2014 LASALLE COUNTY STATION

INITIAL LICENSE EXAMINATION

PROPOSED EXAM FILES

SCENARIO Guides

LaSalle County Station

ILT DYNAMIC SIMULATOR SCENARIO GUIDE

ESG NRC 13-1-3

Shutdown in Progress / Unisolable RCIC Steam Leak

Rev. 0

08/22/2014

DEVELOPED BY:	Instructor	Date 8/27/14
VALIDATED BY:	SME/Instructor	Date 8/27/14
REVIEWED BY:	Operations Manager	Date 8/27/14
APPROVED BY:	Operations Training Manager	Date 8/27/14

Facility: LaSalle County Station **Scenario No.: NRC 13-1-3**

PURPOSE

Examine the ILT candidate's ability to operate the plant in normal, abnormal, and emergency conditions.

SUMMARY OF EVENTS

Initial Conditions: Unit 1 is operating at 59% Power. C Turbine Bldg Exhaust fan is Out-of-Service.

1. This event is a continuation of a normal unit shutdown. The crew is expected to insert control rods per the sequence package and LGP-2-1 to achieve a 61% Flow Control Line.
2. Stuck control rod requires a higher drive water DP to insert
   One control rod is determined to be stuck. Attempts to free the rod using the normal operating procedure will fail. The LOA actions are used and the rod frees itself when CRD Drive pressure is raised. The shutdown can continue.
3. Secure steam to MSR 2nd stage reheat per LOP-TG-06
   The BOP will transfer 2nd Stage MSR reheat Drain Tank to its emergency controller as part of a normal shutdown.
4. Steam Packing Exhauster blower trip
   The running Steam Packing Exhauster blower will trip. The BOP must start the standby blower and throttle open its discharge valve to restore normal system vacuum.
5. VC Rad Monitor failure **(TS)**
   The 1A VC Radiation Monitor will spike upscale requiring the BOP operator to reset the alarm. After the alarm is reset, the Rad Monitor will fail upscale requiring the BOP to perform a channel check to determine that only one rad monitor has failed. The SRO will have to make a Tech Spec determination based on the failed VC rad monitor.
6. Loss of TB Exhaust Fan.
   Loss of 1VT02CA. With only 1 TB Exhaust Fan operating, the BOP must secure one TB Supply Fan per LOA-VT-101. Response includes stack WGRM flow verification.
7. RR Flow control valve fails open **(TS)**
   While raising power A RR FCV will continue to open until locked up by operator IAW LOA-RR-101. Resultant flow mismatch may require T.S. evaluation.
8. Unisolable steam leak in RCIC
   RCIC will experience a steam supply leak and the isolation valves will fail to automatically and manually isolate. The crew will manually scram the reactor per LGA-002.
9. The crew may anticipate Blowdown. When a second area parameter exceeds a Max Safe value, The LGA-004 Blowdown will be performed. During LGA-004, 3 ADS valves will fail to open, requiring the crew to open 3 more SRVs.

Critical Tasks

1. With a primary system discharging into the secondary containment, and discharge cannot be isolated or isolation attempt failed, scram the reactor.
2. With a primary system discharging into the secondary containment, and radiation levels exceeding maximum safe values in more than one area, INITIATE emergency depressurization. (or anticipates Blowdown and depressurizes rapidly via the main turbine bypass valves.)
3. With conditions present to Emergency Depressurize, and < 7 SRVs open, manually open additional SRVs until a total of 7 are open. (May be N/A if blowdown anticipated and bypass valves used)

TRAINING REQUESTS (if applicable)

1. None

OPEX (if applicable)

2. None

IER 11-3

1. **Monitoring plant indications and conditions closely**
2. **Controlling plant evolutions precisely**
3. **Operating the plant with a conservative bias**
4. **Working effectively as a team**
5. **Having a solid understanding of plant design, engineering principles, and sciences**

SOER 10-2

1. **Oversight ensures proper focus**
2. **Equipment restoration risk evaluation**
3. **Preparation for high risk evolution**
4. **Control Room resources adequate for EOP response**
5. **Sufficient engagement of others in decision making**

Record of Revisions (Summary)

Rev. 0	Developed new for the ILT 13-1 NRC Exam

INITIAL SIMULATOR SETUP/REQUIRED DOCUMENTATION

1. Recall a shutdown IC at 70 Mlbs/hr core flow, prior to RR Downshift. (Use IC191 for ILT 13-1 NRC Exam)
2. Place simulator in RUN.
3. If necessary, insert control rods to achieve the following approximate values:
   - 2039 MWth
   - 59% Power
   - 76.95 FCL
   - 70 Mlb/Hr
4. Load and run the setup CAEP written for this scenario: **NRC Scenario 13-1-3.cae**
5. Perform the following panel manipulations:
   - Start the MDRFP and secure one TDRFP
   - Adjust HD system per LGP 2-1, Step E.1.7.1 and Attachment D
   - Start 1A VT Exhaust Fan
   - Place the 1C VT Exhaust Fan in PTL Place and Out of Service tag on switch
   - Take Condensate Polishers out of service as necessary
   - Verify the 1B Steam Packing blower B Exhauster is in service
   - Secure one (1) Heater Drain Pump
   - Verify TDRFP High Discharge Temp PPC alarms cleared
6. Verify the following:
   - **From the Monitored Parameter Screen verify** RCIC Isolation Valve Stroke times:
     - **set vmmsf63r = 1e6**
     - **set vtmsf08r = 1e6**
7. Provide the following procedures marked up as described:
   - LGP-2-1 Marked up as complete to step E.1.7, with Step E.1.7.1 and Attachment D completed
   - LOP-TG-06 with Sections A, B, C, & D completed
   - A "Shutdown" REMA with Step 1 of 4 signed off, but step 2 of 4 still unsigned
   - Mark up the Control Rod Move Sheet up to Step 168
   - LOP-RM-01 marked up for Shutdown
8. Place Protected Equipment rings and/or robust barriers on the following components: None
9. Update the Tech Spec Timeclock Sheet as follows: None
10. Perform the pre-scenario checklist. (TQ-LA-150-0308)

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: LaSalle Scenario No.: NRC Scenario 13-1-3 Op-Test No.: 2014301
Examiners: _____ Operators: _____

Initial Conditions: At 59% power, Shutdown in progress per LGP 2-1. Continue Inserting control rods to achieve a 61% FCL and take the MSR Second stage Reheat out of service.

Turnover: 1C VT Exhaust Fan Out of Service due to high vibration

Event No.	Malf. No.	Event Type*	Event Description
1	None	ATC R	Control Rod insertion for shutdown
2	mrd199	ATC C	Stuck control rod 06-23 requires a higher drive water DP to insert
3	None	BOP N	Secure steam to MSR 2nd stage reheat per LOP-TG-06
4	k5609jpz	BOP C	Steam Packing Exhauster blower trip
5	mrm039	SRO TS	VC Rad Monitor failure
6	k7d15wpg	BOP C	Loss of the A Turbine Bldg. Exhaust Fan
7	mrc039 k2k08pxi	ATC / SRO I TS	1A Reactor Recirculation FCV controller fails open and HPU Trip button fails. (ABN)
8	set vmmsf63r set vtmsf08r mes019	Crew M	Unisolable steam leak in RCIC
9	g1h31g1w g1h32g1w mes 9, 10, & 14	Crew M	When a 2nd area approaches a Max Safe value, manual ADS will be performed but 3 ADS SRVs fail to open

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

ES-301-4 Quantitative attributes:
Total Malfunctions (5-8): **7**
Malfunction(s) after EOP (1-2): **2**
Abnormal Events (2-4): 2
Major Transient(s) /E-Plan entry (1-2): **E8**
EOPs (1-2): **2** (LGA-002 and 001)
EOP Contingencies (0-2): **1**
Critical Tasks (2-3): **3**

ES-301-5 Quantitative attributes:
BOP Normal: **E3**
ATC Reactivity (1 per set): **E1**
BOP I/C (4 / set): **E4 & E6**
ATC I/C (4 / set): **E2 & E7**
SRO-I I/C (4 / set inc 2 as ATC): **E2, 4, 6, & 7**
SRO Tech Spec (2 per set): **E5 & E7**
ALL Maior Transients (2 per set): **E8**

APPROXIMATE SCENARIO RUN TIME

90 Minutes

GENERAL OBJECTIVE: (USED THROUGHOUT THIS EXERCISE)

769.00.01	During performance of tasks, dynamic learning activities, or formal evaluations, demonstrate applicable Human Performance behaviors IAW the appropriate procedures.

TASKS

RO - ATC	
301.010	Given Unit Supervisor authorization, perform normal unit shutdown from full power to depressurizing to Shutdown Cooling IAW station procedures.
47.005	Given Unit Supervisor authorization, perform a Continuous Control Rod Insertion IAW station procedures.
25.048	Provided initial conditions, respond to a Control Rod Drive failure from the Main Control Room IAW station procedures.
23.002	Provided initial conditions, respond to a Reactor Recirc Flow Control Valve failure to maximum demand IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
418.000	Given LGA-002, Secondary Containment Control, in progress, and a system discharging into an area, evaluate plant conditions and terminate the release to secondary containment by isolating systems not needed for Fire Fighting or LGA actions, IAW station procedures
413.000	Given LGA-01, RPV Control, in progress, evaluate plant conditions and control RPV level +11" to 59.5" IAW LGA-001

RO - BOP/ASSIST	
301.010	Given Unit Supervisor authorization, perform normal unit shutdown from full power to depressurizing to Shutdown Cooling IAW station procedures.
71.013	Given Unit Supervisor authorization, perform the control room actions to startup and shutdown first and second stage reheat to the MSR IAW station procedures.
71.033	Given Unit Supervisor authorization, perform Control Room actions to startup and shutdown Gland Seal Steam System IAW station procedures.
117.016	Respond to VC/VE system abnormalities (i.e. hi rad, smoke, etc.) IAW station procedures.
119.015	Provided initial conditions, respond to a Turbine Building ventilation abnormal condition IAW station procedures.
418.000	Given LGA-002, Secondary Containment Control, in progress, and a system discharging into an area, evaluate plant conditions and terminate the release to secondary containment by isolating systems not needed for Fire Fighting or LGA actions, IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
413.000	Given LGA-01, RPV Control, in progress, evaluate plant conditions and control RPV level +11" to 59.5" IAW LGA-001
428.000	Given entry in LGA-4/06, RPV Blowdown, evaluate plant conditions and rapidly depressurize the RPV using SRVs via the ADS system IAW station procedures.
421.000	Given LGA-03, Primary Containment Control, in progress, cool the Suppression Pool IAW station procedures.

SRO - UNIT SUPERVISOR	
301.010	Given Unit Supervisor authorization, perform normal unit shutdown from full power to depressurizing to Shutdown Cooling IAW station procedures.
47.005	Given Unit Supervisor authorization, perform a Continuous Control Rod Insertion IAW station procedures.
25.048	Provided initial conditions, respond to a Control Rod Drive failure from the Main Control Room IAW station procedures.
71.013	Given Unit Supervisor authorization, perform the control room actions to startup and shutdown first and second stage reheat to the MSR IAW station procedures.
71.033	Given Unit Supervisor authorization, perform Control Room actions to startup and shutdown Gland Seal Steam System IAW station procedures.
117.016	Respond to VC/VE system abnormalities (i.e. hi rad, smoke, etc.) IAW station procedures.
201.011	Given a set of plant conditions, identify and prepare the Technical Specification required actions IAW Tech Specs.
119.015	Provided initial conditions, respond to a Turbine Building ventilation abnormal condition IAW station procedures.
23.002	Provided initial conditions, respond to a Reactor Recirc Flow Control Valve failure to maximum demand IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
418.000	Given LGA-002, Secondary Containment Control, in progress, and a system discharging into an area, evaluate plant conditions and terminate the release to secondary containment by isolating systems not needed for Fire Fighting or LGA actions, IAW station procedures
413.000	Given LGA-01, RPV Control, in progress, evaluate plant conditions and control RPV level +11" to 59.5" IAW LGA-001
428.000	Given entry in LGA-4/06, RPV Blowdown, evaluate plant conditions and rapidly depressurize the RPV using SRVs via the ADS system IAW station procedures.
421.000	Given LGA-03, Primary Containment Control, in progress, cool the Suppression Pool IAW station procedures.

Event-1		
Description: Control Rod insertion for shutdown		
Initiation: Following crew assuming shift, on direction of Lead Evaluator		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
301.010 47.005	ATC	Per LOP-RM-101: • SELECT the next Rod in the sequence (Rod 54-39) • DEPRESS and HOLD rod INSERT push-button to continuously insert rod until push-button is released • CHECK Control Rod insert sequence begins: Rod INSERT light indication appears on the ROD SELECT Display or STATUS Display. • Rod position indication shows a continuous change indication appears on the ROD SELECT Display, STATUS Display or CORE MAP Display. • OBSERVE changes in nuclear instrumentation indications. • When rod INSERT push-button is released, VERIFY rod SETTLE indication appears and remains on for approximately 6 seconds. • VERIFY rod settles at next even numbered position when push-button is released. • VERIFY that new rod position is shown on the ROD SELECT Display, STATUS Display or CORE MAP Display.
301.010	BOP	• Provides Peer Checks for ATC Operator as needed.
301.010 47.005	SRO	• Directs Control Rod Insertion • Directs actions for LGP-2-1 Shutdown

Event – 1	
Description: Control Rod insertion for shutdown	
Simulator Operator Actions	
None	

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TRs
None
Terminus: After the ATC has resolved the Stuck rod in Event 2 and when the ATC has completed a reactivity manipulation to the satisfaction of the Lead Evaluator

Event-2		
Description: Stuck control rod		
Initiation: When ATC Operator attempts to insert Rod 06-23		
Key Parameter Response: No rod movement for Rod 06-23 Expected Annunciators: None Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

45.048	ATC	Per LOA-RD-101 section B.4
		• Check control rod failed to move with drive water pressure > 450 psig or using LOP-RM-01
		• CHECK control rod positions NORMAL
		• VERIFY CRD Hydraulic system NORMAL (63 gpm flow – 250 to 300 psid drive water pressure)
		  • Response not obtained
		  • Throttle the following valves as required
		  o 1C11-R600 (FCV 1C11-F002A/B)
		  o PCV 1C11-F003
		• Insert/Withdraw apparent stuck control rod (Observe RCMS indications for normal directional control valve sequencing)
		• Check directional control valve sequence normal
		• Raise drive water pressure to 500 psid
		• Insert/Withdraw control rod
		• Check control rod moved
		  • Response not obtained
		  • Perform the following
		  • Raise drive water pressure in increments of 50 psid, from 450 to 750 psid
		  • After each incremental increase in drive water pressure up to 750 psid, return to step 7 and attempt control rod movement
		• Return drive water pressure to normal
		• Insert/Withdraw control rod to in sequence position
		• Note any applicable information in Unit Log and LOP-RM-01 Attachment A
		• Closely monitor further movements of affected control rod and exit this procedure

	BOP	• Monitor BOP and peer check ATC actions as necessary
45.048	SRO	• Direct and supervise crew actions in LOA-RD-101

Event – 2	
Description: Stuck control rod	
Simulator Operator Actions	
	Inserted at setup: **imf mrd199** (Rod 06-23 Stuck)
Event Trigger 2	Verify the following commands associated with Event Trigger 2: • **trgset 2 "g3f02g1d.gt.0.67"** (When CRD Drive pressure >515 psig) • **trg 2 "dmf mrd199"** (On Event Trigger 2, Rod 06-23 malfunction deleted)
Manual Trigger 2	Verify Event Trigger 2 goes TRUE when CRD Drive Pressure is raised >515 psig. If not, manually activate Trigger 2.

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: After rod 06-23 movement is restored, the ATC should return to Event 1, inserting control rods for shutdown

Event-3		
Description: Secure steam to MSR 2nd stage reheat per LOP-TG-06		
Initiation: Direction to perform this activity was given in the turnover.		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.

