

**PROPOSED NRC-AUTHORIZED SCENARIOS**

**FOR THE LASALLE INITIAL EXAMINATION - APRIL 2002**

# LaSalle County Station

## Operations Scenario #1

**Exam Date:**      **April 8, 2002**

Developed By:      Raymond Keith Walton      Date 3/3/2002

Reviewed By:      \_\_\_\_\_      Date \_\_\_\_\_

## NARRATIVE SUMMARY

### Current plant operating status.

The unit is at 85% power decreasing to perform LOS-RP-Q3, MSIV Scram Functional Test. HPCS is inoperable. During MSIV functional test, 1A RBCCW pump trouble alarm comes in. 'C' Narrow range level instrument fails upscale. This is followed by a trip of the operating 'B' RWCU pump. A TDRFP runs up to maximum flow. This is followed by a feedwater line break inside the steam tunnel. RCIC fails to start.

### Scenario segments

- Power decrease (from 85% to < 82% power for testing)
- LOS-RP-Q3, MSIV Scram Functional Test, Inboard MSIV Scram Solenoids will NOT deenergize
- 1A RBCCW pump Suction Strainer high d/p
- 1C Narrow Range Level Instrument fails Upscale
- 'B' RWCU pump trips
- 1A TDRFP M/A Station Fails High
- FW Break in the Main Steam Tunnel
- Scram and LGA entry
- RCIC fails to start

## SHIFT TURNOVER INFORMATION

- |   |  |
|---|--|
| ⇒ Day of week and shift   |  |
| <ul style="list-style-type: none"> <li>◆ Today, Day Shift</li> </ul>  |  |
| ⇒ Weather conditions  |  |
| <ul style="list-style-type: none"> <li>◆ Warm</li> <li>◆ Windy</li> </ul>   |  |
| ⇒ (Plant power levels)  |  |
| <ul style="list-style-type: none"> <li>◆ Unit 1 – 85% Power, 101% FCL</li> <li>◆ 2960 MWt</li> <li>◆ 945 MWe</li> <li>◆ 85 Mlbm/hr CORE FLOW</li> </ul> | <ul style="list-style-type: none"> <li>◆ Unit 2 – 100 % Power, 108.5% FCL</li> <li>◆ 3489 MWt</li> <li>◆ 1189 MWe</li> <li>◆ 93 Mlbm/hr CORE FLOW</li> </ul> |
| ⇒ Thermal Limit Problems/Power Evolutions   |  |
| <ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>  | <ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>   |
| ⇒ Existing LCOs, date of next surveillance  |  |
| <ul style="list-style-type: none"> <li>◆ 3.5.1 condition B due to HPCS inop.</li> <li>◆</li> <li>◆</li> </ul>   | <ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>   |
| ⇒ LOSs in progress or major maintenance   |  |
| <ul style="list-style-type: none"> <li>◆ Complete LOS-RP-Q3 for 1A inboard MSIV<br/>    &amp; 1A outboard MSIV.</li> <li>◆</li> </ul>                   | <ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>   |
| ⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment   |  |
| <ul style="list-style-type: none"> <li>◆ HPCS</li> <li>◆ 1B TDRFP M/A in MANUAL</li> <li>◆</li> </ul>   | <ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>   |
| ⇒ Comments, evolutions, problems, etc.  |  |
| <ul style="list-style-type: none"> <li>◆ Online Risk is Yellow</li> <li>◆ 3 CW pumps operating</li> </ul>   | <ul style="list-style-type: none"> <li>◆ Online Safety is Green</li> <li>◆ 3 CW pumps operating</li> </ul>   |

## SIMULATOR SETUP

### A. CARDS/TAGS TO BE HUNG:

- Place HPCS Pump in PTL and hang OOS cards on the following HPCS components:
  - 1E22-F004, -F015, and -C001

### B. MISCELLANEOUS:

#### Timeclock Board

1. HPCS/R 3.5.1 condition E. Make TC Board and turnover sheets reflect 4 hours left on time clock to be in Mode 3.
2. Is 'C' NR RPV Water Level Instrument selected for Feedwater Level?

### C. TURNOVER INSTRUCTIONS:

- Gather the crew in an appropriate classroom setting and turnover sheet to provide a shift turnover. Stress the following items:
  1. Unit is decreasing power to perform LOP-RP-Q3.
  2. HPCS is inoperable and OOS
  3. On the 101% FCL
  4. Unit 2 at Full Power
  5. 1B TDRFP is in manual due to control valve oscillations

<b>Event 1-1</b>	<b>Initiation:</b> Following Shift turnover on the signal of lead examiner
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Power Decrease with Recirculation Flow</b>
	<p><b>Reactor Operator Response:</b> Takes actions to establish a power ramp per LGP-3-1 and LOP-RR-07, to decrease load:</p> <ul style="list-style-type: none"> <li>• VERIFY Manual light on Recirc Loop Flow Controller M/A station A/B is ON.</li> <li>• Change Flow evenly in both loops by pressing LOWER button and observing flow indication to Flow controller M/A Stations.</li> <li>• REDUCE core flow to approximately 70 Mlbm/hour using Attachment C unless otherwise directed by the QNE <ul style="list-style-type: none"> <li>• At a rate up to 100 MWe/hour</li> <li>• At a higher rate specified by a QNE</li> </ul> </li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>• REMOVE condensate polishers from service when no longer needed per LOP-CP-03</li> <li>• MAINTAIN condensate flow through the polishers per LOP-CD-03</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• DIRECTS crew to reduce power at &lt;100 MWe/hour to &lt;82% power using recirculation flow</li> <li>• Notifies Electric Operations of power reduction</li> <li>• DIRECTS crew to hold power drop below 82% to complete LOS-RP-Q3</li> </ul>
<b>TERMINUS:</b>	Clearly observable plant response from change in power level.

