrical ATWS / Standby Liquid Control Rupture / CRD Flow Control Valve Failure

Time	Position	Applicant's Actions or Behavior
	CRS	Enter T-101, RPV Control, due to the failure to scram
	CRS	Direct the RO place the reactor mode switch to SHUTDOWN
	RO	Place the reactor mode switch to SHUTDOWN
	CRS	Direct the RO to insert SRMs and IRMs
	RO	Insert SRMs and IRMs
	CRS	Direct the RO to manually initiate RRCS
	RO	Manually initiate RRCS using the arm and depress pushbuttons
	CRS	Direct the performance of T-214, Manual Initiation of ARI
	CRS	Direct trip of both reactor recirculation pumps
	PRO	Trip both reactor recirculation pumps at least 10 seconds apart
	CRS	Direct the RO to manually insert control rods with the RWM bypassed
	RO	Bypass the Rod Worth Minimizer and manually insert control rods
	CRS	Direct the performance of T-215, De-energization of Scram Solenoids, and T-216, Manual Isolation and Vent of Scram Air Header
	CRS	Enter T-117, Level/Power Control
	CRS	Direct inhibiting auto ADS
	PRO	Inhibit auto ADS
	CRS	Direct performance of T-221, Defeat of MSIV/PCIG Isolation
	CRS	Direct terminate and prevent injection per T-270 until RPV level is below -50 inches
	PRO/RO	Perform T-270, Terminate and Prevent Injection to the RPV
	RO	Re-initiate injection to maintain RPV level less than -50 inches
	CRS	Enter T-102, Primary Containment Control when suppression pool

Op-Test No. _____

Scenario No. A Event No.: 4

Event Description:

Electrical ATWS / Standby Liquid Control Rupture / CRD Flow Control Valve Failure

Time	Position	Applicant's Actions or Behavior
		temperature reaches 95° F.
	CREW	Recognize SLC injection line rupture
	CRS	Direct securing all SLC pumps
	RO	Secure all 3 SLC pumps
	CRS	Direct performance of T-209
	RO	Recognize CRD flow control valve failed closed
	CRS	Direct investigation of CRD flow control valve failure, and swap to alternate flow control valve, <u>OR</u> close CRD pressure control valve to re-establish adequate drive water pressure
	CRS	When suppression pool temperature reaches 110° F, direct T-270, Terminate and Prevent Injection into the RPV
	RO/PRO	Perform T-270, Terminate and Prevent Injection into the RPV.
	RO	When re-injection criteria is met, then re-inject to the RPV with feedwater to maintain level between -186 and the level to which it was lowered
	CRS	Enter SE-10, LOCA when LOCA signal occurs (-129 inches)
	PRO	Reset instrument buses following LOCA signal

CRITICAL TASKS

1. Terminate and prevent injection into the RPV per T-270 (RPV level is lowered below –50 inches by terminating and preventing injection into the RPV per T-270)
2. Terminate and prevent injection into the RPV per T-270 (RPV level is intentionally lowered by terminating and preventing injection into the RPV per T-117 step LQ-11, when conditions of step LQ-14 are met)
3. Maintain RPV level between –186 inches and the level to which it was intentionally lowered (RPV level maintained between –240 inches and –50 inches)

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. RPV level is being maintained between –186 and the level to which it was lowered.

Scenario B

SHIFT TURNOVER SHEET

UNIT 1 PLANT CONDITIONS:

- OPCON 1
- 90% Reactor Power

INOPERABLE / OUT OF SERVICE EQUIPMENT:

- "1B" EHC pump is blocked out of service for maintenance

ACTIVITIES PLANNED FOR THIS SHIFT:

- The crew is directed to place both H₂/O₂ analyzers in service for the weekly reading per S57.1.B, Placing Hydrogen and Oxygen Analyzers in Service.