71.013	BOP	Removes Second stage Reheat From Service Per LOP-TG-06
		• Open the following valves:
		  • 1B21-RSDV1, MS to 1A MSR 2nd Stage Drain
		  • 1B21-RSDV2, MS to 1B MSR 2nd Stage Drain
		• Monitor Temperatures on 1PM02J while securing 2nd stage Reheat
		• Slowly throttle closed (until fully closed):
		  • 1B21-RSSV1, MS to 1A MSR 2nd Stage Isol
		  • 1B21-RSSV2, MS to 1B MSR 2nd Stage Isol

71.013	SRO	• Supervises removal of Second stage Reheat From Service

Event – 3	
Description: Secure steam to MSR 2nd stage reheat per LOP-TG-06	
Simulator Operator Actions	
None	

Simulator Operator Role Play
If contacted as IMD when emptying the 2nd Stage Reheater Drain Tank: Report that the emergency controller was recently calibrated and that there is nothing else that can be done to improve controllability.

Floor Instructor Notes/OPEX/TR's
If necessary, prompt the SRO to continue the shutdown by securing steam to MSR 2nd stage reheat per LOP-TG-06
Terminus: When Steam has been secured to MSR 2nd Stage Reheat

Event-4		
Description: Steam Packing Exhauster blower trip		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 4.**		
Key Parameter Response: 1B SPE Blower B auto trip indications Expected Annunciators: 1PM02J-A305, GLAND SEAL STEAM CNDSR VAC LO 1PM02J-A305, GLAND SEAL STEAM /PACKING EXH BLOWER AUTO TRIP Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.

71.033	BOP	• Responds to annunciator and inform the Unit Supervisor
		• Per LOR-1PM02J-A305
		  • CHECK Gland Seal Steam Condenser Vacuum is equal to or less than 5" H2O Vacuum.
		  • DISPATCH operator to EL. 754' in Turbine Building to INSPECT Gland Seal Steam Blower for proper operation per procedure LOP-GS-01, Gland Seal Steam System Startup.
		  • DISPATCH operator to EL. 754' in Turbine Building to VERIFY proper Condensate Flow thru Gland Seal Steam Condenser per LOP-GS-01, Gland Seal Steam System Startup.
		  • STARTUP idle Gland Seal Steam Packing Exhauster Blower per LOP-GS-05, Change over of Gland Seal Steam Packing Exhauster Blowers
		  • Start the 1B SPE A Blower
		  • Maintain Steam Packing Exhauster Inlet Header A/B at between 5" - 12" W.C. on 1PI-GS032
		  • THROTTLE OPEN the suction valve for the A Blower until the SPE Steam Inlet Header vacuum increases to 12" W.C.
		  • THROTTLE SHUT the suction valve for the B Blower
		  • Repeat above steps as necessary until the suction valve for the B Blower is fully closed
		  • Adjust the suction valve for the A Blower until the SPE Steam Inlet Header vacuum is 8" -12" W.C.
		  o May momentarily place the 1B SPE B Blower switch in STOP

71.033	SRO	• Directs actions of LOR-1PM02J-A305

Event – 4	
Description: Steam Packing Exhauster blower trip	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 4** and verify the following commands become active: • **ior k5g09jpz (4) stop** (1B Packing Exhauster B Blower Trip) • **ior 15g09maz (4) on** (B Packing Exhauster B Blower Auto Trip light on) • **imf r1211 (4) on** (GS SPE BLOWER AUTO TRIP annunciator on)

Simulator Operator Role Play
Role Play as EO dispatched to the tripped SPE Blower: "The motor is hot to the touch."
Role Play as EO dispatched to the tripped SPE Blower: "Condensate flow through the Gland Seal condenser is normal."

Floor Instructor Notes/OPEX/TR's
Terminus: A Standby SPE Blower is put into service and SPE vacuum is 8" -12" W.C.

Event-5		
Description: VC Rad Monitor failure		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 5.**		
Key Parameter Response: VC Intake Rad Monitor 1D18-K751A reading upscale Expected Annunciators: 1PM13J-B401, CR CAM Panel Trouble Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
117.016	BOP	Per LOR-1PM13J-B401, CR CAM Panel Trouble: • If alarm was due to momentary spike on one detector and reading has returned to normal: o May attempt to RESET Rad Monitor (If so, it will trip a second time) • ENTER event in Unit Log • Notify IMD to investigate. • DETERMINES that 1A VC Intake Radiation Monitor has failed high and reports to the Unit Supervisor.
117.016 201.011	SRO	DECLARES 1A VC Intake Radiation Monitor INOPERABLE and refers to Technical Specifications: • Per Technical Specification LCO 3.3.7.1, determines that a 6-hour time clock to place 1A VC Intake Radiation Monitor channel in TRIP is appropriate per Required Action A.2. • Directs LOA-PR-101 to jumper in the trip for positive control for Tech Spec.

Event – 5	
Description: VC Rad Monitor failure	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 5** and verify the following command becomes active: • **imf mrm039 (5) 10000** (VC Rad Monitor failures high) **IMMEDIATELY** upon receipt of high alarm, activate **Manual Trigger 15** and verify that malfunction **mrm039** is deleted.
After the Rad Monitor has been reset and with the concurrence of the Lead Evaluator	Activate **Manual Trigger 25** and verify the following command becomes active: **imf mrm039 10000** (VC Rad Monitor failures high)

Simulator Operator Role Play
Role play: as field / maintenance personnel.

Floor Instructor Notes/OPEX/TR's
The first alarm will be a signal spike, monitor will reset. The second will be due to instrument failure.
Terminus: Tech Spec call for inoperable VC Rad monitor completed

Event-6		
Description: Loss of TB Exhaust Fan		
Initiation: At the direction of Lead Examiner, activate **Manual Trigger 6.** Be prepared to initiate **Event 7** during this event.		
Key Parameter Response: Vent Stack Flow indication on recorder VR-019 at Panel 1PM06J Expected Annunciators: 1PM06J-B402, TB 1A EXH FAN AUTO TRIP 1PM06J-B304, TB DP HI 1PM06J-B303, TB SPLY AIR FLOW LOSS Automatic Actions: TB Supply Fans may trip due to high DP		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
119.015	BOP	Per LOR 1PM06J-B402 • Verify that 1A Turbine Building Supply Fan has tripped • Start the idle TB Exhaust fan / Identifies only B Turbine Building Supply Fan is available and running • Determine cause of the trip • Initiate appropriate corrective action

119.015	BOP	May enter LOA-VT-101
		• If only one Turbine Building Exhaust Fan is available:
		  • VERIFY only 1 Turbine Building Supply Fan OPERATING / Trips one of the running TB Supply fans
		  • VERIFY Main Stack Flow is ISOKINETIC per LOP-PR-04).
		  • (At 0PM14J) Verifies adequate sample flow to WRGM Monitors per LOP-PR-04
		• Check Turbine Building differential pressure between - 2.0 and 0 in. H_2O by contacting an EO.

119.015	BOP	May enter LOP-VT-01, TB Ventilation Startup • May perform Startup Steps E.1.1 through E.1.3 with an EO • Starts/verifies running 1 TB Exhaust Fan • Immediately starts 1 TB Supply Fan • Verifies corresponding discharge check dampers are open
119.015	SRO	• May direct the BOP to stop one TB Supply Fan. • Supervises actions of LOR 1PM06J-B402 and LOA-VT-101 • Orders the 1A VT Exhaust Fan troubleshot by appropriate station personnel.

Event – 6	
Description: Loss of TB Exhaust Fan	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 6** and verify the following commands become active: • **ior k7d15wpg (6) stop** (A VT Exh Fan switch to stop) • **ior q7d15lgg (6) off** (A VT Exh Fan Green/Off light off) • **ior q7d15mag (6) on** (A VT Exh Fan Amber Auto trip light on) • **imf r1479 (6) on** (A VT Exhaust Fan trip Annunciator on)
Event Triggers 16, 26, & 27	If the BOP takes the A VT Fan to PTL, verify Event Triggers 16, 26, and 27 go active and the following commands are deleted: • (Override) **k7d15wpg** (A VT Exh Fan switch to stop) • (Override) **q7d15mag** (A VT Exh Fan Amber Auto trip light on) • (Malfunction) **r1479** (A VT Exhaust Fan trip Annunciator)

Simulator Operator Role Play
If recovery is performed per LOA-VT-101, **Role Play EO:** When contacted to check Turbine Building differential pressure, report Turbine Building DP at -0.5 inches H_2O on 1PDI-VT006 at 1PL28J.
If recovery is performed per LOP-VT-01, **Role Play EO as necessary to support VT restart per the LOP:** When directed, report local actions per Steps E.1.1 through E.1.3 completed satisfactorily. When directed, verify that the discharge check dampers for the running fans are open and verify that the non-running fan dampers closed When contacted to check Turbine Building differential pressure, report Turbine Building DP at -0.5 inches H2O on 1PDI-VT006 at 1PL28J.

Floor Instructor Notes/OPEX/TR's
Direct the SIMOP to initiate Event 7 during this event. **Event 7, the FCV failing open, must be initiated while the BOP is performing Event 6.** (In order for the ATC to get 2 manipulations in Event 5, the FCV Lockup must be performed from the same computer that the BOP was using to monitor FCV Position Demand.)
Terminus: Turbine Bldg DP stabilized by either LOA-VT-101 or LOP-VT-01

Event-7		
Description: RR Flow control valve fails open		
Initiation: At the direction of the signal of lead examiner, activate **Manual Trigger 7**		
Key Parameter Response: Jet Pump and Loop Flows rising, APRM readings rising steadily Expected Annunciators: 1H13-P602-A101, A RR FLOW CONTROL VALVE TROUBLE 1H13-P603-A108, APRM HI Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

23.002	ATC	• Announces condition and Locks up FCV.
		• Enters LOA-RR-101 Section B.5
		  • CHECK FCV position -STABLE. If not, 1.1 Lock up FCV:
		  • PRESS 1A/1B HPU TRIP pushbutton.(Does Not Trip)
		  • Lockup solenoid valve at 1DS001.(will lockup)
		  • Select RRFC
		  • Select HPU Status A Loop
		  • Select HPU Shutdown
		  • Select CONFIRM
		  • Verify Annunciator
		  o Stop HPU Pump at 1DS001.(will stop)
		  • PERFORM Subsection B.1, Core Instabilities
		  • CHECK Recirc loop flows balanced – less than T.S. mismatch Within 10.85 Mlbm/hr, if core flow is less than 75.95 Mlbm/hr.
		• Enters and performs LOA-PWR-101
		  • Checks RPS setpoints not exceeded
		  • CHECK Reactor Power is less than 100% RTP (3546 MWt)
		  • CHECK Reactor Pressure is less than 1005 psig.
		  • CHECK FCL is less than MELLLA (113.2% FCL)

	BOP	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
23.002	SRO	• Directs actions per LOA-RR-101. • Directs LOA-PWR-101 • Enter Tech Spec 3.4.1 Condition B RR Flow mismatch not within limits

Event – 7	
Description: RR Flow control valve fails open	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate Manual Trigger 7 and verify the following command goes active: **imf mrc039 (7) 100** (RR FCV fails open)

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: RR Flow Mismatch TS Call completed

Event-8		
Description: Unisolable steam leak in RCIC		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 8.**		
Key Parameter Response: RCIC Room Temperatures and Rads Expected Annunciators: 1H13-P601-B110, RB RAD HI 1H13-P601 C408, LPCS/RCIC PMP CUBICLE TEMP HI 1H13-P601-B409 (D504), DIV 2 (DIV 1) RCIC STM LINE/TURB ISOL 1PM10J-B303, FIRE DET CONTROL PANEL TROUBLE Automatic Actions: RCIC Isolation except 1E51-F063 and 1E51-F008		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
418.000	ATC or BOP	• Responds to RB Hi Rad annunciators and informs the US • Verifies Automatic actions for RCIC Leak Detection alarms • Attempts to isolate RCIC by closing 1E51-F063 and F008 • Notifies US of RCIC Isolation failure Notifies SRO of LGA-002 entry conditions

418.000
304.010
413.000
	ATC	Performs Reactor Scram and LGP 3-2 on US direction. **.(CT)**
		1. ARM and DEPRESS Scram Pushbuttons
		2. PLACE Reactor Mode Switch in SHUTDOWN
		3. INSERT IRMs and SRMs
		4. CHECK Control Rods INSERTED and Power Decreasing
		5. INFORM Unit Supervisor of Control Rod Status and Reactor Power
		6. Operate Feedwater and/or ECCS as necessary to maintain RPV Water Level 20" to 50" or as specified by Unit Supervisor
		  • Place LFFRV in AUTO
		  o Verify FRV closed in MANUAL
		  • If MDRFP can maintain level, trip the running TDRFP and close its discharge valve
		7. REPORT to the Unit Supervisor the status of RPV Level and Pressure
		8. If needed for level control:
		  o Place the FRV in AUTO
		  o Reset the Scram
		  o Dispatch an EO to close 1CH11-F034, Charging Water Supply Valve
		9. VERIFY Reactor Recirculation Pumps have downshifted
		10. VERIFY Main Turbine and Generator Trip
		11. STABILIZE Reactor Pressure <1020 psig
		  o If Main Condenser is available, open Bypass Valves
		• Maintains RPV water level as directed
		• Maintains RPV pressure as directed

418.000
304.010
	BOP	• Monitors Reactor Building areas for rising Temperature and/or rad levels
		• Perform LOA-AR-101
		  • Evacuate personnel from the Reactor Building
		  • Notify RP to survey and sample in the Reactor Building
		  • Attempt to determine the cause of the high temperature condition

Event-8 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

418.000
304.010
413.000
	SRO	• Directs performance of LORs
		• Directs isolation of RCIC system
		• Enters and directs LGA -002
		• Monitors release limits for potential entry into LGA-009
		• Before any area exceed its Max Safe Rad level
		  • Direct a manual reactor scram **(CT)**
		  • Enter and direct LGA-001
		• Enters and directs actions of LGA-001 LEVEL LEG
		  • Establishes a RPV water level band of -30 to +50 inches
		• Enters and directs actions of LGA-001 PRESSURE LEG
		• STABILIZE Reactor Pressure below 1059 psig

Event – 8	
Description: Unisolable steam leak in RCIC	
Simulator Operator Actions	
Note	The failure to isolated commands are inserted at Setup: • **set vmmsf63r = 1e6** (RCIC Isolation Valve 1E51-F063 Stroke time to 1e6) • **set vtmsf08r = 1e6** (RCIC Isolation Valve 1E51-F008 Stroke time to 1e6)
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 8** and verify the following commands become active: • **imf mes019 (8 0) 70 300** (RCIC Steam leak) • **ior gka03p06 (8 30) 215 120** (Override DIV 1 and 2 RI equipment temp) • **ior gma03p06 (8 30) 215 120** (Override DIV 1 and 2 RI equipment temp) • **ior gka03p04 (8 30) 140 120** (Override DIV 1 and 2 RI equipment temp) • **ior gma03p04 (8 30) 142 120** (Override DIV 1 and 2 RI equipment temp) • **ior g1h32g1w (8 30) 225 600** (Override 601 LPCS temp ind) • **ior g1h31g1w (8 30) 225 600** (Override 601 LPCS temp ind) • **imf fpid1503 (8) 1** (Fire alarm in RI area)

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: When a second area has exceeded Max Safe temperatures and a LGA-004 Blowdown has been performed

Event-9		
Description: 2nd area approaches a Max Safe value		
Initiation:		
Key Parameter Response: RCIC and LPCS Room temperatures, SRV Open indications Expected Annunciators: 1H13-P601 C408, LPCS/RCIC PMP CUBICLE TEMP HI 1H13-P601-B409 (D504), DIV 2 (DIV 1) RCIC STM LINE/TURB ISOL Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Maintains RPV water level as directed during Blowdown • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions
	ATC or BOP	• If directed, opens Turbine Bypass Valves