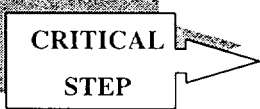
<b>Event 1-2</b>	<b>Initiation:</b> Following Shift turnover on signal from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Key Event: Perform LOS-RP-Q3 MSIV Scram Functional Test</b>
	<p><b>BOP Operator Response:</b>  Takes actions to perform LOS-RP-Q3, MSIV Scram Functional Test for 1A inboard MSIV and 1A outboard MSIV:</p> <ul style="list-style-type: none"> <li>• VERIFIES Rx Power &lt;82%, all MSIV switches in AUTO, Scrams RESET, and MSIV Relays energized.</li> <li>• One at a time, places 1A inboard MSIV control Sw. in OPEN SLOW TEST</li> <li>• Depresses and Holds PB until 2 relays deenergize or for about 10 sec. After receiving dual indication.</li> <li>• Then Releases PB.</li> <li>• VERIFIES 1A inboard MSIV reopens and 2 relays deenergize then reenergize.</li> <li>• Checks that 1A/1B MSIV inbd/outbd Not Full Open alarm received.</li> <li>• Verify 1A inboard MSIV open.</li> <li>• Verify all MSIV relays energized (1C71A-K3A through K3H).</li> <li>• Reset 1A/1B MSIV Inbd/Otbd Not Full Open alarm.</li> <li>• Place 1B21-F022A, Inbd MSIV control switch in AUTO.</li> <li>• Waits 2 minutes to stabilize flows.</li> <li>• Repeats above steps with 1A outboard MSIV. <ol style="list-style-type: none"> <li>1. Except that 2 scram relays do <u>NOT</u> deenergize after holding PB for greater than 10 secs.</li> </ol> </li> </ul>
	<p><b>Reactor Operator Response:</b></p> <ul style="list-style-type: none"> <li>• VERIFIES Rx Power &lt;82%, all MSIV switches in AUTO, Scrams RESET, and MSIV Relays energized.</li> <li>• Monitors plant parameters for alarms/unusual conditions</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• HOLDS power decrease to perform MSIV surveillance test</li> <li>• MONITORs crew performing LOS-RP-Q3</li> <li>• Refers to TS 3.0.5</li> </ul>
<b>TERMINUS:</b>	Completion of surveillance test

<b>Event 1-3</b>	<b>Initiation:</b> After events 1-1 & 1-2 completed, on signal from lead examiner
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1A RBCCW Pump Trouble</b> 1PM10J-A102, RBCCW Pump Suction Strainer D/P High
	<b>BOP Operator Response:</b> RESPONDS to Annunciator PM10J-A102: <ul style="list-style-type: none"> <li>• ANNOUNCES annunciator alarm to crew.</li> <li>• SHIFT to standby RBCCW pump per LOP-WR-02.</li> </ul> Per LOP-WR-02, "Startup and Operation of RBCCW System:" <ul style="list-style-type: none"> <li>• STARTS 1B RBCCW Pump.</li> <li>• Observe 'B' RBCCW pump amperes increase to 145 – 172 amps</li> <li>• Observe 'B' RBCCW pump discharge header pressure increase to 52 – 80 psig</li> <li>• STOP the 'A' RBCCW pump after the system pressure stabilizes.</li> </ul>
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>• Holds reactor power steady at less than 82%.</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Acknowledges alarm.</li> </ul>
<b>Terminus:</b>	Starts standby RBCCW pump.



<b>Event 1-4</b>	<b>Initiation:</b> After Event 1-3 completed, after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1C NR Level Instrument Fails Upscale</b> Mismatch between 1C and 1A or 1B NR Level 1C Level 8 Trip Light
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>Recognize SPDS display turns RED</li> <li>Recognize CX alarm for selected NR level</li> <li>Recognize disparity between 1C Narrow Range and the other two Narrow Range instruments</li> <li>Informs the Unit Supervisor</li> <li>REFERS to LOA-NB-101, Reactor Vessel Instrumentation Abnormal <ul style="list-style-type: none"> <li>CHECK redundant indications to identify actual level/pressure</li> <li>Identify suspect incorrect reading instrument</li> <li>REFER to Attachment A to identify reference leg associated with suspect instrument</li> <li>CHECK indications from other instruments fed from same reference leg</li> <li>Perform channel checks on suspect reactor level/press instruments.</li> <li>Check at least one instrument on shared reference leg outside limits of associated channel checks.</li> </ul> </li> <li>Verify proper operation of the RWLC system</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>Verifies proper operation of Feed and Condensate System</li> </ul>
	<b>Unit Supervisor Response:</b> For the failed 1C Narrow Range Level Instrument: <ul style="list-style-type: none"> <li>Declare C Level 8 Switch INOP.</li> <li>Reviews Tech Spec 3.3.2.2 , Enters Action Statement</li> <li>Contact IMD to investigate transmitter failure.</li> <li>Write a condition report</li> </ul>
	<b>Simulator Operator:</b> As IMD, when sent to investigate the Narrow Range Level problem, wait several minutes then report that it appears the equalizing valve on the transmitter is leaking by. It will take about 2 shifts to get the package ready and replace the valve.
<b>TERMINUS:</b>	Unit Supervisor has investigated the appropriate Technical Specifications.

<b>Event 1-5</b>	<b>Initiation:</b> After Event 1-4 completed, after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1B RWCU Pump Trips</b> 1H13-P602-A107, B RWCU Recirc Pump Auto Trip
	<b>BOP Operator Response:</b> RESPONDS to Annunciator P602-A107, B RWCU RECIRC PMP AUTO TRIP: <ul style="list-style-type: none"> <li>• ANNOUNCES annunciator alarm to crew.</li> <li>• VERIFIES 1B RWCU pump trips.</li> <li>• REFERS to LOA-RT-101, B.2, Loss of RWCU pump:             <ul style="list-style-type: none"> <li>• OPEN G33-F354, RWCU Filter Demin Bypass Vlv.</li> <li>• Locally place A/B/C Vesse Control Sw to ISOLATE position.</li> <li>• Locally check Filter/Demin Vessel Inlet/Outlet Vlvs closed.</li> <li>• STARTS 1A RWCU Pump.</li> </ul> </li> </ul>
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>• Holds reactor power steady at less than 82%.</li> <li>• Reports any abnormal/unusual conditions/alarms</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Acknowledges alarm.</li> </ul>
<b>TERMINUS:</b>	Starts standby RWCU pump.