Facility: LGS Scenario No.: B Op-Test No.:

Examiners: _____ Operators: _____

Description: This scenario will begin with the crew placing the hydrogen and oxygen analyzers in service per S57.1.B (Placing Hydrogen and Oxygen Analyzers in Service) for the weekly surveillance. Shortly after placing the analyzers in service, an inadvertent isolation of the instrument gas system will occur. The crew is expected to diagnose that the isolation was inadvertent, bypass the isolation, and restore instrument gas flow. The CRS should reference Technical Specifications for actions required as a result of the isolation bypass. A loss of D14 safeguard bus will then occur, with the crew expected to enter and implement E-D14 (Loss of D14 Safeguard Switchgear). The "A" reactor recirculation pump will then experience a field breaker trip, requiring entry into OT-112 (Recirculation Pump Trip), and requiring a power reduction to 33%. During the power reduction, a recirculation loop rupture will occur, requiring scram and entry into T-101 and T-102. Eventually, a LOCA signal will occur, requiring performance of SE-10 (LOCA). When parameters cannot be maintained on the SAFE side of the Pressure Suppression Pressure curve in T-102, then an emergency blowdown will be required per T-112 (Emergency Blowdown).

Initial Conditions: 90% Power, OPCON 1, "1B" EHC pump blocked and out of service

Turnover: 90% Power, OPCON 1. The "1B" EHC pump is blocked out of service for maintenance. The crew is directed to place both H2/O2 analyzers in service for weekly reading per S57.1.B, Placing Hydrogen and Oxygen Analyzers in Service.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(PRO/CRS)	Place H2/O2 analyzers in service for weekly reading
2	MNS160A	I(PRO / CRS)	Inadvertent Isolation of Instrument Gas (Tech. Spec)
3	MED263B	C (ALL)	Loss of D14 Safeguard Bus
4	MRR436A	C (ALL)	"1A" Recirc Pump Generator Field Breaker Trip
4	N/A	R (ALL)	Reduce Power to 33% with Control Rods
5	MRR440A	M (ALL)	Recirc Loop Rupture
5	MRH171A	I (PRO / CRS)	"1A" RHR Pump Fails to Start
5	MRH528B	C(PRO)	HV51-1F016B, "B" RHR Outboard Drywell Spray Valve Fails Closed

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

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> ■ Perform OTM 7.1 Checklist
	<ul style="list-style-type: none"> ■ Reset Simulator to IC-53
	<ul style="list-style-type: none"> ■ Take out of FREEZE and ensure the following: <ul style="list-style-type: none"> - Reactor power is approximately 90% - "1B" EHC pump indicating lights are all off, and an info tag is hung stating that the pump is blocked for maintenance - All other annunciator windows are clear
	<ul style="list-style-type: none"> ■ Load Scenario "2001 LOT NRC Scenario B" from floppy disk labeled "2001 LOT NRC SCENARIOS" using A: drive and ensure the following malfunctions are loaded: <ul style="list-style-type: none"> • MRH171A, "1A" RHR pump fails to start (active immediately) • MRH528B, HV51-1F016B ("B" RHR Outboard Drywell Spray Valve) fails closed (active immediately) • "1B" Main Turbine EHC Pump indicating lights "ALLOFF" • "1B" Main Turbine EHC Pump 1BP113 "ALLOFF" • MNS160A, Inadvertent isolation of Instrument Gas (active 3 minutes after the 10S205 H2/O2 analyzer is placed to "ANALYZE") • MED263D, Loss of D14 Safeguard Bus (active 11 minutes after the 10S205 H2/O2 analyzer is placed to "ANALYZE") • MRR436A, "1A" Recirc Pump Generator Field Breaker Trip (active 21 minutes after the 10S205 H2/O2 analyzer is placed to "ANALYZE") • MRR440A, 4% Recirc Loop Rupture (active when control rod 46-47 is selected, with a ramp time of 8 minutes)
	<ul style="list-style-type: none"> ■ Reset any annunciators that should not be present

B. INSTRUCTIONS FOR SIMULATOR OPERATOR**EVENT 1: PLACE H2/O2 ANALYZERS IN SERVICE**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support ■ Ensure trigger 1 activates when 10S205 analyzer function selector switch is placed to "ANALYZE".

EVENT 2: INADVERTENT ISOLATION OF INSTRUMENT GAS

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If Equipment Operator / Floor Supervisor sent to investigate the cause of the inadvertent isolation, wait 5 minutes, then report that you cannot determine the reason for the isolation. ■ If WWM / I&C / Floor Supervisor are contacted to investigate the cause of the inadvertent isolation, then inform the crew that a TRT (Troubleshooting, Rework, and Testing) form will be generated and routed to the MCR for approval.