428.000
 	
421.000
	BOP	• Monitors Reactor Building areas for rising Temperature and/or rad levels
		• Notifies Unit Supervisor of two area radiation levels are above Max Safe **(CT)**
		• When directed, performs a manual initiation of ADS **(CT)**
		  • Arms and depresses both Div 1 ADS MANUAL INITIATION pushbuttons
		  • Arms and depresses both Div 2 ADS MANUAL INITIATION pushbuttons
		• Verifies 7 ADS valves open. **(CT)**
		• Notifies SRO that 3 ADS SRVs failed to open and opens an additional SRVs **(CT)**
		• Monitors containment parameters throughout
		• Reports LGA-003 Entry Condition to the US

428.000
 	
421.000
	SRO	• Anticipates Blowdown and directs actions to rapidly depressurize via turbine bypass valves
		• Directs LGA-004, RPV Blowdown, when 2 areas above Max Safe Radiation and unable to isolate leak. enters and directs LGA-004 **(CT)**
		  • Verifies Suppression Pool level is greater than 18 ft.
		  • Directs a manual initiation of ADS
		• Verifies 7 ADS valves open **(CT)**
		• When Suppression Pool Water Temperature exceeds 105°F, enters and directs LGA-003

Event-9 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

421.000	BOP	When directed, starts all available Pool Cooling per LGA-RH-103
		• Startup RHR Service Water as follows:
		  • OPEN 1A/1B RHR Hx Service Water Outlet Valve: 1E12-F068A/B
		  • At approximately 9 to 10 seconds after taking the 1E12-F068A/B switch to OPEN, START first RHR Service Water Pump: 1A or 1B/C or D
		  • When indicated flow reaches 3000 gpm, START second RHR Service Water Pump
		• Startup RHR
		  • Start 1A/1B RHR Pump
		  • Establish RHR flow of 1500 to 7450 gpm:
		  • Throttle 1E12-F024A/B (Test Valve) OPEN
		  • Close 1E12-F048A/B (HX Bypass)
		  o Place A/B HTX Bypass Throttle/Seal in switch to THROTTLE and THROTTLE CLOSED 1E12-F048A/B or
		  o Place A/B HTX Bypass Throttle/Seal in switch to SEAL IN and CLOSE 1E12-F048A/B

Event – 9	
Description: 2nd area approaches a Max Safe value / 3 ADS valves fail	
Simulator Operator Actions	
None	(Malfunctions established during Setup)

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
None
Terminus: Blowdown has been performed

REFERENCES

Procedure	Title	Revision (As of approval date)
1. LGP-2-1	Normal Unit Shutdown	103
2. LOP-RM-01	Rod Control Management System	42
3. LOA-RD-101	Control Rod Drive Abnormal	19
4. LOP-TG-06	Shutdown of First and Second Stage Reheat Steam	17
5. LOR-1PM02J-A305	GLAND SEAL STEAM CNDSR VAC LO	01
6. LOR-1PM02J-A405	GLAND SEAL STEAM PACKING EXH BLOWER AUTO TRIP	01
7. LOP-GS-05	Change Over Gland Seal Steam Packing Exhauster Blowers	03
8. LOR-1PM13J-B401	CR CAM Panel Trouble	08
9. LOA-PR-101	Unit 1 Process Radiation monitoring System Abnormal	14
10. LOR-1PM06J-B402	TB 1A EXH FAN AUTO TRIP	02
11. LOR-1PM06J-B304	TB DP HI	01
12. LOR-1PM06J-B303	TB SPLY AIR FLOW LOSS	03
13. LOP-VT-01	Turbine Building Ventillation System Startup	23
14. LOA-VT-101	Unit 1 Turbine Building Ventillation Abnormal	03
15. LOR-1H13-P602-A101	A RR FLOW CONTROL VALVE TROUBLE	04
16. LOR-1H13-P603-A108	APRM HI	05
17. LOA-RR-101	Unit 1 Reactor Recirculation System Abnormal	33
18. LOA-PWR-101	Unit 1 Unplanned Reactivity Addition	12
19. LOR 1H13-P601-B110	RB RAD HI	01
20. LOR 1H13-P601 C408	LPCS/RCIC PMP CUBICLE TEMP HI	03
21. LOR 1H13-P601-B409	DIV 2 RCIC STM LINE/TURB ISOL	03
22. LOR 1H13-P601-D504	DIV 1 RCIC STM LINE/TURB ISOL	04
23. LOA-AR-101	Unit 1Area Radiation Monitoring System Abnormal	04
24. LGA-001	RPV CONTROL	14
25. LGA-002	SECONDARY CONTAINMENT CONTROL	06
26. LGA-003	PRIMARY CONTAINMENT CONTROL	14
27. LGA-004	RPV BLOWDOWN	07
28. LGA-010	FAILURE TO SCRAM	13
29. LGP-3-1	POWER CHANGES	57
30. LGP-3-2	REACTOR SCRAM	69
31. LGA-RH-103	Unit 1 A and B RHR Operations in the LGAs and SAMGs	11

COMPUTER AIDED EXERCISE PROGRAM (CAEP)

ESG NRC 13-1-3
Revision: 00
Revision Date: 08/22/14
Developed By: G. Thullen
##

SETUP COMMANDS

- **trgset 2 "g3f02g1d.gt.0.67"** (When CRD Drive pressure >515 psig)
- **imf mrd199 100** (For Event 2, Rod 06-23 Stuck/Rod friction at 100% severity)
- **trg 2 "dmf mrd199"** (On Event Trigger 2, Rod 06-23 malfunction deleted)
- **set vmmsf63r = 1e6** (For Event 8, RCIC Isolation Valve 1E51-F063 Stroke time to 1e6)
- **set vtmsf08r = 1e6** (For Event 8, RCIC Isolation Valve 1E51-F008 Stroke time to 1e6)
- **imf mes009 (**For Event 9, SRV D Fails to open)
- **imf mes010** (For Event 9, SRV E Fails to open)
- **imf mes014** (For Event 9, SRV V Fails to open)
- **ior k2k08pxi false** (For Event 7, 1A RR HPU kill switch disabled)
- **trgset 16 "k7d15wlg"** (For Event 6, If A VT Exh Fan switch is placed in PTL)
- **trgset 26 "k7d15wlg"** (For Event 6, If A VT Exh Fan switch is placed in PTL)
- **trgset 27 "k7d15wlg"** (For Event 6, If A VT Exh Fan switch is placed in PTL)
- **trg 16 "dor k7d15wpg"** (For Event 6, A VT Exh Fan switch override deleted)
- **trg 26 "dor q7d15mag"** (For Event 6, A VT Exh Fan Amber Auto trip light override deleted)
- **trg 27 "dmf r1479"** (For Event 6, A VT Exh Fan trip annunciator malfunction deleted)
- **ior k7d17wpg stop** (For Event 6, C VT Exhaust Fan Switch Taken to STOP)
- **ior q7d17lgg off** (For Event 6, C VT Exhaust Fan Green/Off light off)
- **ior q7d17mag off** (For Event 6, C VT Exhaust Fan Amber/Trip light off)
- **irf vzms020 tripped** (For Event 3, A MSR 2nd Stage Reheater Drain Tank Normal Drain tripped)
- **irf vzms031 tripped** (For Event 3, B MSR 2nd Stage Reheater Drain Tank Normal Drain tripped)

EVENT COMMANDS

- **ior k5g09jpz (4) stop** (On Manual Trigger 4, 1B Packing Exhauster Compressor Trip)
- **ior 15g09maz (4) on** (On Manual Trigger 4,1B Packing Exhauster Auto Trip light on)
- **imf r1211 (4) on** (On Manual Trigger 4, GS SPE BLOWER AUTO TRIP annunciator on)
- **imf mrm039 (5) 10000** (On Manual Trigger 5, VC Rad Monitor failure)
- **trg 15 "dmf mrm039"** (On Manual Trigger 15, deletes the VC Rad Monitor failure)
- **trg 25 "imf mrm039 10000"** (On Manual Trigger 25, VC Rad Monitor fails upscale a 2nd time)
- **ior k7d15wpg (6) stop** (On Manual Trigger 6, A VT Exh Fan switch to stop)
- **ior q7d15lgg (6) off** (On Manual Trigger 6, A VT Exh Fan Green/Off light off)
- **ior q7d15mag (6) on** (On Manual Trigger 6, A VT Exh Fan Amber Auto trip light on)
- **imf r1479 (6) on** (On Manual Trigger 6, A VT Exhaust Fan trip Annunciator on)
- **imf mrc039 (7) 100** (On Manual Trigger 7, RR FCV fails open)
- **imf mes019 (8 0) 70 300** (On Manual Trigger 8, RCIC leak)
- **ior gka03p06 (8 30) 215 120** (On Manual Trigger 8, override DIV 1 and 2 RI equipment temp)
- **ior gma03p06 (8 30) 215 120** (On Manual Trigger 8, override DIV 1 and 2 RI equipment temp)
- **ior gka03p04 (8 30) 140 120** (On Manual Trigger 8, override DIV 1 and 2 RI equipment temp)
- **ior gma03p04 (8 30) 142 120** (On Manual Trigger 8, override DIV 1 and 2 RI equipment temp)
- **imf fpid1503 (8) 1** (On Manual Trigger 8, fire alarm in RI area)

End

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U1 SUPERVISOR TURNOVER

Shift: 2
Date: Today
Mode: 1
OLR: Green
Work Week: Non-Div

Unit 1 power level

- 59% Power

Unit 2 power level

- 100 % Power

U1 Thermal Limit Issues /Power Evolutions

- Shutdown in progress per LGP-2-1
- At Step E.1.7
- Insert Control rods to 61% FCL
- Then secure MSR 2nd Stage Reheat Steam
- RR Downshift on hold until Engineering is present in MCR

U2 Thermal Limit Issues /Power Evolutions

- None

Existing LCOs, date of next surveillance

- None

Existing LCOs, date of next surveillance

- None

LOSs in progress or major maintenance

- None

LOSs in progress or major maintenance

- None

⇒ **Equipment removed from service or currently unavailable**

- 1C VT Exhaust Fan

- None

Grid Status is Green

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green

LaSalle County Station

ILT DYNAMIC SIMULATOR SCENARIO GUIDE

ESG NRC 13-1-2

ATWS Power Level Control

Rev. 0

08/22/2014

DEVELOPED BY:	Instructor	Date 8/20/14
VALIDATED BY:	SME/Instructor	Date 8/27/14
REVIEWED BY:	Operations Manager	Date 8/27/14
APPROVED BY:	Operations Training Manager	Date 8/27/14

Facility: LaSalle County Station **Scenario No.: NRC 13-1-1**

PURPOSE

Examine the ILT candidate's ability to operate the plant in normal, abnormal, and emergency conditions.

SUMMARY OF EVENTS

1. Start LPCS test, LOS-LP-Q1, to the point that walkdowns are being performed.
2. Emergency power reduction for loss of Feedwater heating
   16A Heater High Level Switch Failure / Loss of Feedwater Heating / Power Reduction.
3. HPCS inadvertent initiation
   A spurious HPCS injection occurs. The crew verifies no initiation signals and then secures HPCS. The SRO will address Tech Spec requirements.
4. Rod Drift in
   Rod 34-19 will drift in. Per LOA-RD-101, the rod can be successfully driven full in where it will remain. The rod will be declared inoperable and T.S. requirements addressed.
5. Loss of Bus 133 with immediate action to start the standby RBCCW pump
   Loss of MCC 133. This will cause a trip of the running RBCCW pump, trip of the running IN compressor and a trip of the running Fuel Pool Cooling pump. The crew will be allowed to re-energize MCC 133 and return systems to operation.
6. RR Pump vibes necessitating a manual trip
   The 1A RR pump will develop high vibrations due to a motor cooler leak. When both the Low Flow and Cooler Leaking annunciator R-points are received the crew is required to trip the 1A RR pump immediately. The SRO is expected to direct actions per LOA-RR-101 and make a Technical Specification determination for Single Loop Operations.
7. The crew will recognize operation in Region 1 of the Power/Flow Map. When they respond by scramming the reactor, a hydraulic (high power) ATWS will be identified. Level / Power control will be performed until all controls rods can be inserted.
8. The first SBLC pump will trip after being started. The alternate pump can be started without further problems

Critical Tasks

1. With a reactor scram required and insufficient control rod worth inserted to maintain the reactor shutdown under all conditions without boron, inject boron and take actions to insert control rods.
2. During an ATWS with reactor power above 3% or unknown, rapidly lower RPV water level to at least –60 inches.
3. During an ATWS with reactor power above 3% or unknown, and RPV water level lowered to less than –60 inches, use Preferred ATWS Systems to hold RPV water level between –60 inches and –150 inches on Wide Range.

TRAINING REQUESTS (if applicable)

1. None

OPEX (if applicable)

2. None

IER 11-3

1. **Monitoring plant indications and conditions closely**
2. **Controlling plant evolutions precisely**
3. **Operating the plant with a conservative bias**
4. **Working effectively as a team**
5. **Having a solid understanding of plant design, engineering principles, and sciences**

SOER 10-2

1. **Oversight ensures proper focus**
2. **Equipment restoration risk evaluation**
3. **Preparation for high risk evolution**
4. **Control Room resources adequate for EOP response**
5. **Sufficient engagement of others in decision making**

Record of Revisions (Summary)

Rev. 0	Developed new for the ILT 13-1 NRC Exam

INITIAL SIMULATOR SETUP/REQUIRED DOCUMENTATION

1. Recall a full power IC. (For ILT 13-1 NRC Exam use IC193)
2. Place simulator in RUN.
3. Perform the following panel manipulations:
   - Verify at approximately 3546 MWTH and 100% power
   - Verify APRM Gains are properly set
   - Remove the bias from the RR speed controllers (critical for Event 6)
   - Shift to the1A RBCCW Pump in operation
   - Verify 1B VP Chiller is in service
4. Load and run the setup CAEP written for this scenario: **NRC Scenario 13-1-2.cae**
5. Verify the following:
   - T.S. Timeclock paperwork for OPRM inoperable
   - IST Data Sheet for LPCS Test
   - A calculator is available
6. Prepare the following procedures marked up as described:
   - LOS-LP-Q1:
     - Sections A, B, C, & D circled and slashed
     - Steps E and E.1 circled and slashed
     - Attachment A completed up to Step A.3 using the following values:
       - For Step A.1.5 use 67 psig
       - For Step A.1.10 use 67 -10.8 = 56.2 psig
       - For Step A.1.11 use >1/2
       - For Step A.1.11 use -1/8
       - For Step A.1.11 use +0.0
   - A "Load Following" REMA
7. Place Protected Equipment rings and/or robust barriers on the following components: None
8. Update the Tech Spec Timeclock Sheet as follows: None

TS/TRM/ODCM	System/ Component	Required Action	REQUIRED ACTION Description	Completion Time	Expiration Date/Time
3.3.1.3	OPRMs	A.1 or A.2	Place Channel in Trip or Place associated RPS trip system in trip	30 days	27 days from now
3.3.1.3	OPRMs	B.1	Initiate alternate method to detect and suppress thermal hydraulic instability oscillations	12 hours	Complete
3.3.1.3	OPRMs	B.2	Restore OPRM Trip capability	120 Days	117 days from now

9. Place the following Tags: None
10. Perform the pre-scenario checklist. (TQ-LA-150-0308)

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: LaSalle Scenario No.: NRC Scenario 13-1-2 Op-Test No.: 2014301
Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: At rated power, OPRMs inoperable

Turnover: Perform LOS-LP-Q1, LPCS System In-service Test

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Start LPCS test, LOS-LP-Q1, to the point that walkdowns are being performed
2	set zhd023=0	ATC R	Emergency power reduction for loss of Feedwater heating
3	mnb078	BOP / SRO I TS	HPCS inadvertent initiation
4	mrd082	ATC / SRO C TS	Rod 34-19 Drift in
5	dcov1331	BOP C	Loss of Bus 133 with immediate action to start the standby RBCCW pump
6	iarrviba r0591/r0593	ATC C	RR Pump vibes necessitating a manual trip
7	mrd277 mrd278	Crew M	The crew will recognize operation in Region 1 of the Power/Flow Map. When they respond by scramming the reactor, a hydraulic (high power) ATWS will be identified. Level power control will be performed until all controls rods can be inserted.
8	iasctrpa/b	Crew M	The first SBLC pump will trip after being started. The alternate pump can be started without further problems

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

ES-301-4 Quantitative attributes:	ES-301-5 Quantitative attributes:
Total Malfunctions (5-8): **7**	BOP Normal: **E1**
Malfunction(s) after EOP (1-2): **1**	ATC Reactivity (1 per set): **E2**
Abnormal Events (2-4): **3**	BOP I/C (4 / set): **E3 & E5**
Major Transient(s) /E-Plan entry (1-2): **1**	ATC I/C (4 / set): **E4 & E6**
EOPs (1-2): LGA-001 & 10	SRO-I I/C (4 / set inc 2 as ATC): **E3, 4, 5, & 6**
EOP Contingencies (0-2): **1**	SRO Tech Spec (2 per set): **E3 & E4**
Critical Tasks (2-3): **3**	ALL Maior Transients (2 per set): **E7**

APPROXIMATE SCENARIO RUN TIME

90 Minutes

GENERAL OBJECTIVE: (USED THROUGHOUT THIS EXERCISE)

769.00.01	During performance of tasks, dynamic learning activities, or formal evaluations, demonstrate applicable Human Performance behaviors IAW the appropriate procedures.