<b>Event 1-6</b>	<b>Initiation:</b> After Event 1-5 completed, after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1A TDRFP M/A Station Fails High</b> 1A TDRFP Flow Ramps High 1H13-P603-A309 FW Control Rx Vessel Lvl Hi
	<b>Reactor Operator Response:</b> Recognize failure of M/A station and takes actions per LOA-FW-101: <ul style="list-style-type: none"> <li>• CHECK Manual Backup Station DIRECT DEMAND SUBSTITUTION or DIRECT VALVE POSITIONING LEDs - ILLUMINATED.</li> <li>• CONTROL Reactor level by INCREASING/DECREASING turbine speed using SPEED/POSITION ADJUST switch.</li> <li>• CHECK TDRFP M/A XFER station – OPERABLE</li> <li>• Manually scram the reactor when level cannot be maintained within the level band given by the Unit Supervisor.</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• Assist Reactor Operator</li> <li>• Monitors status of Feed and Condensate System</li> </ul>
	<b>Unit Supervisor Response:</b> For the failed M/A Transfer Station: <ul style="list-style-type: none"> <li>• Give the NSO a level band to maintain</li> <li>• Authorizes Reactor Operator to scram unit if can not maintain level band.</li> <li>• Prioritize and assign duties (who is in charge of level control, who is monitoring the reactor, etc.)</li> </ul>
<b>NOTE:</b>	<b>Simulator Operator:</b> Ensure RCIC failure to automatically start has been entered prior to initiating Events 1-7 and 1-8.
<b>TERMINUS:</b>	If unable to maintain RPV water level, scram plant. If able to maintain RPV water level, after cue from lead examiner, start Event 1-7

<b>Event 1-7</b>	<b>Initiation:</b> Plant Scrams or after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Key Event: FW Break in Steam Tunnel</b> Lowering RPV Level 1H13-P601-F404 - LD MSL Pipe Tunnel Amb Temp Hi 1H13-P601-F405 - LD MSL Pipe Tunnel Diff Temp Hi FW HDR Flow Mismatch
	<b>Reactor Operator Response:</b> Per LGP-3-2, completes the actions of the Scram Hardcard and follows up with the procedure; <ul style="list-style-type: none"> <li>• ARM and DEPRESS Scram Pushbuttons</li> <li>• PLACE Reactor Mode Switch in SHUTDOWN</li> <li>• INSERT IRMs and SRMs</li> <li>• CHECK all Control Rods in and Power Decreasing</li> <li>• INFORM Unit Supervisor Of Rod Status and Reactor Power</li> <li>• Operate FW as necessary within the level bank 32 to 45 inches</li> <li>• REPORT to the Unit Supervisor the status (and trend) of RPV Level and Pressure</li> <li>• VERIFY Reactor Recirculation Pumps have downshifted</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E. 2 of LGP-3-2</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• Trip 1 TDRFP and close discharge valve.</li> <li>• Start MDRFP. If level can be maintained, trip remaining TDRFP and shut discharge valve.</li> <li>• Verify Main Generator/Turbine Trip</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E. 2 of LGP-3-2</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Directs actions per LGP-3-2 (See RO and BOP operator responses above)</li> </ul>

<b>Key Event 1-8</b>	<b>Initiation:</b> Initiated with key event 1-7.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
<b>Key Event 1-7</b>	<b>FW Break in Steam Tunnel (Continued)</b> <b>RCIC Fails to Start Automatically</b>
	<p><b>Panel Operator Response:</b> Per LGA-001</p> <p><u>RPV Level Control Leg</u></p> <ul style="list-style-type: none"> <li>• CONTROL Level 11 to 59.5 inches using ECCS Systems, (RT, Feedwater and Condensate should be isolated to stop the leak)</li> <li>• When level can't be held &gt;-150 inches, then:</li> <li>• Maximize injection with all Preferred Injection</li> <li>• WAIT until level drops to -150 inches on WR then ENTER LGA-004</li> </ul> <p><u>RPV Pressure Control Leg</u></p> <ul style="list-style-type: none"> <li>• Stabilize Pressure Below 1059 psig</li> <li>• Depressurize RPV using Turbine Bypass Valves at &lt;100°F/hour</li> </ul>
	<p><b>Panel Operator Response:</b></p> <ul style="list-style-type: none"> <li>• REPORTS that RCIC failed to start.</li> <li>• ATTEMPTs to start RCIC manually.</li> <li>• RCIC starts but trips less than 1 minute later.</li> </ul>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>CRITICAL STEP</b> </div>	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs actions per LGA-001 (See RO and BOP Operator Responses above)</li> </ul>
	<p><b>NOTE:</b> If the crew is aggressive and uses the "anticipate a blowdown" override of LGA-001, a rapid depressurization with the Turbine Bypass Valves will allow LPCS injection and level recovery before RPV level drops to -150 inches.</p>