EVENT 3: LOSS OF D14 SAFEGUARD BUS

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If Equipment Operator / Floor Supervisor sent to investigate the cause of the loss of D14 safeguard bus, wait 5 minutes, then report that there is a trip of the "B" phase bus overcurrent trip indicated at the switchgear. ■ If WWM / I&C / Floor Supervisor are contacted to investigate the cause of the loss of D14 safeguard bus, then inform the crew that a TRT (Troubleshooting, Rework, and Testing) form will be generated and routed to the MCR for approval. ■ Respond as requested to calls for support

EVENT 4: "1A" RECIRC PUMP TRIP / SHAFT FAILURE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support.

EVENT 5: RECIRC LOOP RUPTURE

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If requested, after 6 minutes, Reset shunt trips per SE-10-1 by loading scenario "SE-10 Shunt Trip Reset.scn (located in Ops Training Scenarios, "Remotes" file). After the remote functions are all active, then report to the MCR that shunt trip resets have been completed per SE-10-1. Reset RHRSW Radiation Monitor and RE Area Rad Monitors by loading scenario RHRSW and ARM Resets.scn (located in Ops Training Scenarios, "Remotes" file), then report - RHRSW radiation monitors and RE ARMs have been reset. ■ Respond as requested to calls for support.

Op-Test No. _____

Scenario No. B Event No.: 1

Event Description:

Place H2/O2 Analyzers in Service for Weekly Reading Per S57.1.B, Placing Hydrogen and Oxygen Analyzers in Service

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the PRO to place both H2/O2 analyzers in service per S57.1.B
	PRO	Place both H2/O2 analyzers in service by placing both analyzer control selector switches to "ANALYZE".
	PRO	Respond to H2/O2 analyzer trouble alarms and high H2 and O2 alarms for drywell and suppression pool.

Op-Test No. _____

Scenario No. B Event No.: 2

Event Description:

Inadvertent Isolation of Instrument Gas (GP-8.5 Bypass of Crucial Systems, Technical Specifications)

Time	Position	Applicant's Actions or Behavior
	PRO	Respond to Instrument Gas system trouble alarms Recirc Pump Motor Winding Cooler Lo Flow alarms
	PRO	Swap cooling for recirc pump motor windings to "B" DWCW loop
	CREW	Recognize and report isolation of Instrument Gas system
	CRS	Determine that Instrument Gas system isolation is inadvertent
	CRS	Direct investigation of inadvertent Instrument Gas isolation
	CRS	Direct the PRO to bypass and restore Instrument Gas system per GP-8.5
	PRO	Bypass and restore Instrument Gas system per GP-8.5
	CRS	Reference Technical Specifications for inoperable primary containment isolation valves, and determine that at least one isolation valve must be maintained OPERABLE in each affected penetration that is open, and within 4 hours either restore the inoperable valve to OPERABLE status, or isolate each affected penetration by use of at least one deactivated automatic valve secured in the isolated position, or isolate each affected penetration by use of at least one closed manual valve or blind flange.

Op-Test No. _____	Scenario No. <u> B </u>	Event No.: <u> 3 </u>
Event Description:		
<u>Loss of D14 Safeguard Bus (E-D14, Loss of D14 Safeguard Switchgear)</u>		
Time	Position	Applicant's Actions or Behavior
	PRO	Recognize and report loss of D14 Safeguard Bus
	CRS	Enter E-D14 for Loss of D14 Safeguard Bus
	CRS	Direct investigation of Loss of D14 Safeguard Bus
	RO/PRO	Recognize and report partial radiation isolation of Control Room HVAC
	RO	Recognize and report RE AREA HI RAD alarm
	PRO	Recognize and report "D" REAC ENCL HVAC PNL 1DC208 TROUBLE alarm
	CRS	Direct RO/PRO to have Equipment Operators investigate RE AREA HI RAD alarm
	CRS	Direct RO/PRO to have Equipment Operators investigate "D" REAC ENCL HVAC PNL 1DC208 TROUBLE alarm
	CRS	Direct PRO to manually initiate a complete Control Room HVAC radiation isolation
	PRO	Manually initiate a complete radiation isolation of Control Room HVAC

Op-Test No. _____

Scenario No. B Event No.: 4

Event Description:

"1A" Recirc Pump Generator Field Breaker Trip (OT-112, GP-5)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize and report that "1A" Recirc Pump field breaker has tripped
	CRS	Direct the PRO to trip "1A" Recirc Pump
	PRO	Trip "1A" Recirc pump by placing drive motor breaker control switch to "TRIP"
	CRS	Enter T-112, Recirculation Pump Trip
	CRS	Direct the RO to insert control rods per Reactor Maneuvering Shutdown Instructions (RMSI) until reactor power is below 33%
	RO	Manually insert control rods per RMSI
	CRS	Reference GP-5, Steady State Operations, for the power reduction