TASKS

RO - ATC	
79.010	Provided initial conditions, respond to a loss of Feedwater Heater(s) IAW station procedures.
303.020	Given Unit Supervisor authorization, reduce power from 100% to 60% power IAW LGP 3-1.
25.048	Provided initial indications, respond to a CRD failures from the Main Control Room IAW station procedures.
5.009	Provided initial indications, respond to the loss of a 480VAC ESS bus IAW station procedures
22.008	Given Unit Supervisor Authorization, respond to Reactor Recirc Pump Trouble, IAW station procedures.
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
431.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and shutdown the reactor IAW station procedures
431.010	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and insert control rods IAW station procedures
431.020	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and perform SBLC injection, IAW station procedures
433.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and maintain RPV water level IAW LGA-010.
434.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and control reactor power by maintaining RPV water level IAW station procedures.

RO - BOP/ASSIST	
63.012	Given Unit Supervisor authorization, perform Control Room actions for the LPCS In-service test IAW station procedures.
79.010	Provided initial conditions, respond to a loss of Feedwater Heater(s) IAW station procedures.
79.017	Given Unit Supervisor authorization, respond to a Heater HI/Lo Level alarm IAW station procedures.
61.006	Given Unit Supervisor authorization, perform Control Room actions to shutdown HPCS after an Auto Initiation IAW station procedures.
25.048	Provided initial indications, respond to a CRD failures from the Main Control Room IAW station procedures.
5.009	Provided initial indications, respond to the loss of a 480VAC ESS bus IAW station procedures
114.019	Provided initial indications, perform the Main Control Room actions for a Trip of a Reactor Building Closed Cooling Water (RBCCW
22.008	Given Unit Supervisor Authorization, respond to Reactor Recirc Pump Trouble, IAW station procedures.

RO - BOP/ASSIST (Continued)	
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
431.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and shutdown the reactor IAW station procedures
431.010	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and insert control rods IAW station procedures
433.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and maintain RPV water level IAW LGA-010.
434.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and control reactor power by maintaining RPV water level IAW station procedures.

SRO - UNIT SUPERVISOR	
63.012	Given Unit Supervisor authorization, perform Control Room actions for the LPCS In-service test IAW station procedures.
79.010	Provided initial conditions, respond to a loss of Feedwater Heater(s) IAW station procedures.
79.017	Given Unit Supervisor authorization, respond to a Heater HI/Lo Level alarm IAW station procedures.
303.020	Given Unit Supervisor authorization, reduce power from 100% to 60% power IAW LGP 3-1.
61.006	Perform Control Room actions to shutdown HPCS after an Auto Initiation
201.011	Given a set of plant conditions, identify and prepare the Technical Specification required actions IAW Tech Specs.
25.048	Provided initial indications, respond to a CRD failures from the Main Control Room IAW station procedures.
5.009	Provided initial indications, respond to the loss of a 480VAC ESS bus IAW station procedures
114.019	Provided initial indications, perform the Main Control Room actions for a Trip of a Reactor Building Closed Cooling Water (RBCCW
22.008	Given Unit Supervisor Authorization, respond to Reactor Recirc Pump Trouble, IAW station procedures.
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
431.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and shutdown the reactor IAW station procedures
431.010	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and insert control rods IAW station procedures
431.020	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and perform SBLC injection, IAW station procedures
433.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and maintain RPV water level IAW LGA-010.
434.000	Given entry in LGA-10, Failure to Scram, evaluate plant conditions and control reactor power by maintaining RPV water level IAW station procedures.

Event-1		
Description: Start LPCS test		
Initiation: Following crew assuming shift, on direction of Lead Evaluator		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.

63.012	BOP	Performs LOS-LP-Q1 Attachment 1A starting at Step A.3
		• Records Suppression Pool Level
		• Verify the Div 1 Water leg Pump is running
		• Calculate LPCS Pump Suction Pressure
		• Monitor Pump and Motor Bearing temperatures on PPC
		• Start the LPCS Pump
		• Verify the following alarms on 1H13-P601:
		  • C208 LPCS PMP BKR CLOSED
		  • C209 LPCS PMP DSCH PRESS HI
		  • F103 DIV 1 ADS LPCS/A RHR DSCH PRESS PERMISSIVE
		• Throttle open 1E21-F012, LPCS TEST to Suppression Pool to establish the following:
		  • Flow rate of 6350 gpm
		  • Discharge pressure greater than or equal to 290 psig
		• Verify the following alarms on 1H13-P601:
		  • C209 LPCS PMP DSCH PRESS HI clears
		  • C508 PLCS PMP INJ FLOW HI Annunciates
		• Verify closed 1E21-F011, LPCS Min Flow Valve
		• Verify the 0 DG Cooling Water Pump is running
		• Dispatch an EO to verify the following:
		  • RCIC Pumps Corner Room Cooling Fan has started
		  • RECORD Coil DP from 1PDI-VY012
		  • RECORD Fan DP from 1PDI-VY011
		• Track LPCS Pump Discharge Flow on PPC

63.012	SRO	• Supervise LOS-LP-Q1

Event – 1	
Description: Start LPCS test	
Simulator Operator Actions	
When the LPCS Pump is started,	Verify that **Event Trigger 1** goes TRUE and that the LPCS Hi Discharge Pressure alarm (C209) comes in 2 seconds later **imf r0283 (1 2)** LPCS Hi Disch Pressure Alarm overridden ON
When the LPCS Pump Test Valve is opened,	Verify that **Event Trigger 21** goes TRUE and that the LPCS Hi Discharge Pressure alarm malfunction is deleted **trg 21 "dmf r0283"** LPCS Hi Disch Pressure Alarm (C209) deleted

Simulator Operator Role Play
As EO when dispatched to perform Post Start Checks per Step A.6.8: • The RCIC Pumps Corner Room Cooling Fan has started and is running normally • The Coil DP from 1PDI-VY012 is 1.7 in.wg. • The Fan DP from 1PDI-VY011 is 2.0 in.wg.

Floor Instructor Notes/OPEX/TRs
None
Terminus: When the LPCS Pump has been started and flow is being monitored

Event-2		
Description: Emergency power reduction for loss of Feedwater heating		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 2.**		
Key Parameter Response: Core Thermal Power Rising; MWe Digital display value rising Expected Annunciators: 1PM03J-B101, HP Heater 16 Level Hi 1PM03J-B408, First Stage Reheater Drain Tank 1A Drain Valve Closed 1PM03J-B409, Second Stage Reheater Drain Tank 1A Drain Valve Closed 1PM03J-B301, High Pressure Heater 16 Drain Valves Closed Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

79.010
303.020
	ATC	• Per LOA-HD-101 when heater isolates:
		  • REDUCE Reactor Power as necessary without entering Region 2:
		  • Reduce RR flow.
		  • INSERT CRAM Arrays, if available.
		  • INSERT control rods from the back of the sequence.
		  • REDUCE core flow at least 5 Mlbm/hr for every 10°F Feedwater drops below nominal on the curve, AND FOLLOW directions on Figure 1
		• Per LOA-PWR-101 for reactor power > 100%
		  • CHECK RPS setpoints not exceeded.
		  • CHECK Reactor Power is LESS than 100%.
		  • REDUCE Reactor Power to < 100% using RR flow or rods.
		  • Verify FCL is less than MELLA

79.017
79.010
	BOP	• Responds to annunciator 1PM03J-B101 and informs the US
		  • DETERMINE which 16 heater is high (16A)
		  • VERIFIES 16A Spill Valve is OPEN
		  • Dispatch operator to CHECK level controller at local instrument rack
		  • DETERMINE is 16A Normal Drain Solenoid valves are LATCHED
		  • CHECK operation of low pressure heaters
		  • REFER to LOA-HD-101 when 16A heater isolates
		• Per LOA-HD-101 when heater isolates:
		  • CHECK Extraction Steam Supply Valves OR Extraction Steam Non-Return Valves CLOSED for any heater with HIGH-HIGH level trip

79.017 79.010 303.020	US	• Directs actions per LORs. • Directs actions per LOA-PWR-101. • Directs actions per LOA-HD-101. • Notifies QNE – Refers to TS COLR. Directs insertion of Thermal Penalty for FWHOOS. o If RBM channel is taken to BYPASS, enter T.S. 3.3.2.1 Condition A

Event – 2	
Description: Emergency power reduction for loss of Feedwater Heating	
Simulator Operator Actions	
NOTE: This event simulates the failure of the 16A level switch in the high level direction. This causes all of the isolation actions for the 16A heater with the indicated level showing normal level. This is because the level indication comes from a different transmitter. (M2061-7 1LS-HD023)	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 2** and verify the following Monitored Parameter value goes to 0.0: • **trg 2 "set zdh023=0"** (16A Heater Level Switch Failure)

Simulator Operator Role Play
As EO, if sent to investigate: Wait 3 minutes and then report that there are no indications of high level in the 16A heater and the normal drains have closed.

Floor Instructor Notes/OPEX/TR's
None
Terminus: Power Reduced

Event-3		
Description: HPCS inadvertent initiation		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 3.**		
Key Parameter Response: RPV water level normal, Containment Parameters normal, APRM and core thermal power rising when HPCS is injecting Expected Annunciators: 1H13-P601-A201, 1B DG ENGINE RUNNING 1H13-P601-A204, HPCS PMP BKR 2 CLOSED 1H13-P601-A205, HPCS SYS ACTUATED 1H13-P601-A208/A308, RX VESSEL WTR LVL 2 LO-LO 1H13-P601-A405, HPCS PUMP DISCH FLOW HI 1H13-P601-A406, HPCS HDR PRESS HI Automatic Actions: HPCS initiation		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Maintains Reactor water level per US direction

61.006	BOP	• Responds to annunciators and inform Unit Supervisor
		• Per LOR 1H13-P601-A205, recognizes that HPCS is operating on minimum flow and must be shutdown
		• When directed, secures the HPCS pump per LOP-HP-04
		  • RESET the HPCS logic by DEPRESSING the HPCS High Drywell Press/Low Wtr Level and High Water Level logic reset pushbuttons.
		  • Recognizes that initiation signal will not reset and inform US
		  • Closes 1E22-F004, HPCS Injection Line Isolation valve
		  • Verifies 1E22-F012, HPCS Pump min Flow valve opens
		  • When directed, takes the HPCS Pump switch to Pull-To-Lock
		  • Verifies 1E22-F012, HPCS Pump min Flow valve closes when the Pump is stopped
		• If directed, secures the HPCS Diesel per LOP-DG-03
		  • CHECK DG has operated unloaded for 5 to 10 minutes to provide adequate cooldown
		  • VERIFY Diesel Gen Selector switch in REMOTE MANUAL
		  • PLACE Diesel Gen Control switch to STOP position
		  • Immediately PLACE 1 the 1B DG Engine Maintenance Switch in MAINT
		• When directed, returns the LPCS pumps to Standby readiness
		  • Throttle closed 1E21-F012 LPCS Test to SP
		  • When flow is < 2000 gpm, verify 1E21-F011 opens
		  • Verify LPCS PMP INJ FLOW HI alarm clears
		  • When flow is < 2000 gpm, stop the LPCS Pump

(Continued)

Event-3 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

61.006
201.011
	SRO	• Determines that the HPCS initiation is not valid
		• Per LOR 1H13-P601-A205, determines that HPCS operation is not required and directs HPCS Pump shutdown
		• May direct shutdown of the HPCS Diesel
		• When HPCS Pump switch to taken to Pull-To-Lock, declares HPCS inoperable and enters:
		  • TS 3.5.1 Condition B.1: Verify RCIC operable immediately
		  • TS 3.5.1 Condition B.2: Restore HPCS operability in 14 days
		• Per LOR 1H13-P601-A208 & A308 Refers to TS 3.3.5.1
		  • Condition A.1, Immediately enter condition B (from Table)
		  • Condition B.2, Within 1 Hr, Declare HPCS inoperable
		  • Condition B.3, Within 24 Hrs, Place Channel in Trip
		• Per LOR 1H13-P601-A201 Refers to TS 3.8.1

Event – 3	
Description: HPCS inadvertent initiation	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 3** and verify the following commands become active: • **mnb078 (3) 55.5** (HPCS initiation setpoint drift, inadvertent initiation)

Simulator Operator Role Play
When directed to place the 1B DG Maintenance switch in MAINT, wait 1 minute and then report completion of the task.

Floor Instructor Notes/OPEX/TR's
None
Terminus: HPCS Secured and TS determination completed

Event-4		
Description: Rod Drift in		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 4.**		
Key Parameter Response: Control Rod 34-19 position indication Expected Annunciators: 1H13-P603-A504, CRD DRIFT Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
25.048	ATC	Per LOR-1H13-P603-A504: • REFER to LOA-RD-101, "Control Rod Drive Abnormal" Per LOA-RD-101: • CONTINUALLY CHECK rod status: • No more than 1 control rod MOVING at the same time (**YES**) • No more than 3 control rods have SCRAMMED or DRIFTED Full in (**NO**). • CHECK Control Rods – No control rod currently moving (**NO**) • SELECT drifting control rod • VERIFY insert block light – OFF at rod select matrix • If required, REMOVE insert block: • PLACE the RWM Mode switch to BYP • Verify greater than Low Power Setpoint • INSERT control rod to position 00 • Place the CRD Drive Flow Trip Circuit Bypass switch in BYPASS • CHECK control rod remains at 04 or less • Verifies CRD Cooling Water parameters are normal • When directed, takes Rod 34-19 out of service per LOP-RM-02 • May direct electrically disarming Rod 34-19 per LOP-RM-02
25.048	BOP	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions • From PPC, demand current control rod position • From PPC, demand LPRM diagnostic • Run and OD-20
25.048 201.011	US	• Directs actions above • Enforces OPS expectations and standards • Refers to T.S. 3.1.3: • Condition C.1; Fully insert the control rod in 3 hours • Condition C.2; Disarm the control rod in 4 hours • Directs C/O for rod 30-43 • Contacts the QNE to monitor the core

Event – 4	
Description: Rod Drift in	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 4** and verify the following commands become active: • **imf mrd082 (4)** (Rod 34-19 drift in)
After rod is fully inserted	From the Summary Page, **DELETE** the rod drift malfunction: • **mrd082**

Simulator Operator Role Play
Role play EO as required if dispatched to HCU 34-19. Wait 2 minutes to report that there is no apparent problem at the HCU.

Floor Instructor Notes/OPEX/TR's
None
Terminus: US has entered TS 3.1.3 condition C.1 and C.2

Event-5		
Description: Loss of Bus 133		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 5.**		
Key Parameter Response: Bus 133 Indication Expected Annunciators: 1PM01J-A511, 480V BUS 131X/Y 133 137X/Y UNDERVOLTAGE 1PM10J-A101, RBCCW PMP AUTO TRIP 1PM10J-A201, RBCCW PMP DISCH HDR PRESS LO 1H13-P602-A303, RWCU FILTER INLET TEMP HI-HI 1PM13J-A404, INSTRUMENT NITROGEN SYSTEM TROUBLE Automatic Actions: RWCU Isolates, IN Compressor trips, Running Fuel Pool Cooling Pump trips		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
5.009	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors RR bearing temps per LOA-RR-101.