Time/Notes	Expected Crew Response
<b>Key Event 1-7</b>	<b>FW Break in Steam Tunnel (continued)</b>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>CRITICAL STEPS</b> </div>	<p><b>Panel Operator Response:</b></p> <p><u>Per LGA-002</u></p> <ul style="list-style-type: none"> <li>• OPERATE Area Coolers and VR if possible</li> <li>• OPERATE Sump Pumps to hold sump level below overflowing</li> <li>• If any area Temperature or Radiation is above Max Normal or if a sump is overflowing, then:             <ul style="list-style-type: none"> <li>• ISOLATE discharges into the area except for those needed to fight fires or needed by other LGAs (crew should isolate FW, CB/CD and RT)</li> <li>• MONITOR release rates for LGA-009 entry conditions</li> <li>• WAIT until 2 or more areas are greater than Max Safe and then:                 <ul style="list-style-type: none"> <li>• SHUTDOWN the Reactor (LGP-3-2), and</li> <li>• ENTER LGA-004 (Blowdown)</li> </ul> </li> </ul> </li> </ul> <p><u>Per LGA-004</u></p> <ul style="list-style-type: none"> <li>• VERIFY Drywell Pressure is greater than 1.69 psig</li> <li>• VERIFY Suppression Pool Level is greater than -18 feet</li> <li>• INITIATE ADS (using BOTH pushbuttons)</li> <li>• VERIFY 7 ADS Valves are OPEN</li> <li>• WAIT until Shutdown Cooling Interlocks clear (135 psig)</li> <li>• COOLDOWN to Cold Shutdown using Shutdown Cooling (per LOP-RH-07)</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs actions per LGA-002, (See Operator Response above)</li> <li>• Directs actions per LGA-004, (See Operator Response above)</li> </ul>
	<p><b>Terminating Conditions</b></p> <ul style="list-style-type: none"> <li>• Restores and maintains RPV level 11 - 59.5"</li> <li>• Commences cooldown at &lt;100°F/Hr if Emergency Depressurization was not required.</li> <li>• Cue from lead examiner</li> </ul>

## **LaSalle County Station**

### **Operations Scenario #2**

**April 8, 2002**

Developed By: Raymond Keith Walton Date March 8, 2002

Reviewed By: \_\_\_\_\_ info \_\_\_\_\_

## NARRATIVE SUMMARY

### Current plant operating status.

A startup is in progress per LGP 1-1. Operators will place 'B' RHR in suppression pool cooling. C APRM will fail high causing a half scram. Reactor Building Ventilation exhaust fan will trip. An SRV will stick open but will be reseated after operators remove fuses. The FCV on one RR pump fails open. Subsequent high vibration and a Cooler leak on the RR pump requires the operators to manually trip the RR pump. Finally, a small LOCA requires LGA entry to stabilize the plant.

### Scenario segments

- Place 'B' RHR in Suppression Pool cooling
- Reactor Building Ventilation Exhaust fan will trip
- SRV sticks open, will reseal after removing fuses
- 1A RR FCV Fails Open
- 1A RR Pump High Vibration w/ Winding leakage
- Small LOCA



### SHIFT TURNOVER INFORMATION

- |   |                                    |  |
|---|------------------------------------|--|
| ⇒ Day of week and shift   |                                    |  |
| ◆ Today, Day Shift  |                                    |  |
| ⇒ Weather conditions  |                                    |  |
| ◆ Warm, mid-summer  |                                    |  |
| ◆ Windy   |                                    |  |
| ⇒ (Plant power levels)  |                                    |  |
| ◆ Unit 1 - 100% Power, 109% FCL   | ◆ Unit 2 – 100 % Power, 108.5% FCL |  |
| ◆ 3489 MWt  | ◆ 3489 MWt                         |  |
| ◆ 1189 MWe  | ◆ 1189 MWe                         |  |
| ◆ 93 Mlbm/hr CORE FLOW  | ◆ 93 Mlbm/hr CORE FLOW             |  |
| ⇒ Thermal Limit Problems/Power Evolutions   |                                    |  |
| ◆ None  | ◆ None                             |  |
| ◆   | ◆                                  |  |
| ◆   | ◆                                  |  |
| ⇒ Existing LCOs, date of next surveillance  |                                    |  |
| ◆ None  | ◆ None                             |  |
| ◆   | ◆                                  |  |
| ◆   | ◆                                  |  |
| ⇒ LOSs in progress or major maintenance   |                                    |  |
| ◆ None  | ◆ None                             |  |
| ◆   | ◆                                  |  |
| ◆   | ◆                                  |  |
| ⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment |                                    |  |
| ◆ 1B VP Chiller is OOS  | ◆ None                             |  |
| ◆   | ◆                                  |  |
| ◆   | ◆                                  |  |
| ⇒ Comments, evolutions, problems, etc.  |                                    |  |
| ◆ Online Risk is Green  | ◆ Online Risk is Green             |  |
| ◆ 3 CW pumps operating  | ◆ 3 CW pumps operating             |  |

## **SIMULATOR SETUP**

### **A. CARDS/TAGS TO BE HUNG:**

- 1B VP Chiller Beaker – OOS

### **B. MISCELLANEOUS:**

- Reactor Building Ventilation Lineup:  
A & B Exhaust fans in operation  
A & B Supply fans in operation

### **C. TURNOVER INSTRUCTIONS:**

- Gather the crew in an appropriate classroom setting, use the SRO and NSO turnover sheets to provide a shift turnover. Stress the following items:
  1. Unit 1 is at 100% power , 109% Flow Control Rod Line.
  2. Place 'B' RHR in Suppression Pool Cooling.
  3. No Time Clocks in effect.
  4. 1B VP Chiller OOS due to freon leak
  5. Unit 2 is at rated power.