Op-Test No. _____

Scenario No. B Event No.: 5

Event Description:

Recirc Loop "A" Rupture, "1A" RHR pump fails to start, "B" RHR Outboard Drywell Spray Valve fails closed (OT-101, High Drywell Pressure; T-101, RPV Control; T-102, Primary Containment Control; SE-10, LOCA)

Time	Position	Applicant's Actions or Behavior
	CREW	Recognize rising drywell pressure
	CRS	Enter and direct actions of OT-101, High Drywell Pressure
	CRS	Direct RO to scram the reactor when drywell pressure approaches 1.68 psig
	RO	Manually scram the reactor <u>or</u> verify the reactor automatically scrams
	CRS	Enter T-101, RPV Control
	CRS	Direct RO to place reactor mode switch in SHUTDOWN
	RO	Place reactor mode switch in SHUTDOWN
	CREW	Recognize and communicate to CRS all rods are in
	CRS	Direct RO to insert SRMs and IRMs
	RO	Recognize SRMs and IRMs have no drive power
	CRS	Direct RO to maintain RPV level between 12.5 and 54 inches
	RO	Control feedwater / condensate injection to establish and maintain RPV level between 12.5 and 54 inches
	CRS	Enter T-102, Primary Containment Control
	CRS	Direct PRO to maximize drywell cooling
	PRO	Maximize drywell cooling
	CRS	Direct PRO to spray the suppression pool per T-225, Startup and Shutdown of Suppression Pool and Drywell Spray Operation
	PRO	Place 1 loop of RHR in suppression pool spray per T-225
	PRO	Monitor RPV level (<i>continuous</i>)
	CRS	Direct closing MSIVs before RPV pressure drops below 350 psig
	PRO	Close MSIVs when directed by CRS
	CRS	Direct drywell spray per T-225

Op-Test No. _____ Scenario No. B Event No.: 5

Event Description:

Recirc Loop "A" Rupture, "1A" RHR pump fails to start, "B" RHR Outboard Drywell Spray Valve fails closed (OT-101, High Drywell Pressure; T-101, RPV Control; T-102, Primary Containment Control; SE-10, LOCA)

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize and report that the HV51-1F016B fails to open
	CREW	Perform SE-10, LOCA
	PRO	Recognize "1A" RHR pump failed to start on the LOCA signal
	CRS	Evaluate Pressure Suppression Pressure Curve on T-102, and determine that conditions cannot stay on the SAFE side of the curve.
	CRS	Enter T-112, Emergency Blowdown
	CRS	Direct the RO/PRO to open 5 ADS valves
	RO/PRO	Open 5 ADS valves
	RO/PRO	Maintain RPV level above -161 inches

CRITICAL TASKS

1. Maintain RPV level greater than TAF (Operate available injection systems as required to maintain reactor level greater than -161 inches)
2. Perform Emergency Blowdown per T-112 (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 SRVs)

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. An Emergency Blowdown has been performed per T-112, and RPV level has been stabilized between 12.5 and 54 inches.

Scenario C

SHIFT TURNOVER SHEET

UNIT 1 PLANT CONDITIONS:

- OPCON 1
- 100% Reactor Power

INOPERABLE / OUT OF SERVICE EQUIPMENT:

- None

ACTIVITIES PLANNED FOR THIS SHIFT:

- The crew is directed to perform ST-6-071-306-1, Channel A1 and A2 RPS Manual SCRAM Channels Functional Test.

Facility: LGS Scenario No.: C Op-Test No.:

Examiners: _____ Operators: _____

Description: This scenario will begin with the crew performing ST-6-071-306-1 (Channel A1 and A2 RPS Manual SCRAM Channels Functional Test). When the "A" RPS channel is de-energized, one control rod will scram, requiring the crew to enter ON-104 (Control Rod Problems). When the crew requests a P-1 edit to check thermal limits, the crew should recognize a thermal limit is exceeding 1.0, requiring entry into GP-14, (Resolution of Thermal Limit Violations). Per ON-104, the crew is required to reduce reactor power to less than 80%. During the power reduction, the "A" channel of the Rod Block Monitor will fail upscale. The CRS must reference Technical Specifications for the failed RBM. A steam leak will then occur in the RCIC room, and the RCIC isolation valves will fail to close. High temperature conditions will spread into the HPCI room, requiring an emergency blowdown per T-112 (Emergency Blowdown). When the crew determines the blowdown is imminent, they should attempt to depressurize the RPV using bypass valves, but the bypass valve jack will not function. The crew may obtain some bypass valve opening by using pressure setpoint adjustment, but this will not enable them to prevent the need for the emergency blowdown.