5.009	ATC or BOP	• Per LOA-RT-101:
		  • Verifies isolation valves F004 is closed
		  • Verifies the running RWCU pump is tripped
		  • Directs an EO to isolate the Filter Demins

5.009
114.019
	BOP	• Performs the Immediate Operator Actions of LOA-WR-101
		  • Identifies RBCCW Discharge Header Pressure <50 psig
		  • Starts Standby Reactor Building Closed Cooling Water (WR) Pump
		• Dispatches operator to investigate loss of Bus 133
		  • Re-energizes 133 when no damage observed
		• Refers to LOR 1PM13J-A404
		  o May direct an EO to restore the IN Compressor lineup

5.009 114.019	SRO	• Directions response per LORs • Directs re-energizing 133 when no problems identified

Event – 5	
Description: Loss of Bus 133	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 5** and verify the following commands become active: • **irf dcov1331 (5) tripped** (MCC133 tripped) • **IMMEDIATELY** return 133 Remote Function to "normal" to allow reclosure of breaker if attempted.
If requested to isolate RWCU Demins	Shutdown and isolate RWCU FDs from Screen RT-2 by verifying the FDs are off and closing 2 valves

Simulator Operator Role Play
As contractor working in the area call the control room and report "I was working in the area of 141Y and accidentally banged a breaker with a piece of scaffolding".
As EO dispatched to check on the Electrical busses: Report no visible damage at Bus 133 or 141Y
As EO dispatched to the IN Compressors-acknowledge directions from the Control Room (No further action is necessary)

Floor Instructor Notes/OPEX/TR's
Terminus: Bus 133 reenergized

Event-6		
Description: RR Pump Vibes		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 6.**		
Key Parameter Response: Recirc Pump monitoring PPC Screen Expected Annunciators: 1H13-P602-A304, 1A RR PMP MTR CLG WTR FLOW LO / CLR LKG 1H13-P602-A305, 1A RR PMP MTR VIBR HI Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
22.008	ATC	Per 1H13-P602-A305, 1A RR Pump Motor Vibrations (takes actions as time permits): • PUSH high vibration reset pushbutton (will not reset) • IMMEDIATELY notify System Engineering to evaluate pump for continued operations • CHECK motor bearing temperatures, motor amperage indication, and loop flow for any abnormal trends (none) o May dispatch an EO and System Engineering to CHECK the Loose Parts Monitoring System abnormal • REFER to LOA-RR-101, Reactor Recirculation System Abnormal Per 1H13-P602-A304, reflashes after 2 minutes: • RECOGNIZES receipt of second R-point • IMMEDIATELY trips 1A RR pump to off Per LOA-RR-101 Step B.2 for trip of an RR pump: • (B.2.1) CHECK at least one RR pump running (yes) • (B.2.2) 1H13-P603-A109, OPRM Hi Alarm – CLEAR (yes) • (B.2.3) PERFORM subsection B.1 concurrently while continuing Per LOA-RR-101 Step B.1 for Thermal Hydraulic Instability • (B.1.1) If OPRM Trip Capability is not Maintained, go to Step B.1.6 • (B.1.2) CHECK outside of Region 1 – NO • Scram the reactor • Exit to LPG 3-2
22.008 304.010	BOP	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions • Verifies Isolations
22.008 304.010	SRO	• DIRECTS Actions per LOA-RR-101, Reactor Recirculation Abnormal, step B.2 for RR pump trip • Direct actions per LGP 3-2 • Enter LGA-001, RPV Control

Event-6 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
304.010	ATC	Performs Reactor Scram and LGP 3-2 on US direction. 1. ARM and DEPRESS Scram Pushbuttons 2. PLACE Reactor Mode Switch in SHUTDOWN 3. INSERT IRMs and SRMs 4. CHECK Control Rods INSERTED and Power Decreasing 5. INFORM Unit Supervisor of Control Rod Status and Reactor Power 6. Operate Feedwater and/or ECCS as necessary to maintain RPV Water Level 20" to 50" or as specified by Unit Supervisor (See Event 5) o After initial level shrink following scram, as level begins to recover, TRIP one TDRFP and close its discharge valve o Start the MDFRP and verify proper operation • Place LFFRV in AUTO o Verify FRV closed in MANUAL • If MDRFP can maintain level, trip the running TDRFP and close its discharge valve • REPORT to the Unit Supervisor the status of RPV Level and Pressure

Event – 6	
Description: RR Pump Vibes	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 6** and verify the following commands become active: • **irf iarrviba (6) high** (A Recirc Pump high vibration) • **imf r0591 (6) 1** (1A RR Pump motor winding cooler leak SER alarm point) • **imf r0593 (6 120) 1** (After 2 minutes, 1A RR Pump motor cooling water low flow SER alarm point)

Simulator Operator Role Play
Role Play: as System Engineering / Field Personnel – as necessary
If dispatched to check the Loose Parts Monitoring System, report no abnormal indications

Floor Instructor Notes/OPEX/TR's
Terminus: When a manual reactor scram has been attempted

Event-7		
Description: ATWS		
Initiation: Event continues from the previous event		
Key Parameter Response: Not all Control Rods fully insert, Reactor power remains well above Expected Annunciators: None Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

431.000
 	
431.010
 	
433.000
434.000
	ATC	• Recognize that all rods did not insert and notify US (Hydraulic ATWS)
		Per the POWER Leg
		• If control rods remain out:
		  • Initiate ARI
		  • If power is above 3%, initiate SBLC (See Event 8)
		• Insert Control rods per LGA-NB-01 (CT)
		  • Method 3 Single Rod Insert
		  • Bypass RWM
		  • Place CRD Drive Flow Trip Circuit in BYPASS
		  • Insert control rods using Continuous Insert or Insert Button
		• WAIT until rods in except one in to at least 02 OR Reactor will stay shutdown under all conditions without boron per QNE.
		• WAIT until Reactor is Shutdown or Cold Shutdown Boron is injected (<3050 gal in SBLC Tank)
		Per the Level Leg
		• If reactor power > 3% or unknown then Rapidly LOWER Level to at least –60 inches (minimizes Feedwater injection) (CT) and use only preferred systems to hold level between –100 and –60 inches. (CT)

431.010
 	
433.000
	BOP
	or
	ATC
		• RUNBACK Reactor Recirculation flow to minimum
		  • If power is >3% then TRIP RR Pumps (Only 1B RR Pump will be running)
		• Method 4 Reset Scram/Drain SDV/Re-Scram
		  • Direct Unit 2 Assist to deenergize ARI
		  • Direct Unit 2 Assist to Install jumpers for resetting the scram
		  • Direct an EO to close 1C11-F034
		  • Reset Scram/Drain SDV/Re-Scram

  433.000	BOP	Per LGA-010 • Inhibit ADS • Prevent injection from HPCS, LPCS and LPCI (CT) Per the PRESSURE Leg • STABILIZE pressure <1059 psig using main turbine bypass valves • VERIFY required automatic actions occur (See event 6) o May request LGA-RH-101 jumper installation

Event-7 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

431.000
 	
433.000
434.000
 	
431.020
431.010
	US	• If all rods are not in to at least 02 and the reactor will not stay shutdown without Boron then EXIT LGA-001 and ENTER LGA-010
		• Directs Inhibit ADS
		• Directs rapidly lowering vessel level to –60".(CT) (PRA)
		• Directs controlling level –100" to –60".(CT)
		• Directs start of SBLC and/or insert control rods.(CT) (PRA)
		• Directs method of control rod insertion per LGA-NB-01(CT)
		  • May direct Method 3 Single Rod Insert
		  • May direct Method 4 Reset Scram/Drain SDV/Re-Scram
		• Directs bypassing MSIV low level isolation per LGA-MS-01

Event – 7	
Description: ATWS	
Simulator Operator Actions	
When directed by the crew, insert ATWS Jumpers and pull fuses. These actions should take approximately 5 minutes – or- as directed by the Lead Examiner/Floor Instructor. Actions may be delayed to allow completion of actions.	LGA-MS-01 • From the RNI display – JMP Screen – click on LGA-MS-01 jumpers (5 jumpers) • Select "INSTALLED" then "INSERT" LGA-NB-01 Method 4 • From the RNI display – JMP Screen – click on LGA-NB-01 jumpers (1 set) • Select "INSTALLED" then "INSERT" • From the CRD Screen (RD1) or cae, close CRD 34 when directed: **irf vhrd034d 0** • From the Action List Remote Function (RD) or cae, de-energize ARI Logic when directed: **irf iaaride1 de-energize** and **irf iaaride2 de-energize** LGA-RH-101 • From the RNI display – JMP Screen – click on LGA-RH-101 (1 jumper) Select "INSTALLED" then "INSERT"
When the scram reset and low air header pressure alarm is clear and at the direction of the Lead Evaluator	From the Summary Screen or cae, delete SDV malfunctions: **dmf mrd277** **dmf mrd278**

Simulator Operator Role Play
Role Play Unit 2 NSOs as necessary to complete LGA-NB-01, LGA-MS-01, and LGA-RH-101 ATWS Actions

Floor Instructor Notes/OPEX/TR's
Terminus: All rods fully inserted. RPV level stable and under control in required band. And Upon approval of Lead Examiner.

Event-7 (Continued)		
Description: ATWS, After Control rods inserted		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
304.010 433.000	ATC	• When directed, stops SBLC pump • VERIFY Main Turbine and Generator Trip • STABILIZE Reactor Pressure <1020 psig • Monitors and reports RPV water level throughout • Controls injection from Condensate and Feed system
	BOP	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions
433.000	US	• When rods inserted, direct securing SBLC injection • When rods inserted, exits LGA-010 and LGA-001 • Enters and directs actions of LGA-001 LEVEL LEG • Directs water level band of +11" to +59.5" (+20" to +50" preferred) • Enters and directs actions of LGA-001 PRESSURE LEG • STABILIZE Reactor Pressure below 1059 psig

Event-8		
Description: The first SBLC pump will trip after being started.		
Initiation: None, failure is established at Setup.		
Key Parameter Response: SBLC Pump indications		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
431.020	ATC	• If power is >3% then START SBLC (per LGA-SC-101) **(CT)** • PLACE 1A/B SBLC PMP switch to SYS A/SYS B position • Verify SBLC injecting • Identifies that the selected SBLC Pump did not start and starts the other SBLC Pump • Verifies SBLC injecting • Verifies RWCU has isolated • Reports failure to US
	BOP	• Performs EOP actions as directed by SRO
431.020	SRO	• Directs start of SBLC and/or insert control rods.**(CT)**

Event – 8
Description: The first SBLC pump will trip after being started
Simulator Operator Actions
Note: Commands for failure of first SBLC pump to start are inserted at Setup.

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
None
Terminus: • All rods fully inserted • RPV level stable and under control in required band • Upon approval of Lead Examiner.

REFERENCES

Procedure	Title	Revision (as of 1st validation)
1. LOS-LP-Q1	LPCS SYSTEM INSERVICE TEST	55
2. LOR-1PM03J-B101	HP Heater 16 Level Hi	01
3. LOR-1PM03J-B408	First Stage Reheater Drain Tank 1A Drain Valve Closed	01
4. LOR-1PM03J-B409	Second Stage Reheater Drain Tank 1A Drain Valve Closed	01
5. LOR-1PM03J-B301	High Pressure Heater 16 Drain Valves Closed	02
6. LOA-HD-101	Heater Drain System Trouble	32
7. LOA-PWR-101	Unplanned Reactivity Addition	12
8. LOR-1H13-P601-A201	1B DG ENGINE RUNNING	03
9. LOR-1H13-P601-A205	HPCS System Actuated	03
10. LOR-1H13-P601-A208	Reactor Vessel Water Level 2 Lo-Lo	03
11. LOP-HP-04	Shutdown HPCS after an Auto Initiation	13
12. LOP-DG-03	Diesel Generator Shutdown	33
13. LOR-1H13-P603-A504	CRD Drift	04
14. LOP-RM-01	Reactor Manual Control Operation	42
15. LOP-RM-02	RMCS On Demand Functions	21
16. LOR-1PM01J-A511	480V BUS 131X/Y 133 137X/Y UNDERVOLTAGE	01
17. LOR-1PM10J-A101	RBCCW PMP AUTO TRIP	02
18. LOR-1PM10J-A201	RBCCW PMP DISCH HDR PRESS LO	02
19. LOR-1H13-P602-A303	RWCU FILTER INLET TEMP HI-HI	02
20. LOA-WR-101	Loss of RBCCW	11
21. LOA-RT-101	Loss of RWCU System	17
22. LOR 1PM13J-A404	INSTRUMENT NITROGEN SYSTEM TROUBLE	07
23. LOR-1H13-P602-A304	1A RR PMP MTR CLG WTR FLOW LO / CLR LKG	06
24. LOR-1H13-P602-A305	1A RR PMP MTR VIBR HI	03
25. LOA-RR-101	Unit 1, Reactor Recirculation System Abnormal	33
26. LGA-001	RPV CONTROL	14
27. LGA-002	SECONDARY CONTAINMENT CONTROL	06
28. LGA-003	PRIMARY CONTAINMENT CONTROL	14
29. LGA-010	FAILURE TO SCRAM	13
30. LGP-3-1	POWER CHANGES	57
31. LGP-3-2	REACTOR SCRAM	69
32. LGA-RH-103	Unit 1 A and B RHR Operations in the LGAs and SAMGs	11
33. LGA-SC-101	Initiation of SBLC Unit 1	02
34. LGA-NB-01	Alternate Rod Insertion	17

COMPUTER AIDED EXERCISE PROGRAM (CAEP)

ESG NRC 13-1-2
Revision: 00
Revision Date: 8/22/14
Developed By: G. Thullen
##

SETUP COMMANDS

- **imf mrd277 62** (For Event 7, Degraded Scram Discharge Volume South ATWS)
- **imf mrd278 56** (For Event 7, Degraded Scram Discharge Volume North ATWS)
- **trgset 9 "q3j00rro .EQ. 1"** (For Event 8, A SBLC pump Red light on)
- **trgset 10 "q3j00rro .EQ. 1"** (For Event 8, A SBLC pump Red light on)
- **trgset 11 "q3k00rro .EQ. 1"** (For Event 8, B SBLC pump Red light on)
- **trgset 12 "q3k00rro .EQ. 1"** (For Event 8, B SBLC pump Red light on
- **mrf iasctrpa (9) trip** (For Event 8, On Event Trigger 9, A SBLC Pump trips after start)
- **mrf iasctrpb (11) trip** (For Event 8, On Event Trigger 11, B SBLC Pump trips after start)
- **trg 10 "drf iasctrpb"** (For Event 8, On Event Trigger 10, B SBLC Pump trip deleted)
- **trg 12 "drf iasctrpa"** (For Event 8, On Event Trigger 13, A SBLC Pump trip deleted)
- **trgset 1 "k1p24wbl"** (For Event 1, LPCS pump switch taken to START)
- **trgset 21 "q1m23rrl.eq.1"** (For Event 1, LPCS Test Valve OPEN light comes on)

EVENT COMMANDS

- **imf r0283 (1 2) on** (On Event Trigger 1, LPCS Hi Disch Pressure Alarm overridden ON)
- **trg 21 "dmf r0283"** (On Event Trigger 21, LPCS Hi Disch Pressure Alarm Malfunction deleted)
- **trg 2 "set zhd023=0"** (On manual Trigger 2, 16A Heater Level Switch Failure)
- **mnb078 (3) 55.5** (On Manual Trigger 3, HPCS initiation setpoint drift, inadvertent initiation)
- **imf mrd082 (4)** (On Manual Trigger 4, Rod 34-19 drift in)
- **irf dcov1331 (5) tripped** (On Manual Trigger 5, MCC133 tripped)
- **irf iarrviba (6) high** (A Recirc Pump high vibration)
- **imf r0591 (6) 1** (1A RR Pump motor winding cooler leak SER alarm point)
- **imf r0593 (6 120) 1** (After 2 minutes, 1A RR Pump motor cooling water low flow SER alarm point)

ATWS COMMANDS

- **irf vhrd034d 0** (Close CRD 34 when directed)
- **irf iaaridede1 de-energize** (Deenergizes ARI Div 1 Logic when directed)
- **irf iaaridede2 de-energize** (Deenergizes ARI Div 2 Logic when directed)
- **dmf mrd277** (Deletes the SDV South malfunction when directed)
- **dmf mrd278** (Deletes the SDV North malfunction when directed)

End

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U1 SUPERVISOR TURNOVER

Shift: 2
Date: Today
Mode: 1
OLR: Green
Work Week: Non-Div

Unit 1 power level

- 100 % Power

Unit 2 power level

- 100 % Power

U1 Thermal Limit Issues /Power Evolutions

- None

U2 Thermal Limit Issues /Power Evolutions

- None

Existing LCOs, date of next surveillance

- All OPRMs are Inoperable due to a NRC Part 21 issue; Next Required Action in 27 Days

Existing LCOs, date of next surveillance

- None

LOSs in progress or major maintenance

- LOS-LP-Q1 in progress:
  - Prestart checks in the LPCS room have been completed
  - Attachment A is completed up to Step A.2.3

LOSs in progress or major maintenance

- None

⇒ **Equipment removed from service or currently unavailable**

- None

- None

Grid Status is Green

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green

LaSalle County Station

ILT DYNAMIC SIMULATOR SCENARIO GUIDE

ESG NRC 13-1-1

Startup in Progress / LOCA with loss of HP Injection

Rev. 0

08/22/2014

DEVELOPED BY:	Instructor	Date 8/26/14
VALIDATED BY:	SME/Instructor	Date 8/27/14
REVIEWED BY:	Operations Manager	Date 8/27/14
APPROVED BY:	Operations Training Manager	Date 8/27/14

Facility: LaSalle County Station **Scenario No.: NRC 13-1-1**

PURPOSE

Examine the ILT candidate's ability to operate the plant in normal, abnormal, and emergency conditions.