<b>Key Event 2-1</b>	<b>Initiation:</b> After completion of shift turnover and after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Start RHR Service Water</b>
	<p><b>BOP Operator Response:</b></p> <p>Starts RHR Service Water per LOP-RH-05</p> <ul style="list-style-type: none"> <li>• PLACE the appropriate Thermal Overload Bypass switch to BYPASS</li> <li>• LOG positioning of O/L Bypass switch in the Unit Log</li> <li>• If required, START an 8 hour clock</li> <li>• MAKE PA Announcement and START the first RHR-WS Pump</li> <li>• OPEN the 1E12-F068A/B, Heat Exchanger Outlet Valve</li> <li>• When RHR-WS Flow is &gt;3000 gpm, then START the second Pump</li> <li>• When 1E12-F068A/B is full open, then CHECK Flow is &gt;7400 gpm.</li> <li>• PLACE the appropriate Thermal Overload Bypass switch in NORMAL</li> <li>• LOG positioning of O/L Bypass switch in Unit Log</li> <li>• If started, STOP the 8 hour clock</li> <li>• NOTIFY Chemistry to take required samples RHR-WS samples</li> <li>• Dispatch an NLO to locally place the strainer backwash in AUTO</li> <li>• Dispatch an NLO to locally VERIFY the CSCS Cubical Fan is running</li> <li>• VERIFY the RHR-WS Strainer high differential pressure alarm is clear</li> <li>• START the RHR Service Water PRM per LOP-PR-06</li> </ul>
	<p><b>Reactor Operator Response:</b></p> <ul style="list-style-type: none"> <li>• Monitors Reactor Power and P603 panel</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs starting Suppression Pool Cooling</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Event 2-1 (cont'd)</b>	<b>Start RHR 'B' in Suppression Pool Cooling</b>
	<p><b>BOP Operator Response</b>            Start RHR in Suppression Pool Cooling Mode per LOP-RH-13</p> <ul style="list-style-type: none"> <li>• PLACE appropriate Thermal Overload Bypass switch in BYPASS</li> <li>• VERIFY CLOSED 1E12-F006B</li> <li>• VERIFY OPEN 1E12-F004B, -F047B, and -F048B</li> <li>• MAKE PA announcement and START 'B' RHR Pump</li> <li>• THROTTLE OPEN 1E12-F024B to maintain 1500 to 7450 gpm</li> <li>• THROTTLE CLOSED 1E12-F048B</li> <li>• THROTTLE 1E12-F003B</li> <li>• VERIFY flow between 1500 and 7450 gpm (but as high as possible)</li> <li>• Dispatch an NLO to VERIFY RHR Pump Room Fan STARTS</li> <li>• VERIFY Diesel Generator Cooling Water Pump is STARTED</li> <li>• PLACE the O/L Bypass switch back to NORMAL</li> <li>• MONITOR Pool Temperature</li> </ul>
	<p><b>RO Response:</b></p> <ul style="list-style-type: none"> <li>• Monitors Reactor Power and P603 panel</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs starting Suppression Pool Cooling</li> </ul>
	<p><b>Simulator Operator:</b> When requested, make appropriate field reports that indicate startup of the RHR-WS and RHR Suppression Pool Cooling is normal.</p>
<b>TERMINUS:</b>	RHRWS and 'B' RHR operating in Suppression Pool Cooling Mode.

<b>Key Event 2-2</b>	<b>Initiation:</b> After completion of Event 2-1 and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Reactor Building Exhaust Fan VR02CB Trips</b> PM06J-A207 RB 1B Vent Exhaust Fan Auto Trip
	<p><b>BOP Operator Response:</b> Per PM06J-A207:</p> <ul style="list-style-type: none"> <li>• VERIFY RB Vent Exhaust fan VR02CB Trips</li> <li>• MONITOR Temperatures as needed.</li> <li>• IF less than 2 exhaust fans are running, then perform following to Bypass Group 1 MSIV logic before starting fans: <ul style="list-style-type: none"> <li>• INSTALL MSL Pipe Tunnel Diff. Temperature Bypass Keys into control switches at Panel 1H13-P642.</li> <li>• At panel 1H13-P642, place MSL PIP TUNNEL DIF TEMP BYPASS DIV 2 SIG B/D to Bypass.</li> <li>• Start appropriate Time Clock</li> </ul> </li> <li>• Start standby RB Ventilation Exhaust Fan</li> <li>• PLACE MSL PIPE TUNNEL DIFF TEMP BYPASS DIV 2 SIG B/D keylock switches at Panel 1H13-P6423 to NORMAL.</li> <li>• Dispatch operator to investigate cause of alarm at SWGR 132X</li> </ul>
	<p><b>RO Response:</b></p> <ul style="list-style-type: none"> <li>• Monitors Reactor Power and P603 panel for abnormal/unusual conditions.</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• REFERS to Tech Specs for operability</li> <li>• Acknowledges Starting/Stopping TS Time clock for Bypassing Gp 1</li> <li>• INITIATES appropriate corrective action (Condition Report)</li> </ul>
<b>TERMINUS:</b>	After SRO reviews appropriate Technical Specifications

Key Event 2-3	Initiation: After completion of Event 2-2 and after cue from lead examiner
Time/Notes	Expected Crew Response
	<b>Stuck Open SRV (B21-F013C)</b> H13-P601-E102, ADS or SRV Leakage H13-P601-F201, ADS Valve Fully Open
	<b>BOP Operator Response:</b> In response to H13-P601-F201 alarm: <ul style="list-style-type: none"> <li>CHECK Drywell Pressure, Reactor Vessel Level and low pressure ECCS system is running to verify and ADS is required to be open. (Not required to be open)</li> <li>Refers to LOA-SRV-101, (Stuck Open SRV): <ol style="list-style-type: none"> <li>IDENTIFY SRV has spuriously actuated or is stuck OPEN</li> <li>DECLARE SRV B21-F013C Inop</li> <li>Cycle B21-F013C control Switch from AUTO to OPEN and back to AUTO.</li> <li>CHECK B21-F013C open (SRV still open)</li> <li>Monitor Suppression Pool water temperature</li> <li>REFER to Table 1 of LOA-SRV-101 to identify fuses associated with stuck open B21-F013C</li> <li>Have Aux Operator remove fuses F3A, F4A, F5A, &amp; F6A in Panel H13-P628 in Auxiliary Electric Equipment Room</li> <li>Have Auxiliary Operator remove fuses F5B &amp; F6B in Panel H13-P631 in Auxiliary Electric Equipment Room.</li> <li>CHECK B21-F013C OPEN (SRV indicates closed)</li> <li>Wait 1 minute then replace fuses removed in steps 8 and 9.</li> <li>CHECK Open B21-F013C (SRV indicates closed)</li> </ol> </li> </ul>
	<b>RO Response:</b> <ul style="list-style-type: none"> <li>Monitors Reactor Power and P603 panel for abnormal/unusual conditions.</li> <li>REDUCE Generator Load 100 Mwe to maintain Rx power &lt; 100%. (See Key Event 2-4)</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>DIRECTS completion of task</li> <li>REFERS to Tech Specs 3.4.4, 3.5.1, 3.6.1.6 &amp; 3.6.2.1 for operability</li> <li>Acceptable TS Actions should include: <ol style="list-style-type: none"> <li>Declare SRV inop and enters 24 hr to trip 7 days to restore time clock (TS 3.3.5.1)</li> <li>Declare inoperable and enters 24 hour to restore time clock (TS 3.5.1.C)</li> </ol> </li> <li>REFERS to TRM Section 3.3.d</li> </ul>
<b>TERMINUS:</b>	After SRO reviews appropriate Technical Specifications