Initial Conditions: 100% Power, OPCON 1

Turnover: 100% Power, OPCON 1. The crew is directed to perform ST-6-071-306-1, Channel A1 and A2 RPS Manual SCRAM Channels Functional Test

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N(ALL)	RPS Surveillance Test
2	MRD016F SIMINS MFLCPR 1.012	C (ALL)	Rod Scrams during RPS Test, Thermal Limit MFLCPR > 1
2	N/A	R (ALL)	Power Reduction to < 80%
3	MPR217A	I (ALL)	RBM Channel "A" Fails to 125% (Tech Spec)
4	MRC465	M (ALL)	Steam Line Break in RCIC Room
4	MRC464A MRC464B	C (PRO/ CRS)	RCIC Isolation Valves Fail to Close
4	RRE002	C (ALL)	Steam Leak Migrates into the HPCI Room Through Broken Door Seal

4	CP436-1 failed to ALLOFF	I (PRO/ CRS)	EHC System Logic Failure Prevents Bypass Valve Operation with Bypass Valve Jack Pushbutton
5	MAD144D	C (RO/ PRO/ CRS)	"H" SRV Fails to Open

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

I. SIMULATOR OPERATOR INSTRUCTIONS

A. INITIAL SIMULATOR SETUP

✓	ITEM / MALFUNCTION / REMOTE FUNCTION / CONDITION
	<ul style="list-style-type: none"> ■ Perform OTM 7.1 Checklist
	<ul style="list-style-type: none"> ■ Reset Simulator to IC-54
	<ul style="list-style-type: none"> ■ Take out of FREEZE and ensure the following: <ul style="list-style-type: none"> - Reactor power is approximately 100% - All other annunciator windows are clear - Ensure sign below full core display indicates this is an "A/A1 Test Day"
	<ul style="list-style-type: none"> ■ Load Scenario "2001 LOT NRC Scenario C" from floppy disk labeled "2001 LOT NRC SCENARIOS" using A: drive and ensure the following malfunctions are loaded: <ul style="list-style-type: none"> • MRC464A, RCIC Steam Isolation Valve HV49-1F007 Fails as is (active immediately) • MRC464B, RCIC Steam Isolation Valve HV49-1F008 Fails as is (active immediately) • MAD144D, Relief Valve (F013H) fails closed (active immediately) • RRE002, Reactor Enclosure Door 19, HPCI to RCIC toggled to "OPEN" (active immediately) • EHC Bypass Jack INCREASE pushbutton failed to "ALLOFF" (active immediately) • MRD016F (26-31) Control Rod Scrams (active when A1 RPS pushbutton depressed) • MPR217A, RBM Channel "A" Fails to 125% (active when control rod 22-07 is selected) • MRC465, RCIC Steam Line Break Inside the Pump Room - 50% (active 6 minutes after control rod 22-07 is selected, with a ramp time of 10 minutes up to 50% leak rate) • IMPORTANT NOTE: When rod 26-31 scrams, THEN insert MFLCPR value of 1.012 using SIMINS page of Plant Monitoring System at Instructor Station. When reactor power is reduced to less than 90%, then return MFLCPR to a value of 0.937.
	<ul style="list-style-type: none"> ■ Reset any annunciators that should not be present

B. INSTRUCTIONS FOR SIMULATOR OPERATOR**EVENT 1: PERFORM ST-6-071-306-1, CHANNEL A1 AND A2 RPS MANUAL SCRAM CHANNELS FUNCTIONAL TEST**

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When requested, inform the MCR that RPS lights "A1 DS1" and "A2 DS2" are lit at 10C609. ■ Ensure trigger 1 activates when the A1 RPS pushbutton is depressed