SUMMARY OF EVENTS

1. Perform LOP-CM-02 to confirm Drywell O2 reading
   The BOP Starts the Div 1 Post LOCA Analyzer to confirm Drywell O2 readings are < 1% per LOP-CM-02, Section E.5.
2. Withdraw control rods to raise power.
   The ATC will continue to pull control rods per the startup sequence package to 1½ Turbine Bypass Valves per Step 5.1.
3. CRD Pump degrades and FCV fails to Manual
   The 1A CRD Pump will degrade requiring the ATC to swap running CRD Pumps and adjust CRD flow. The ATC will review LOP-RD-03 for swapping with the pump degraded.
4. A Fuel Pool Radiation Monitor fails inoperable
   The 1C Reactor Building Ventilation Fuel Pool Exhaust Radiation Monitor fails Downscale. The Unit Supervisor is expected to make a Technical Specification 3.3.6.1 determination
5. EHC Leak, swap pumps
   Loss of EHC fluid pressure. An EO is dispatched to investigate. Discovery of a leak on the running EHC pump that can be isolated. EHC standby pump fails to auto start and BOP must take action to stop falling pressure per the LOR for EHC fluid tank low level.
6. D APRM fails INOP
   The crew is expected to follow annunciator procedures for the APRM failure. The ATC must diagnose the failure. Since all other APRMs are operable, the SRO and ATC can bypass the APRM and reset the ½ scram
7. Loss of one Squib valve continuity indication
   The annunciator activates for loss of continuity on the A SBLC Squib valve. The crew investigates and determines that the valve is inoperable. The US enters T.S. 3.1.7.
8. Steam Seal PCV Failure
   Steam Seal Evaporator Pressure Control Valve fails. The PCV Bypass valve will not open. The BOP must line up to supply steam from the Main Steam header per LOA-GS-101.
9. LOCA
   A suction line ruptures on B Recirc Loop. The crew responds Per LGA-001 and LGA-003. When high pressure injection systems are lost, the crew will attempt to maintain RPV water level with alternate injection systems. Suppression Pool and Drywell sprays can be used to mitigate the transient on the Containment.
10. Loss of high pressure injection due to trip of the SAT and failure of the HPCS Pump breaker to close. When RPV water level reaches TAF, the crew will perform LGA-004 and then restore PRV water level

Critical Tasks

1. Start drywell spray before exceeding the PSP curve.
2. With available injection systems unable to hold RPV water level above –150 inches on Wide Range, enter LGA-004 and verify emergency depressurization initiated when RPV water level drops to –150 inches on Wide Range.
3. With High Pressure Injection systems unavailable, utilize Low Pressure systems to restore and maintain level > TAF.

TRAINING REQUESTS (if applicable)

1. None

OPEX (if applicable)

2. None

IER 11-3

1. **Monitoring plant indications and conditions closely**
2. **Controlling plant evolutions precisely**
3. **Operating the plant with a conservative bias**
4. **Working effectively as a team**
5. **Having a solid understanding of plant design, engineering principles, and sciences**

SOER 10-2

1. **Oversight ensures proper focus**
2. **Equipment restoration risk evaluation**
3. **Preparation for high risk evolution**
4. **Control Room resources adequate for EOP response**
5. **Sufficient engagement of others in decision making**

Record of Revisions (Summary)

Rev. 0	Developed new for the ILT 13-1 NRC Exam

INITIAL SIMULATOR SETUP/REQUIRED DOCUMENTATION

1. Recall a startup IC at approximately 11% power with the Reactor Mode switch in RUN.
    - Use IC192 for ILT 13-1 NRC Exam.
    - (Note: IC37 is just prior to Turbine Roll. If this IC is used, control rods must be inserted.)
2. Place simulator in RUN.
3. Verify the following:
    - Reactor Mode switch in RUN
    - Reactor power is at approximately 11%
    - The Recirc Pump Flow Control Valves are Full Open and Locked-Up
    - The Off Gas Preheater is on the PCV per LGP-1-1 Step E.4.19
    - A CRD Pump is running
    - A EHC Pump is running
    - All APRMs are in service
4. Load and run the setup CAEP written for this scenario: **NRC Scenario 13-1-1.cae**
5. Provide the following procedures marked up as described:
    - Rod Pull Sheet marked up to Step 417, move Rod 10-35 from 8 to 12
    - REMA prepared for Startup
    - LGP-1-1, completed up to Step E.5
    - LOP-CM-02:
        - Sections B, C, & D completed
        - Step E.5.1 completed
        - Steps 5.3 and 5.4 marked N/A
    - LOP-RM-01 marked up for Startup
6. Place Protected Equipment rings and/or robust barriers on the following components: None
7. Update the Tech Spec Timeclock Sheet as follows: None
8. Perform the pre-scenario checklist. (TQ-LA-150-0308)

Appendix D **Scenario Outline** **Form ES-D-1**

Facility: LaSalle Scenario No.: NRC Scenario 13-1-1 Op-Test No.: 2014301
Examiners: _____ Operators: _____

Initial Conditions: 11% power in RUN prior to synchronizing the Main Generator

Turnover: Drywell Inerting just Completed. Perform LOP-CM-02 to confirm Drywell O2 reading

Event No.	Malf. No.	Event Type*	Event Description
1	None	BOP N	Perform LOP-CM-02 to confirm Drywell O2 reading
2	None	ATC R	Withdraw control rods to raise power.
3	mrd027 mrd284	ATC C	CRD Pump degrades and FCV fails to Manual. Swap CRD Pumps and adjust CRD Flow
4	mrm021	SRO TS	A Fuel Pool Rad monitor fails inoperable
5	mms007 k5h09wl6	BOP C	EHC Leak, swap pumps
6	ko430w5b	ATC I	D APRM fails inoperable TS
7	r0742	SRO TS	Loss of one Squib valve continuity indication
8	k5h03jc1	BOP C	Steam seal PCV Failure
9	mrc034	Crew M	LOCA
10	mee041 mes032	Crew M	Loss of high pressure injection due to trip of the SAT and failure of the Div 3 DG Output breaker. When RPV water level reaches TAF, the crew will perform LGA-004 and then restore RPV water level

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

ES-301-4 Quantitative attributes:	ES-301-5 Quantitative attributes:
Total Malfunctions (5-8): **8**	BOP Normal: **E1**
Malfunction(s) after EOP (1-2): **2**	ATC Reactivity (1 per set): **E2**
Abnormal Events (2-4): **E6 & E8**	BOP I/C (4 / set): **E5 & E8**
Major Transient(s) /E-Plan entry (1-2): **E9**	ATC I/C (4 / set): **E3 & E6**
EOPs (1-2): **2**	SRO-I I/C (4 / set inc 2 as ATC): **E3, 5, 6, & 8**
EOP Contingencies (0-2): **2** (ALC and BD)	SRO Tech Spec (2 per set): **E4 & E7**
Critical Tasks (2-3): **3**	ALL Maior Transients (2 per set): **E9**

APPROXIMATE SCENARIO RUN TIME

90 Minutes

GENERAL OBJECTIVE: (USED THROUGHOUT THIS EXERCISE)

769.00.01	During performance of tasks, dynamic learning activities, or formal evaluations, demonstrate applicable Human Performance behaviors IAW the appropriate procedures.

TASKS

RO - ATC	
47.001	Given Unit Supervisor authorization, Perform a Notch Withdrawal of a Control Rod IAW station procedures.
25.048	Provided initial indications, respond to a CRD failures from the Main Control Room IAW station procedures.
44.002	Provided initial conditions, respond to a Loss of APRM Indication, IAW station procedures.
28.003	When required, monitor the Control Room indications of the SBLC System to determine if the system is in a standby lineup IAW station procedures.
419.000	Given LGA-003, Primary Containment Control, in progress Evaluate plant conditions and control and maintain Primary Containment Pressure to less than 1.93 psig, IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
413.000	Given LGA-01, RPV Control, in progress, evaluate plant conditions and control RPV level +11" to 59.5" IAW LGA-001
414.000	Given LGA-01, RPV Control in progress, evaluate plant conditions and restore RPV water level to > -150 inches on WR or > -185 inches on FZ using preferred injection systems and if needed alternate injection systems IAW station procedures.
414.010	Given LGA-01, RPV Control in progress, evaluate plant conditions and control RPV water level using SBLC IAW station procedures.
413.010	Given entry in LGA-01, RPV Control, evaluate plant conditions and control RPV water level using CRD IAW station procedures.

RO - BOP/ASSIST	
92.002	Given Unit Supervisor authorization, perform the in plant actions to startup, operate and shutdown the suppression chamber / drywell Oxygen monitor system IAW station procedures
51.001	Given Unit Supervisor permission, verify proper operation of the Main Control Room Area Radiation Monitoring Panels IAW station procedures
71.041	Provided initial conditions, perform Control Room actions for a Gland Seal Steam evaporator casualty, IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
413.000	Given LGA-01, RPV Control, in progress, evaluate plant conditions and control RPV level +11" to 59.5" IAW LGA-001
414.000	Given LGA-01, RPV Control in progress, evaluate plant conditions and restore RPV water level to > -150 inches on WR or > -185 inches on FZ using preferred injection systems and if needed alternate injection systems IAW station procedures.
419.000	Given LGA-003, Primary Containment Control, in progress Evaluate plant conditions and control and maintain Primary Containment Pressure to less than 1.93 psig, IAW station procedures
419.020	Given LGA-03, Primary Containment Control, in progress, spray the Suppression Pool, IAW station procedures.
419.030	Given LGA-03, PC Control, in progress, spray the Drywell, IAW station procedures.

RO - BOP/ASSIST	
421.010	Given LGA-03, Primary Containment Control, in progress, cool the Suppression Pool IAW station procedures.
428.000	Given entry in LGA-4/06, RPV Blowdown, evaluate plant conditions and rapidly depressurize the RPV using SRVs via the ADS system IAW station procedures.
414.040	Given entry in LGA-01, RPV Control, evaluate plant conditions and control RPV water level using LPCI, IAW LGA-RH-103 IAW station procedures.

SRO - UNIT SUPERVISOR	
92.002	Given Unit Supervisor authorization, perform the in plant actions to startup, operate and shutdown the suppression chamber / drywell Oxygen monitor system IAW station procedures
47.001	Given Unit Supervisor authorization, Perform a Notch Withdrawal of a Control Rod IAW station procedures.
25.048	Provided initial indications, respond to a CRD failures from the Main Control Room IAW station procedures.
51.001	Given Unit Supervisor permission, verify proper operation of the Main Control Room Area Radiation Monitoring Panels IAW station procedures
201.011	Given a set of plant conditions, identify and prepare the Technical Specification required actions IAW Tech Specs.
44.002	Provided initial conditions, respond to a Loss of APRM Indication, IAW station procedures.
28.003	When required, monitor the Control Room indications of the SBLC System to determine if the system is in a standby lineup IAW station procedures.
71.041	Provided initial conditions, perform Control Room actions for a Gland Seal Steam evaporator casualty, IAW station procedures
304.010	Given Unit Supervisor authorization, perform actions for a reactor scram IAW station procedures
413.000	Given LGA-001, RPV control, in progress, evaluate plant conditions and control RPV water level +11 to +59.5 inches using preferred sources, IAW LGA-001
414.000	Given LGA-01, RPV Control in progress, evaluate plant conditions and restore RPV water level to > -150 inches on WR or > -185 inches on FZ using preferred injection systems and if needed alternate injection systems IAW station procedures.
414.010	Given LGA-01, RPV Control in progress, evaluate plant conditions and control RPV water level using SBLC IAW station procedures.
413.010	Given entry in LGA-01, RPV Control, evaluate plant conditions and control RPV water level using CRD IAW station procedures.
419.000	Given LGA-003, Primary Containment Control, in progress Evaluate plant conditions and control and maintain Primary Containment Pressure to less than 1.93 psig, IAW station procedures
419.020	Given LGA-03, Primary Containment Control, in progress, spray the Suppression Pool, IAW station procedures.
419.030	Given LGA-03, Primary Containment Control, in progress, spray the Drywell, IAW station procedures.
421.010	Given LGA-03, Primary Containment Control, in progress, cool the Suppression Pool IAW station procedures.
428.000	Given entry in LGA-4/06, RPV Blowdown, evaluate plant conditions and rapidly depressurize the RPV using SRVs via the ADS system IAW station procedures.
414.040	Given entry in LGA-01, RPV Control, evaluate plant conditions and control RPV water level using LPCI, IAW LGA-RH-103 IAW station procedures.

Event-1		
Description: Perform LOP-CM-02 to confirm Drywell O2 reading		
Initiation: Following crew assuming shift, on direction of Lead Evaluator		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors control room panels and notifies the CRS of any unusual or unexpected conditions.

92.002	BOP	Samples Drywell O2 concentration per LOP-CM-02, Section E.5
		• Verifies 1PL76J has been in Standby for at least 6 hours
		• Performs shutdown of 1PL75J
		  • Directs EO to close 1CM035
		• At 1PM13J:
		  • Open 1CM022A, Drywell Suction
		  • Close 1CM024A, Suppression Chamber Suction
		  • Open 1CM025A, Suppression Chamber Return
		• Place 1PL76J in SAMPLE
		• (After 1 minute) Reset the Common Failure alarm
		• Place 1PL76J in ANALYZE
		• Monitor and report readings from 1AIR-CM012 and CM047

92.002	SRO	• Directs actions above.

Event – 1	
Description: Perform LOP-CM-02 to confirm Drywell O2 reading	
Simulator Operator Actions	
None	

Simulator Operator Role Play
Role Play EO as necessary when directed to close 1CM035. Wait 1 minute and then report that 1CM035 is closed.