<b>Event 2-4</b>	<b>Initiation:</b> After event 2-3 completed and after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Power Decrease with Recirculation Flow</b>
	<p><b>Reactor Operator Response:</b>  Takes actions to establish a power ramp per LGP-3-1 and LOP-RR-07, to decrease load 100 Mwe:</p> <ul style="list-style-type: none"> <li>• VERIFY Manual light on Recirc Loop Flow Controller M/A station A/B is ON.</li> <li>• Change Flow evenly in both loops by pressing LOWER button and observing flow indication to Flow controller M/A Stations.</li> <li>• REDUCE core flow to approximately (?) Mlbm/hour using Attachment C unless otherwise directed by the QNE</li> <li>• At a rate up to 100 MWe/hour</li> <li>• At a higher rate specified by a QNE</li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>• REMOVE condensate polishers from service when no longer needed per LOP-CP-03</li> <li>• MAINTAIN condensate flow through the polishers per LOP-CD-03</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• DIRECTS crew to reduce power at &lt;100 MWe/hour using recirculation flow control.</li> <li>• Notifies Electric Operations of power reduction</li> </ul>
<b>TERMINUS:</b>	Clearly observable plant response from change in power level.

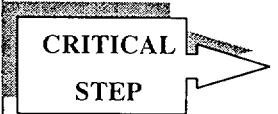
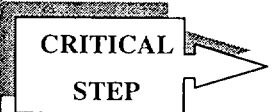
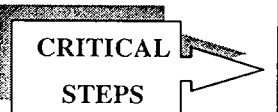
Key Event 2-5	Initiation: After Event 2-4 completes and cue from lead examiner.
Time/Notes	Expected Crew Response
	<b>1A RR FCV Fails Open</b> 1H13-P602-A101 1A RR Flow Control Vlv Trouble 1H13-P603-A511 Flux/Flow Controller Output Signal Abnml RR Motion Inhibit Light RR Motion Inhibit Light
	<b>Reactor Operator Response:</b> Takes actions per LOA-RR-101 for RR FCV failing OPEN <ul style="list-style-type: none"> <li>CHECK FCV position is STABLE</li> <li>PRESS HPU 1A TRIP pushbutton</li> <li>CHECK core flow and loop flows LESS THAN T/S MISMATCH (w/in 5.425 Mlbm/hour if core flow is &gt;75.95 Mlbm/hour, and w/in 10.85 Mlbm/hour if core flow is &lt;75.95 Mlbm/hour)</li> <li>CHECK instrumentation for indications of FUEL DAMAGE</li> <li>Evaluate core performance</li> <li>If &gt;TS MISMATCH:               <ol style="list-style-type: none"> <li>Restore flow mismatch within 1 hour.</li> <li>Initiate TADS.</li> <li>Zero servor error on 1A FCV M/A Station</li> <li>Check HPU Subloop available</li> <li>Verify HPU subloop is in lead</li> <li>Check "Pump Motor Running" indicates False @ DS001 Operator Station in both subloops</li> <li>Select Start/Stop pump motor, Press START</li> <li>Check pump motor running &amp; Pressure normal.</li> <li>Push 1A FCV Inhibit Reset PB &amp; verify Motion Inhibit light clears.</li> <li>Push LOWER PB at 1A FCV M/A station.</li> </ol> </li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>Monitors panels for changes in plant conditions</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>Starts a 2-hour time clock per Tech Spec 3.4.1 condition F.</li> <li>Contacts QNE to evaluate concerns for balancing loop flows</li> </ul>
	<b>Simulator Operator:</b> As the QNE, when contacted, tell them you'll check thermal limits and get back to them. Wait 10 min. then report that no thermal limits have been exceeded but they are getting close in a couple areas and you would like them to balance flows as soon as possible.
<b>TERMINUS:</b>	Crew has taken actions for the failed RP FCV, and SRO has reviewed applicable Technical Specifications. With the concurrence of the Chief Examiner, initiate the high vibrations and winding leakage.