EVENT 2: ROD SCRAMS DURING RPS TESTING WITH THERMAL LIMIT MFLCPR > 1

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ When rod 26-31 scrams, THEN insert MFLCPR value of 1.012 using SIMINS page of Plant Monitoring System at Instructor Station. When reactor power is reduced to less than 90%, then return MFLCPR to a value of 0.937. ■ If Reactor Engineering contacted, ask which control rod scrammed, then tell them you will begin investigating immediately. ■ If Floor Supervisor / Equipment Operator requested to investigate the scrammed control rod, wait 6 minutes, then respond that the fuse for the "B" scram pilot solenoid has blown for HCU 26-31. ■ Respond as requested to calls for support

EVENT 3: RBM CHANNEL "A" FAILS TO 125%

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If WWM / I&C / Floor Supervisor are contacted for investigation, inform crew a TRT (Troubleshooting, Rework, and Testing) form will be generated and routed to the MCR for approval.
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support

EVENT 4: STEAM LINE BREAK IN THE RCIC ROOM / RCIC ISOLATION VALVES FAIL TO CLOSE / HPCI-TO-RCIC DOOR SEALS FAIL

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ If requested to investigate 1AC208 HVAC PNL TROUBLE alarm, wait 4 minutes, then respond with temperature indication given on the instructor station T-103 icon, Temperature Display indication for the RCIC room. ■ If requested to perform T-290, wait 5 minutes, then respond by providing Reactor Enclosure data by selecting T-103 icon on simulator instructor station, and selecting T-103 Radiation Display and T-103 Temperature Display.
	<ul style="list-style-type: none"> ■ If requested to manually attempt to actuate the contactors for the RCIC isolation valves, after 6 minutes, Report that efforts to close the RCIC isolation valves manually have been unsuccessful from the breakers.
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support

EVENT 5: "H" SRV FAILS TO OPEN

✓	MALFUNCTION / REMOTE FUNCTION / REPORT
	<ul style="list-style-type: none"> ■ Respond as requested to calls for support

Op-Test No. _____

Scenario No. C Event No.: 1

Event Description:

Perform ST-6-071-306-1, Channel A1 and A2 RPS Manual Scram Channels Functional Test

Time	Position	Applicant's Actions or Behavior
	CRS	Direct the RO to perform ST-6-071-306-1
	RO	Perform ST-6-071-306-1
	PRO	Peer check the RO's performance of ST-6-071-306-1

Op-Test No. _____

Scenario No. C Event No.: 2

Event Description:

Rod Scrams During RPS Testing with Thermal Limit MFLCPR > 1

Time	Position	Applicant's Actions or Behavior
	RO/PRO	Recognize control rod 26-31 has scrammed when the "A" RPS channel is de-energized, and report the rod scram to the CRS
	CRS	Enter ON-104, Control Rod Problems
	CRS	Perform ON-104, Attachment 3
	CRS	Direct the RO to generate a P-1 edit
	RO	Order a P-1 edit, and determine that MFLCPR is greater than 1
	CRS	Order power reduction to less than 80% per RMSI
	RO/PRO	Reduce recirc. MG set speed to lower power to 90% per RMSI
	RO	Insert control rods per RMSI to reduce power to < 80%
	CRS	Enter GP-14, Resolution of Thermal Limit Violations
	CRS	Contact Reactor Engineering for assistance

Op-Test No. _____

Scenario No. C Event No.: 3

Event Description:

Rod Block Monitor Channel "A" Fails to 125%

Time	Position	Applicant's Actions or Behavior
	RO	Recognize and report "A" RBM has failed upscale
	RO/PRO	Reference ARC for "A" RBM upscale alarm
	CRS	Reference Technical Specifications for failed RBM channel
	CRS	Recognize that RBM is required to be operable with power less than 90% and MCPR less than 1.7
	CRS	Recognize operating on a LIMITING CONTROL ROD PATTERN, and recognize requirement per Tech Spec action to place the inoperable rod block monitor in the tripped condition within 1 hour.