Floor Instructor Notes/OPEX/TRs
None
Terminus: Drywell O2 Reading obtained

Event-2		
Description: Withdraw control rods to raise power.		
Initiation: After Drywell O2 reading has been obtained		
NOTE: Event 3, CRD Pump failure, works best if initiated during this Event		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
47.001	ATC	Per LGP-1-1 • Continue to increase CTP with control rod withdrawal. ° Monitor IRM and APRM recorders. ° Verify Main Turbine BPVs open as reactor power increases. Per LOP-RM-01: • Verify Rod desired to be positioned is selected on the Rod Select Display or Status Display, if in control mode. • Verify rod position information is correct on the Rod Select Display/Status Display/Core Map Display. • Verify no insert or withdraw block indications on the Rod Select Display. • Verify CRD Drive Flow Trip Circuit Bypass Switch is in the NORMAL position • DEPRESS rod WITHDRAW push-button and CHECK control rod withdrawal sequence begins: ▪ Rod insert indication appears on the Rod Select or Status Display. ▪ Rod withdraw indication appears on the Rod Select or Status Display ▪ Control Rod motion is indicated on the Rod Select or Status Display. • RELEASE rod WITHDRAW pushbutton and CHECK: ▪ Rod position indication on Rod Select Display, Status Display or Core Map shows new rod position. ▪ Observe changes in nuclear instrumentation indications. ▪ Rod settle light is lit for ≈ 2 seconds.
	BOP	• Monitors control room panels and notifies the CRS of any unusual or unexpected conditions. • Peer checks rod movements
47.001	SRO	• Directs actions above.

Event – 2	
Description: Withdraw control rods to raise power.	
Simulator Operator Actions	
None	

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
NOTE: Event 3, CRD Pump failure, works best if initiated during this Event
Terminus: After Event 3 and when the Lead Evaluator is satisfied with the reactivity change

Event-3		
Description: CRD Pump degrades, swap CRD Pumps		
Initiation: During Control Rod withdrawal, Event 2, and on direction of Lead Evaluator, activate **Manual Trigger 3**		
Key Parameter Response: Low CRD Charging Header Pressure, slow control rod movement Expected Annunciators: 1H13-P603-A204, CRD Charging Water Pressure Low 1H13-P603-A302, Low Charging Water Header Pressure Scram A1 and B1 1H13-P603-B302, Low Charging Water Header Pressure Scram A2 and B2 Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
25.048	ATC	Per LOR-1H13-P603-A204 • IF the Unit is in Mode 1 or 2 (yes), Immediately starts standby CRD pump and checks for proper operation • Dispatches EO to investigate cause of "A" CRD pump degradation and to perform pre and post-start checks on "B" CRD pump. Per LOR-1H13-P603-A302 • If required, START standby CRD pump. Per LOA-RD-101 • CHECK no control rods drifting • CHECK the following CRD parameters NORMAL: • CRD system flow approximately 63 gpm. • Cooling Header < 30 psid. • Drive Water Header < 600 psid. • ADJUST Flow Controller Output using OPEN/CLOSE pushbuttons to RESTORE parameters to NORMAL • IF Flow Controller Output will not ADJUST, THEN locally VERIFY instrument air is lined up to and is available to CRD Manual /Auto Station • THROTTLE Drive Water PCV 1C11-F003 as required to restore parameters to NORMAL
	BOP	• Assists ATC Operator as directed • Performs peer checks
25.048	SRO	• Direct ATC to swap CRD pumps. • Enter LOA-RD-101 and Scram Criteria given. • Orders the FCV troubleshot by appropriate station personnel.

Event – 3	
Description: CRD Pump degrades and eventually trips	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 3** and verify the following commands become active: • **imf mrd027 (3) 14 240** ('A' CRD pump reduced capacity by 14% over 240 seconds) • **imf mrd280 (3 245)** (After 245 seconds, 'A' CRD pump trip) • **imf mrd283 (3 245) 40** (After 245 seconds, CRD FCV setpoint to 40)
When the B CRD Pump is started	Verify **Event Trigger 13** goes Active and the CRD FCV setpoint malfunction is deleted: **trg 13 "dmf mrd283"**

Simulator Operator Role Play
Role Play: If dispatched to CRD pump, wait 3 minutes to report, " It sounds like it is pumping rocks"
Role Play: Take local actions as requested by the crew using Instructor Station simulator drawing RD1. (Ramp CRD pump discharge valves open/closed over 5 minute.)
Role Play: As EO, if asked, request securing CRD ventilation to aid communications. (Securing CRD ventilation is <u>not</u> required for this event).

Floor Instructor Notes/OPEX/TR's
Terminus: B CRD Pump started, ability to withdraw control rods restored

Event-4		
Description: A Fuel Pool Rad monitor fails inoperable		
Initiation: On direction of Lead Evaluator, Activate **Manual Trigger 4**		
Key Parameter Response: C Rad Monitor White low light lit and meter downscale Expected Annunciators: LOR-1H13-P601-E305, DIV 2 Fuel Pool Rad Mon Downscale Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitor plant for abnormalities.

51.001	BOP	Per LOR-1H13-P601-E305
		• Check which Div 2 Fuel Pool Radiation Monitors are reading less than or equal to alarm setpoint.
		  • Identifies that 1C Fuel Pool Exhaust Radiation Monitor is downscale
		• Check if monitors are energized.
		  • Identifies that 1C Fuel Pool Exhaust Radiation Monitor has power
		  • May attempt to reset 1C Fuel Pool Exhaust Rad Monitor

51.001
201.011
	SRO	• Evaluate plant conditions and control secondary containment per LOR-1H13-P601-E305
		• Refer to the following Tech Specs:
		  • T.S. 3.3.6.1, Primary Containment Isolation Instruments, Required Action A.1
		  • T.S. 3.3.6.2, Secondary Containment Isolation Instruments, Required Action A.1
		  • T.S. 3.6.1.3, Primary Containment Isolation Valves, Required Actions A.1 and A.2
		  • T.S. 3.6.4.2, Secondary Containment Isolation Valves, Required Actions A.1 and A.2
		• Evaluate for entry into LGA-002

Event – 4	
Description: A Fuel Pool Rad monitor fails inoperable	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 4** and verify the following commands become active: • **imf mrm021** (On Trigger 4, C FP Vent PRM Downscale failure)

Simulator Operator Role Play
Role Play: As RP if directed to perform surveys; acknowledge this directive. Further response is not necessary as time will not allow.

Floor Instructor Notes/OPEX/TR's
Terminus: Tech Spec call completed

Event-5		
Description: EHC Leak, swap pumps		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 5**		
Key Parameter Response: EHC Fluid pressure below green band and lowering; 1A EHC pumps amps higher than normal and rising slowly Expected Annunciators: 1PM02J-B505 EHC MINOR TROUBLE EHC Workstation Alarm ID 315, EHC LEVEL DECREASING OVER TIME Automatic Actions: None; auto start of standby pump is failed		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	BOP	• Responds to annunciator 1PM02J-B505 EHC MINOR TROUBLE • Checks EHC workstation alarm screen • Refers to LOP-EH-11 EHC Workstation Alarm Message Interpretation • Per LOP-EH-11 EHC LEVEL DECREASING OVER TIME (Page 63), dispatch an EO to look for leaks • Starts the 1B EHC pump and stops the 1A EHC Pump based on either: o Recognizing the EHC pressure is below the auto start pressure for the 1B EHC Pump o The report from the EO. • Verifies EHC pressure is restored • Verifies the leak has been stopped
	SRO	• Directs crew actions per the annunciator and abnormal procedures • May direct shifting to the standby EHC Pump

Event – 5	
Description: EHC Leak, swap pumps	
Simulator Operator Actions	
Note	The 1B EHC Pump auto start is disabled (**ior k5h09wi6 false**) with the Setup commands
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 5** and verify the following commands become active: • **imf mms007 (5) 150** (EHC oil leak)
	Verify the 1B EHC pump starts/override is deleted based on Event Trigger 15: **trgset 15 "k5h09wb6.eq.1"** (When 1B EHC Pump switch is taken to START) **k5h09wi6 override deleted**
	Verify the EHC Fluid leak malfunction is deleted based on Event Trigger 25: **trgset 25 "k5h09wb6.eq.1"** (When 1B EHC Pump switch is taken to START) **mms007** malfunction deleted

Simulator Operator Role Play
Role-play as the EO dispatched to the EHC Skid: Wait 2 minutes, then report from the EHC skid: • There is an EHC fluid leak on the discharge of the 1A pump, between the pump and the discharge check valve. Recommend securing the 1A EHC Pump. • The tank level is 17.5 inches and lowering slowly When the 1B EHC pump has been started and the 1A pumps is stopped, call the control room to report that the leak has stopped.

Floor Instructor Notes/OPEX/TR's
None
Terminus: B EHC Pump started and A EHC Pump secured

Event-6		
Description: D APRM fails INOP		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 6**		
Key Parameter Response: D APRM indicates an INOP trip Expected Annunciators: 1H13-P603-A505, Channel B APRM HI-HI / INOP 1H13-P603-B208, Channel A2/B2 Neutron Monitoring Trip Automatic Actions: ½ Scram on Channel B RPS		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
44.002	ATC	Per 1H13-P603-B208, Channel A2/B2 Neutron Monitoring Trip: • VERIFIES Automatic actions; RPS channel B ½ scram based on 1D APRM inoperable Per 1H13-P603-A505, Channel B APRM Hi-Hi/Inop: • VERIFY automatic actions (RPS channel A trip)(no) • CHECK if RPS channel B tripped • OBSERVE APRMs to determine cause (1D APRM inop) • OBSERVE APRMs for oscillations (none) • DETERMINE if only one APRM is INOP • BYPASS inoperable APRM • Reset ½ Scram • Tells SRO to REFER to Technical Specification 3.3.1.1
	BOP	• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • May check APRM D backpannel indications
44.002	SRO	• Technical Specification 3.3.1.1 • Directs bypassing inoperable APRM and resetting the ½ scram

Event – 6	
Description: D APRM fails INOP	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 6** and verify the following commands become active: • **ior ko218w5b (6) false** (D APRM fails upscale)

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: When the ½ Scram is reset

Event-7		
Description: Loss of one Squib valve continuity indication		
Initiation: On direction of Lead Evaluator, Activate **Manual Trigger 7**		
Key Parameter Response: A Squib Valve Indication off and A Squib Valve Continuity Meter downscale Expected Annunciators: 1H13-P603-A105, SBLC Squib Valve Continuity Loss Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
28.003	ATC	• Responds to annunciator 1H13-P603-A105 and informs the US • Requests another NSO check indication at back of panel 1H13-P603 • Dispatches an EO to verify A SBLC Pump Breaker is on
	BOP	• Checks A Squib Valve Continuity Meter • Checks fuses for A Squib Valve Continuity Meter Relay
28.003 201.011	SRO	• Verifies actions per LOR-1H13-P603-A105 • Enters Tech Spec 3.1.7 Condition A.1, 7 Day LCO

Event – 7	
Description: Loss of one Squib valve continuity indication	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 7** and verify the following commands become active: • **imf r0742 (7 0) on** (1H13-P603-A105 SBLC Loss of Continuity alarm) • **ior q3h03lgo (7 0) off** (A SBLC Squib valve indication off) • **ior g3f17gz6 (7 0) 0** (A Squib valve continuity indication downscale)

Simulator Operator Role Play
Inform the Crew member who checks the SBLC M1 Meter Relay fuses (in 1H13-P603 interior) that fuses F1, F2, and F3 appear intact.
Role Play EO dispatched to a SBLC Pump breaker at MCC135X-1, Compartment D1, Breaker 19: Wait 2 minutes and then report that: The Breaker is still closed and there are no obvious signs of damage, but there is an acrid odor near the breaker.
Role Play EMD as necessary if contacted to investigate this failure.

Floor Instructor Notes/OPEX/TR's
None
Terminus: Tech Spec 3.1.7, Condition A.1, 7-Day LCO entered.

Event-8		
Description: Steam Seal PCV Failure		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 8.**		
Key Parameter Response: Steam Seal Header Pressure, Steam Seal Feed Pressure Expected Annunciators: 1PM02J-A105, GLAND SEAL STEAM FEED VALVE OPEN 1PM02J-A205, GLAND SEAL STEAM HDR PRESS LO Automatic Actions: None		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
71.041	BOP	Per LOR-1PM02J A105 • CHECK Gland Seal Steam pressure is between 2 and 6 psig. • IF Gland Seal Steam pressure is decreasing, THROTTLE OPEN 1GS-S2, Steam Seal Evaporator Outlet Steam PCV M.O. Bypass Valve, to re-establish Gland Seal Steam • Monitor Condenser Vacuum • IF parameters indicate an inability to supply sealing steam from Steam Seal Evaporator, ESTABLISH Gland Sealing Steam per procedure LOP-GS-03, Transfer to Backup Gland Seal Steam Supply Per LOR-1PM02J A205 • Dispatch Operator to EL 768' in TB to INSPECT Gland Seal Steam Control Panel 1PL81J and Gland Seal Steam Evaporator Control Panel 1PA80J for proper operation. • Refer to LOA-GS-101 Per LOA-GS-101 ▪ CHECK Stm Seal Header Press, 1PI-GS026 at 1PM02J INDICATES BELOW 6 PSIG ▪ CHECK Feed Press, 1PI-GS019 at 1PM02J – INDICATES above 40 PSIG ▪ CHECK Level, 1LI-GS018 at 1PM02J - INDICATES 6 TO 8 inches ▪ CHECK Stm Seal Header Press, 1PI-GS026 at 1PM02J INDICATES above 2 PSIG ▪ **Response not obtained** ▪ VERIFY 1GS-S1, SSEVP Outlet PCV Upstrm Stop at 1PM02J fully open ▪ THROTTLE 1GS-S2, SSEVP Outlet PCV Bypass Stop at 1PM02J to maintain 4 to 6 psig on Stm Seal Header Press, 1PI-GS026 ▪ If pressure can not be maintained 4 to 6 psig, LINEUP main steam to seals ▪ VERIFY 1GS001, SSEVP Main Steam Supply Stop at 1PM02J Open ▪ OPEN 1GS002, SSEVP Bypass Stop at 1PM02J ▪ (Throttle) OPEN 1GS-S6, SSEVP Bypass PCV Upstrm Stop at 1PM02J ▪ CLOSE 1GS-S2, SSEVP Outlet PCV Bypass Stop at 1PM02J ▪ CLOSE 1GS-S1, SSEVP Outlet PCV Upstrm Stop at 1PM02J (Failed Open at Setup) • If Stm Seal Header Press, 1PI-GS026 at 1PM02J indicates below 4 psig, THROTTLE 1GS-S7, SSEVP Bypass PCV Bypass Stop at 1PM02J to maintain 4 to 6 psig.