<b>Key Event 2-6</b>	<b>Initiation:</b> After cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1A RR Pump Hi Vibrations / Winding Leak</b> 1H13-P602-A304 1B RR Pmp Mtr Clg Wtr Flow Low/Clr Lkg 1H13-P602-A305 1B RR Pmp Mtr Vibr Hi
	<b>Reactor Operator Response:</b> Takes actions per LOR-1H13-P602-A304 for motor cooling abnormal: <ul style="list-style-type: none"> <li>• CHECK motor bearing temperatures, motor amps, and loop flow</li> <li>• CHECKS SOR typer for R-points</li> <li>• TRIPS RR Pump when both R-points are received (R0591 and R0593)</li> <li>• REFER to LOA-RR-101, RR System Abnormal.</li> <li>• Continue to MONITOR abnormal trends or parameters.</li> </ul>
	<b>BOP Operator Response:</b> Takes actions per LOR-1H13-P602-A305 for RR motor vibrations <ul style="list-style-type: none"> <li>• PUSH Vibration RESET pushbutton</li> <li>• If alarm can't be reset IMMEDIATELY NOTIFY System Engineering to MONITOR and EVALUATE</li> <li>• CHECK Loose Parts Monitor</li> <li>• If abnormal conditions exist IMMEDIATELY trip the pump REFER to LOA-RR-101.</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Contacts System Engineering and IMD for assistance</li> <li>• REFER to Tech Spec 3.4.1 for Single Loop Operation.</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Event 2-6 (Cont'd)</b>	<b>1A RR Pump Hi Vibrations/Winding Leak Manual Trip of 1A RR Pump</b>
	<p><b>Reactor Operator Response:</b> Takes actions per LOA-RR-001 when directed to manually trip 1A RR pump</p> <ul style="list-style-type: none"> <li>CHECK at least one RR pump running (yes)</li> <li>PERFORM Core Instability checks while continuing <ul style="list-style-type: none"> <li>CHECK FCL is below 95.2% (yes)</li> <li>CHECK Reactor Power OUTSIDE of Region A (yes)</li> <li>CHECK Reactor Power OUTSIDE of Region B (no) <ul style="list-style-type: none"> <li>INITIATE LOS-RR-SR1 within 15 minutes per T.S. 3.4.1 Action A.</li> <li>INSERT Cram Arrays AND (RAISE core flow OR INSERT in-sequence rods) to IMMEDIATELY EXIT Region B.</li> <li>START 2-hour timeclock per T/S 3.4.1 if required</li> </ul> </li> <li>CHECK APRM Noise &lt;2 x Normal (yes)</li> <li>CHECK core flow to RIGHT of Natural Circulation line (yes)</li> <li>CHECK LPRM Noise &lt;2 x Normal (yes)</li> <li>CHECK APRM – OPERABLE APRMs within <math>\pm 2\%</math> of calculated core thermal power.</li> <li>MONITOR and EVALUATE Core Performance</li> </ul> </li> <li>CHECK recirculation flow in active loop <math>\geq 21,000</math> gpm</li> <li>CHECK SLO condition allowed with existing EOOS</li> <li>CHECK Operating RR Pump in fast speed (yes)</li> <li>INITIATE actions of T/S 3.4.1 for single loop (REDUCE MCPR and APLHGR, ADJUST APRM and RBM setpoints)</li> <li>NOTIFY IMD to adjust APRM/RBM Flow Converters</li> <li>DECREASE FCV to minimum on tripped RR pump</li> <li>PLACE all breakers for tripped pump in PTL (when less than 350 rpm)</li> <li>INSERT Control Rods to &lt;66.7% FCL</li> <li>REDUCE loop flow to &lt;34,425 gpm</li> <li>MAINTAIN tripped pump's suction and discharge valves FULL OPEN</li> <li>COMMENCE LOP-RR-13 Single Loop Baseline Date</li> <li>CHECK RR Loop <math>\Delta T &lt; 50^\circ\text{F}</math></li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>Assists RO in establishing single loop operations: <ul style="list-style-type: none"> <li>ISOLATE CPs as needed</li> <li>MAINTAIN Condensate Flow 5,000 to 8,000 gpm.</li> <li>If both TDRFPs are running SHUTDOWN one as time permits.</li> </ul> </li> <li>INITIATE special log to monitor loop <math>\Delta T</math></li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>Directs actions per LOA-RR-101</li> <li>REFERS to TS 3.4.1</li> <li>Contacts Chemistry for &gt; 20% power change in 1 hour</li> </ul>
<b>TERMINUS:</b>	After plant stabilized and SRO has reviewed applicable Technical Specifications.

<b>Key Event 2-7</b>	<b>Initiation:</b> After Event 2-6 completed and after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Small Break LOCA Inside Primary Containment</b> 1PM13J-A302 RB North/DW Flr Sump Trouble 1PM13J-A204 DW Cooler Cond Flow Rate Hi 1H13-P603-B501 Pri Cnmt Pressure Hi/Lo
	<b>Reactor Operator Response:</b> Takes actions to manually scram per LGP-3-2, completes the actions of the Scram Hardcard and follows up with the procedure when a LOCA is discovered; <ul style="list-style-type: none"> <li>• ARM and DEPRESS Scram Pushbuttons</li> <li>• PLACE Reactor Mode Switch in SHUTDOWN</li> <li>• INSERT IRMs and SRMs</li> <li>• CHECK all Control Rods in and Power Decreasing</li> <li>• INFORM Unit Supervisor Of Rod Status and Reactor Power</li> <li>• Operate FW as necessary within the level bank 32 to 45 inches</li> <li>• REPORT to the Unit Supervisor the status (and trend) of RPV Level and Pressure</li> <li>• VERIFY Reactor Recirculation Pumps have downshifted</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E.2 of LGP-3-2</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• VERIFY Main Turbine and Generator Trip</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E.2 of LGP-3-2</li> </ul> Makes plant announcement for Reactor Scram and DW leak. Takes actions per LGA-001 when level drops below 11 inches (see next page) <ul style="list-style-type: none"> <li>• Verify Main Generator/Turbine Trip</li> <li>• GO TO Step E. 2 of LGP-3-2</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Directs actions to manually scram per LGP-3-2</li> </ul>