Op-Test No. _____

Scenario No. C Event No.: 4

Event Description:

Steam Line Break in the RCIC Room / RCIC Isolation Valves Fail to Close / RCIC-to-HPCI Door Seals Fail / EHC System Logic Failure Affecting Bypass Valves

Time	Position	Applicant's Actions or Behavior
	PRO	Recognize and report fire alarms in RCIC
	CRS	Enter SE-8, Fire
	PRO	Announce fire location over plant page, and dispatch Fire Brigade
	PRO	Recognize and report REAC ENCL HVAC PNL 1AC208 TROUBLE alarm
	PRO	Dispatch an Equipment Operator to investigate REAC ENCL HVAC PNL 1AC208 TROUBLE alarm locally
	RO	Recognize and report DIV 1 STEAM LEAK DET SYS HI TEMP / TROUBLE alarm
	CRS	Enter T-103, Secondary Containment Control
	CRS	Direct RO and PRO to read RPV pressure and RPV level only from PAMS, Fuel Zone Level, EQ PMS parameters
	CRS	Direct performance of T-290, Instrumentation Available for T-103/SAMP-2
	CRS	When RCIC temperature is above Maximum Normal Operating (MNO), 114 deg. F , then direct PRO to attempt to manually isolate RCIC per T-250
	PRO	Report RCIC isolation failure to CRS
	CRS	When report received of RCIC room temperature above Maximum Safe Operating (MSO), 155 deg. F , then recognize plant shutdown is required
	CRS	Direct PRO to perform S91.6.B, to transfer house loads to offsite power
	PRO	Transfer house loads per S91.6.B
	CRS	Direct the RO/PRO to reduce recirc. MG set speed to minimum
	RO/PRO	Reduce recirc. MG set speed to minimum
	CRS	Direct the RO to scram the reactor at 50% core flow

Op-Test No. _____

Scenario No. C Event No.: 4

Event Description:

Steam Line Break in the RCIC Room / RCIC Isolation Valves Fail to Close / RCIC-to-HPCI Door Seals Fail / EHC System Logic Failure Affecting Bypass Valves

Time	Position	Applicant's Actions or Behavior
	RO	Manually scram the reactor using the RPS arm and depress pushbuttons
	CRS	Enter T-101, RPV Control
	CRS	Direct RO to place reactor mode switch in SHUTDOWN
	RO	Place reactor mode switch in SHUTDOWN
	CREW	Recognize and communicate to CRS all rods are in
	CRS	Direct RO to insert SRMs and IRMs
	RO	Insert SRMs and IRMs
	CRS	Direct RO to maintain RPV level between 12.5 and 54 inches
	RO	Control feedwater / condensate injection to establish and maintain RPV level between 12.5 and 54 inches
	CRS	Direct Floor Supervisor / Equipment Operator to attempt to close RCIC isolation valves locally
	CRS	Perform T-291, Temperature Effects on Reactor Level Instrumentation
	CRS	Re-enter T-103 when DIV 3(2,4) STEAM LEAK DET SYS HI TEMP / TROUBLE alarms annunciate
	CRS	Recognize HPCI room temp approaching MSO value of 176 deg. F , determine blowdown imminent, and order rapid depressurization using turbine bypass valves, per T-101 step RC/P-6.
	RO/PRO	Use EHC Bypass Valve Jack INCREASE pushbutton to attempt to open turbine bypass valves
	RO/PRO	Recognize failure of turbine bypass valves to open using Bypass Valve Jack INCREASE pushbutton, and report to the CRS
	CRS	When HPCI room temperature exceeds MSO, then enter T-112, Emergency Blowdown
	CRS	Direct the RO/PRO to open 5 ADS valves
	RO/PRO	Place 5 ADS valve handswitches to open

Op-Test No. _____

Scenario No. C Event No.: 5

Event Description:

"1H" SRV Fails to Open

Time	Position	Applicant's Actions or Behavior
	RO/PRO	Recognize failure of "1H" SRV to open, and report to the CRS
	CRS	Direct the RO/PRO to open another SRV
	RO/PRO	Open another SRV until a total of 5 ADS/SRVs are open

CRITICAL TASKS

1. Direct the performance of T-290, Instrumentation Available for T-103/SAMP-2. (Direct the performance of T-290 to operations personnel located outside the control room)
2. Manually scram the reactor. (When it has been determined that one area in Table SCC-2 has exceeded max. safe op. value, manually scram the reactor)
3. Perform Emergency Blowdown per T-112. (After it is determined that two areas in Table SCC-2 have exceeded max. safe op. values and a primary system is still discharging into secondary containment, open 5 ADS/SRVs)

TERMINATION POINT

The scenario will be terminated when the following criteria are met:

1. An emergency blowdown has been performed per T-112, Emergency Blowdown, and RPV level is within the band of 12.5 to 54 inches.