Objective	Position	EXPECTED OPERATOR RESPONSE
	ATC	• Monitor the Plant for Anomalies
71.041	SRO	• Direct Actions of LOR-1PM02J A105 and LOR-1PM02J A205 • Sets Critical Parameters and Directs actions of LOA-GS-101 • NOTIFY RP of plant configuration change • May refer to ODCM for Pretreat with elevated Off Gas flow • May direct filling Off Gas Loop Seals

Event – 8	
Description: Steam Seal PCV Failure	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 8** and verify the following commands become active: **ior q5h03lr1 (8) off** (GS Header PCV Stop MOV-GS-S1 Red/closed light off) **ior q5h03rg1 (8) on** (GS Header PCV Stop MOV-GS-S1 Grn/Open light on) **ior k5h03jc1 (8) close** (GS PCV Stop MOV-GS-S1 switch to close) **ior k5h03jn1 (8) false** (GS PCV Stop MOV-GS-S1 Open position false) **ior k5i04jc1 (8) close** (PCV Bypass GS-S2 closed) **ior k5i04jn1 (8) false** (PCV Bypass GS-S2 Open position false)

Simulator Operator Role Play
Role Play: If dispatched as an EO, wait 3 minutes and report: **PCV has failed closed as it is demanding the valve be open but it is closed.**

Floor Instructor Notes/OPEX/TR's
None
Terminus: 1GS-S7, SSEVP Bypass PCV Bypass Stop, being throttled to maintain Steam seal pressure 4-6 psig

Event-9		
Description: LOCA		
Initiation: On direction of Lead Evaluator, activate **Manual Trigger 9**		
Key Parameter Response: Drywell Pressure rising Expected Annunciators: 1H13P603-B501 PRI CNMT PRESSURE HI/LO 1PM13J-A302 RB NORTH/DW FLR SUMP TROUBLE 1PM13J-A204 DW COOLER COND FLOW RATE HI Automatic Actions: Reactor Scram, ECCS initiations, PCIS Isolations		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

419.000
304.010
	ATC	• Responds to PRI CONT PRESSURE HI/LO annunciator and informs the Unit supervisor
		• When directed, manually scrams the reactor
		  • ARM and DEPRESS Scram Pushbuttons
		  • PLACE Reactor Mode Switch in SHUTDOWN
		  • INSERT IRMs and SRMs
		  • CHECK Control Rods INSERTED and Power Decreasing
		  • REPORT to the Unit Supervisor the status of RPV Level and Pressure
		  • VERIFY Reactor Recirculation Pumps have downshifted
		  • VERIFY Main Turbine and Generator Trip
		  • STABILIZE Reactor Pressure <1020 psig
		  • REFER to LGP-3-2
		• Monitors and reports RPV water level throughout
		• Controls injection from Condensate and Feed system
		• Controls RPV Pressure with SRVs as directed

419.000 304.010	BOP	• Reports the status of the Electric Plant • Verifies proper operation of 0 DG and observes load limits • Monitors containment parameters throughout • Reports LGA-003 Entry Condition to the US
419.000 304.010	SRO	○ May direct a manual reactor scram prior to reaching 1.93 psig in the Drywell • Enters and directs actions of LGA-001 LEVEL LEG • Establishes a RPV water level band of -30 to +55 inches • Direct actions to start all available high pressure injection • When RPV water level cannot be maintained above 11 inches, directs actions to maintain level above -150 inches • Enters and directs actions of LGA-001 PRESSURE LEG • STABILIZE Reactor Pressure below 1059 psig (800 psig to 1000 psig per Ops Strategies document)

(Continued)

Event – 9	
Description: LOCA	
Simulator Operator Actions	
With the concurrence of the Lead Evaluator	Activate **Manual Trigger 9** and verify the following commands become active: • **imf mrc034 (9 5) 1.5 660** (B RR Suction Rupture at 1.5% severity over 11 min) • **imf mee041 (9 120)** (After a 2 min delay, trip of the SAT)

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: After RPV Blowdown has been performed and RPV water level has been restored and at the direction of the Lead Evaluator

Event – 9 (Continued)		
Description: LOCA		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

419.020
419.030
(CT)
421.000
	SRO	• When Drywell Pressure exceeds 1.93 psig, enters and directs actions of LGA-003
		• Before Drywell Pressure exceeds 12 psig, directs start of Suppression Chamber Sprays
		  • When Drywell Pressure exceeds 12 psig, direct initiation of Drywell sprays **(CT)**
		  • Verifies Containment Flood level below 723 ft.
		  • Verifies Drywell Pressure and Temperature permit Drywell Sprays per Figure D
		  • Verifies both Recirc Pumps are tripped
		  • Direct initiation of Drywell sprays
		• When Suppression Pool temperature exceeds 105°F initiation of direct initiation of Suppression Pool Cooling

419.020
419.030
(CT)
421.000
413.000
	BOP	• Monitors and reports containment parameters throughout
		• When directed places Suppression Pool Cooling in service:
		  • Startup RHR Service Water as follows:
		  • OPEN 1A/1B RHR Hx Service Water Outlet Valve: 1E12-F068A/B
		  • At approximately 9 to 10 seconds after taking the 1E12-F068A/B switch to OPEN, START first RHR Service Water Pump: 1A or 1B/C or D
		  • When indicated flow reaches 3000 gpm, START second RHR Service Water Pump.
		  • Startup RHR
		  • Start 1A/1B RHR Pump
		  • Establish RHR flow of 1500 to 7450 gpm:
		  • Throttle 1E12-F024A/B (Test Valve) OPEN.
		  • Close 1E12-F048A/B (HX Bypass)
		  • Place A/B HTX Bypass Throttle/Seal in switch to THROTTLE and THROTTLE CLOSED 1E12-F048A/B. or
		  • Place A/B HTX Bypass Throttle/Seal in switch to SEAL IN and CLOSE 1E12-F048A/B
		• When directed establish Suppression Chamber Spray:
		  • VERIFY 1A/1B RHR Pump is running
		  • OPEN 1E12-F027A/B
		• When directed establish Drywell Spray: **(CT)**
		  • VERIFY 1A/1B RHR Pump is running
		  • THROTTLE 1E12-F024A/B CLOSED
		  • OPEN:1E12-F016A/B and 1E12-F017A/B

Event – 9 (Continued)		
Description: LOCA		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

413.000
413.010
414.010
	ATC	• If directed, starts a second CRD pump per LGA-RD-01
		  • Directs an EO to perform in-plant actions for starting a second CRD Pump
		  • Align 2 Drive Water Filters and 2 Suction Filters
		  • Open Minimum flow valves
		  • Close 1C11-F434 in CRD Pump Recirculation Line
		  • Defeat the CRD Low Suction Pressure trips
		  • Starts the second CRD Pump
		  • Places BOTH CRD Pump switches in START and holds for 5 seconds before releasing
		  • Opens 1C11-F003, CRD Drive Pressure Control Valve
		• If directed, starts SBLC per LGA-SC-102
		  • Starts only one SBLC pump
		  • Place A SBLC Pump in Sys A
		  • Place B SBLC Pump in Sys B
		  • Check that the Storage tank Outlet valve opens on the selected pump
		  • Check that the selected SBLC Pump starts
		  • Check that SBLC Discharge Pressure rises above RPV pressure

413.000
413.010
414.010
	SRO	• Direct actions to start all available high pressure injection
		• When RPV water level cannot be maintained above 11 inches, directs actions to maintain level above -150 inches
		• Directs use of Alternate Injection systems
		  • Starting both CRD pumps
		  • Injecting with SBLC
		• When HPCS failure is reported, direct shutdown of HPCS

Event-10		
Description: Loss of High-Pressure Injection		
Initiation: Contingencies following from Event 9		
Key Parameter Response: Loss of SAT Transformer, HPCS Pump supply breaker indications Expected Annunciators: 1PM01J-A117, SAT 142 SYSTEM 1 PROT RELAY TRIP 1PM01J-B117, SAT 142 SYSTEM 2 PROT RELAY TRIP 1H13-P601-A104, 1B DG CLG WTR PMP TROUBLE Automatic Actions: Loss of essential busses		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**
414.000	ATC	• Monitors and reports RPV water level throughout (value, rate, trend) • Performs additional EOP actions as directed by SRO • Coordinates with BOP to maintain/restore RPV level in band specified using preferred injection systems (CT)
	BOP	• Recognizes failure of the HPCS DG to close and reports to US o May trip the HPCS DG • Makes crew update for loss of Unit 1 SAT. • Enters LOA-AP-101 B.2 per US direction • CHECK 142Y Live (NO) • CHECK 242Y Live (NO)-Perform Attachment G • CHECK 141Y Live or 241Y Live (NO)-Perform Attachment K • CHECK 142Y-LIVE (NO) • CHECK 241Y –LIVE (NO) • PERFORM Att. B while continuing • Performs Att. K per LOA-AP-101 • Perform LOA-DG-101 for 1A DG
414.000	BOP	• To prevent losing Chamber Spray/ECCS runout with DW Spray prior to 500 psig. • Place Div 1/2 Inj Override Switch to NON-ATWS • Div I: With an ECCS signal present Verify White Manual Override light for 1E12-F042A AND 1E21-F005 Illuminated (NOTE: If level 1 is received LPCS override will clear and LPCS will Inject) • Div II: With an ECCS signal present Verify White Manual Override light for 1E12-F042B AND 1E12-F042C Illuminated (NOTE: If level 1 is received 1C RHR override will clear and 1C RHR will Inject)

(Continued)

Event-10 (Continued)		
Objective	**Position**	**EXPECTED OPERATOR RESPONSE**

428.000 **(CT)** 414.040	BOP	• When directed, performs a manual initiation of ADS **(CT)**
		  • Arms and depresses both Div 1 ADS MANUAL INITIATION pushbuttons
		  • Arms and depresses both Div 2 ADS MANUAL INITIATION pushbuttons
		  • Verifies 7 ADS valves open
		• Maximizes injection from LPCS and Div 1 RHR/LPCI
		  • If Div 1 RHR was placed in the Pool Cooling Mode, verify the Test Valve, 1E21-F024A, closes
		  • Verify LPCI and LPCS injection valves open fully
		  • When directed, controls LPCS Injection by throttling LPCS INJECTION VLV 1E21-F005
		• When directed, controls LPC1 Injection by throttling 1A LPCI INJ VLV 1E12-F042A

428.000 **(CT)** 414.000 **(CT)** 414.040	SRO	• With available injection systems unable to hold RPV water level above –150 inches on Wide Range, INITIATE emergency depressurization when RPV water level drops to –150 inches on Wide Range. **(CT)**
		  • Verifies Suppression Pool level is greater than 18 ft.
		  • Directs a manual initiation of ADS
		  • Verifies 7 ADS valves open
		  • Directs the BOP to maximize injection into the RPV
		• Directs restoration of RPV water level to maintain -30 inches to +50 inches **(CT)**

Event – 10	
Description: Loss of High-Pressure Injection	
Simulator Operator Actions	
None	

Simulator Operator Role Play
None

Floor Instructor Notes/OPEX/TR's
Terminus: After RPV Blowdown has been performed and RPV water level has been restored and at the direction of the Lead Evaluator

REFERENCES

Procedure	Title	Revision (As of Approval Date)
1. LGP-1-1	Normal Unit Startup	108
2. LOP-CM-02	Startup, Operation and Shutdown of post LOCA Primary Containment Atmosphere Hydrogen and Oxygen Monitoring System	31
3. LOP-RM-01	Rod Control Management System	42
4. LOR-1H13-P603-A204	CRD Charging Water Pressure Low	03
5. LOR-1H13-P603-A302	Low Charging Water Header Pressure Scram A1 and B1	04
6. LOR-1H13-P603-B302	Low Charging Water Header Pressure Scram A2 and B2	04
7. LOA-RD-101	Control Rod Drive Abnormal	19
8. LOR-1H13-P601-E305	DIV 2 FUEL POOL RAD MON DOWNSCALE	04
9. LOR-1PM02J-B505	EHC Minor Trouble	04
10. LOP-EH-11	EHC Workstation Alarm Response and other Information	18
11. LOA-EH-101	Unit 1 EHC Abnormal	31
12. LOR-1H13-P603-B208	Channel A2/B2 Neutron Monitoring Trip	04
13. LOR- H13-P603-A505	Channel B APRM HI-HI / INOP	06
14. LOR-1H13-P603-A105	SBLC Squib Valve Continuity Loss	04
15. LOR-1PM02J-A105	GLAND SEAL STEAM FEED VALVE OPEN	01
16. LOR-1PM02J-A205	GLAND SEAL STEAM HDR PRESS LO	03
17. LOA-GS-101	U1 TURBINE GLAND SEAL STEAM SYSTEM ABNORMAL	07
18. LOR-1H13-P603-B501	PRI CONT PRESSURE HI/LO	04
19. LGA-001	RPV CONTROL	14
20. LGA-RD-01	Alternate RPV Injection Using Both CRD Pumps	13
21. LGA-SC-102	Unit 1 Alternate Vessel Injection Using the SBLC System	02
22. LGA-003	PRIMARY CONTAINMENT CONTROL	14
23. LGA-004	RPV BLOWDOWN	07
24. LGP-3-2	REACTOR SCRAM	69
25. LOA-AP-101	UNIT 1, AC POWER SYSTEM ABNORMAL	46
26. LOP-RH-13	SUPPRESSION POOL COOLING OPERATION	32
27. LOP-RH-05	OPERATION of RHR SERVICE WATER SYSTEM	32
28. LGA-RH-103	Unit 1 A and B RHR Operations in the LGAs and SAMGs	11
29. LOR-1PM01J-A/B117	SAT 142 SYSTEM 1/SYSTEM 2 PROT RELAY TRIP	02
30. LOR-1H13-P601-A104	1B DG CLG WTR PMP TROUBLE	04

COMPUTER AIDED EXERCISE PROGRAM (CAEP)

ESG NRC 13-1-1
Revision: 00
Revision Date: 8/22/14
Developed By: G. Thullen
##

SETUP COMMANDS

- **ior k5h09wi6 false** (1B EHC Pump auto start disabled / switch Normal-after-Stop false)
- **trgset 15 "k5h09wb6.eq.1"** (When 1B EHC Pump switch is taken to START)
- **trgset 25 "k5h09wb6.eq.1"** (When 1B EHC Pump switch is taken to START)
- **trg 15 "dor k5h09wi6"** (On Trigger 15, 1B EHC Pump is allowed to start / override deleted)
- **trg 25 "dmf mms007"** (On Trigger 25, delete EHC Fluid leak)
- **mes032** (For Event 10, HPCS Pump supply breaker fails to close)
- **trgset 13 "k3j02jbb.eq.1"** (When the B CRD Pump switch is taken to START)

EVENT COMMANDS

- **imf mrd027 (3) 14 240** (On Manual Trigger 3 'A' CRD pump reduced capacity by 14% on a 240 second ramp)
- **imf mrd280 (3 245)** (On Manual Trigger 3 after 245 seconds, 'A' CRD pump trip)
- **imf mrd283 (3 245) 40** (On Manual Trigger 3 after 245 seconds, CRD FCV setpoint to 40)
- **trg 13 "dmf mrd283"** (CRD FCV setpoint malfunction deleted)
- **imf mrm021 (4)** (On Manual Trigger 4, C FP Vent PRM Downscale failure)
- **imf mms007 (5) 150** (On Manual Trigger 5, EHC oil leak)
- **ior ko218w5b (6) false** (Manual Trigger 6, D APRM fails inoperable / Mode switch out of Operate)
- **imf r0742 (7 0) on** (On Manual Trigger 7, 1H13-P603-A105 SBLC Loss of Continuity alarm)
- **ior q3h03lgo (7 0) off** (On Manual Trigger 7, A SBLC Squib valve indication off)
- **ior g3f17gz6 (7 0) 0** (On Manual Trigger 7, A Squib valve continuity indication downscale)
- **ior q5h03lr1 (8) off** (On Manual Trigger 8, GS Header PCV Stop MOV-GS-S1 Red/closed light off)
- **ior q5h03rg1 (8) on** (On Manual Trigger 8, GS Header PCV Stop MOV-GS-S1 Grn/Open light on)
- **ior k5h03jc1 (8) close** (On Manual Trigger 8, GS PCV Stop MOV-GS-S1 switch to close)
- **ior k5h03jn1 (8) false** (On Manual Trigger 8, GS PCV Stop MOV-GS-S1 Open position false)
- **ior k5i04jc1 (8) close** (On Manual Trigger 8, PCV Bypass GS-S2 closed)
- **ior k5i04jn1 (8) false** (On Manual Trigger 8, PCV Bypass GS-S2 Open position false)
- **imf mrc034 (9) 1.5 660** (On Manual Trigger 9, B RR Suction Rupture at 1.5% severity over 11 min)
- **imf mee041 (9 120)** (On Manual Trigger 9 with a 2 min delay, trip of the SAT)

End

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U1 SUPERVISOR TURNOVER

Shift: 2
Date: Today
Mode: 1
OLR: Green
Work Week: Non-Div

Unit 1 power level

- 11% Power

Unit 2 power level

- 100 % Power

U1 Thermal Limit Issues /Power Evolutions

- Startup in progress
- Mode Switch in RUN
- At Step E.5.1

U2 Thermal Limit Issues /Power Evolutions

- None

Existing LCOs, date of next surveillance

- None

Existing LCOs, date of next surveillance

- None

LOSs in progress or major maintenance

- None

LOSs in progress or major maintenance

- None

⇒ **Equipment removed from service or currently unavailable**

- None

- None

Grid Status is Green

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green
- Inerting has been secured
- Both Post LOCA analyzers have been in Standby for > 6hours
- Per LOP-CM-02, Section E.5, Start the Div 1 Post LOCA Analyzer to confirm Drywell O2 reading are < 1%.

⇒ **Comments, evolutions, problems, etc.**

- Non-Div workweek
- OLR is Green