Timeline/Notes	Expected Crew Response
<b>Key Event 2-7</b>	<b>SB LOCA Inside Primary Containment (Continued)</b>
<div data-bbox="186 604 462 716">  </div> <div data-bbox="186 909 462 1020">  </div>	<p><b>Panel Operator Response:</b>  Takes Actions per LGA-001, RPV Control  <u>RPV Level Control Leg</u></p> <ul style="list-style-type: none"> <li>• CONTROL Level 11 to 59.5 inches using Preferred Injection Systems (primarily CD &amp; FW)</li> <li>• If cannot restore level above 11 inches then hold level above -150 inches on WR (using Preferred Injection Systems)</li> </ul> <p><u>RPV Pressure Control Leg</u></p> <ul style="list-style-type: none"> <li>• Stabilize Pressure Below 1059 psig</li> <li>• Depressurize RPV using Turbine Bypass Valves at &lt;100°F/hour</li> </ul> <p>Takes actions per LGA-003 when high drywell pressure is received  <u>Containment Pressure Leg</u></p> <ul style="list-style-type: none"> <li>• Start Suppression Chamber Sprays</li> <li>• When &gt;12 psig;</li> <li>• VERIFY within the Drywell Spray Initiation Limit (Figure D)</li> <li>• TRIP both RR pumps</li> <li>• START DW Sprays (per LGA-RH-103)</li> </ul> <p><u>Drywell Temperature Leg</u></p> <ul style="list-style-type: none"> <li>• VERIFY all available Drywell Cooling is running (per LGA-VP-01)</li> </ul> <p><u>Suppression Pool Temperature Leg</u></p> <ul style="list-style-type: none"> <li>• START all available Pool Cooling (LGA-RH-103) if temperature reaches 105°F/hour</li> <li>• Monitor Suppression Pool Level</li> </ul> <p><u>Containment Hydrogen Leg</u></p> <ul style="list-style-type: none"> <li>• START Hydrogen and Oxygen Monitors (LGA-CM-01)</li> </ul>
<div data-bbox="186 1419 462 1530">  </div>	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Makes plant announcement for LGA entries</li> <li>• Directs actions for LGA-001 (See Panel Operator Reponse above)</li> <li>• Directs actions for LGA-003 (See Panel Operator Reponse above)</li> <li>• Makes plant announcement for GSEP Alert</li> </ul>
<b>Terminating Conditions</b>	<ul style="list-style-type: none"> <li>• Maintains RPV level 11" - 59.5"</li> <li>• Primary Containment parameters under control</li> <li>• Cue from Lead Examiner</li> </ul>

## **LaSalle County Station**

### **Operations Scenario #3**

**Exam Date: April 8, 2002**

Developed By: Raymond Keith Walton Date: March 8, 2002

Reviewed By: \_\_\_\_\_ Date: \_\_\_\_\_

## **NARRATIVE SUMMARY**

### **Current plant operating status.**

The plant is at approximately 100% power. Power will be reduced using recirculation flow. The Div II DG surveillance is in progress. The 1A DG cooling water pump will trip followed by a rod drift. HPCS will spuriously initiate followed by failure of both CRD pumps. Multiple scram accumulator alarms result, with a failure of rods to manually scram. The SBLC Squib valve will fail to open.

### **Scenario segments**

- 1A DG Monthly Surveillance
- 1A DG Cooling Water Pump Trip
- Rod Drift
- HPCS Initiation
- Clogged CRD Suction Filter and CRD Pump Trip
- SCRAM and ATWS
- SBLC Squib valves fail to open

### SHIFT TURNOVER INFORMATION

- |   |                                      |  |
|---|--------------------------------------|--|
| ⇒ Day of week and shift   |                                      |  |
| ◆ Today, Day Shift  |                                      |  |
| ⇒ Weather conditions  |                                      |  |
| ◆ Warm, mid-summer  |                                      |  |
| ◆ Windy   |                                      |  |
| ⇒ (Plant power levels)  |                                      |  |
| ◆ Unit 1 - 100 % Power, <109% FCL   | ◆ Unit 2 - 100 % Power, 108.5% FCL   |  |
| ◆ 3489 MWt  | ◆ 3489 MWt                           |  |
| ◆ 1189 MWe  | ◆ 1189 MWe                           |  |
| ◆ 92.5 Mlbm/hr CORE FLOW  | ◆ 92 Mlbm/hr CORE FLOW               |  |
| ⇒ Thermal Limit Problems/Power Evolutions   |                                      |  |
| ◆ None  | ◆ None                               |  |
| ◆   | ◆                                    |  |
| ◆   | ◆                                    |  |
| ⇒ Existing LCOs, date of next surveillance  |                                      |  |
| ◆ None  | ◆ None                               |  |
| ◆   | ◆                                    |  |
| ◆   | ◆                                    |  |
| ⇒ LOSs in progress or major maintenance   |                                      |  |
| ◆ LOS-DG-M2 completed through step 1.24 of attachment 1A-IDLE   | ◆ None                               |  |
| ◆   | ◆                                    |  |
| ◆   | ◆                                    |  |
| ⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment |                                      |  |
| ◆ 1B Bus Duct Cooler Fan OOS  | ◆ None                               |  |
| ◆ Common SA Compressor OOS  | ◆                                    |  |
| ◆ 1B OG Refrigeration Unit OOS  | ◆                                    |  |
| ◆   |                                      |  |
| ⇒ Comments, evolutions, problems, etc.  |                                      |  |
| ◆ Online Safety is Green (RAW = 1.0)  | ◆ Online Safety is Green (RAW = 1.0) |  |
| ◆ 3 CW pumps operating  | ◆ 3 CW pumps operating               |  |

## **SIMULATOR SETUP**

### **A. CARDS/TAGS TO BE HUNG:**

- 1B Bus Duct Cooler Fan
- Common SA Compressor

### **B. MISCELLANEOUS:**

- 1B OG Refrigeration Machine
- Split 142X and 142Y Buses (for LOS-DG-M2, Attachment 1A-IDLE Step 1.7)
- Verify 1A DG Voltmeter is not in OFF

### **C. TURNOVER INSTRUCTIONS:**

- Gather the crew in an appropriate classroom setting and use the turnover sheet to provide a shift turnover. Stress the following items:
  1. The plant is starting up at 100% power.
  2. LOS-DG-M2 is in progress and completed through Step 1.24 of attachment 1A-IDLE
  3. Tech Staff and Electrical Maintenance are standing by in the DG room.
  4. Rod line is 109%
  5. 1B Bus Duct Cooler Fan is OOS for motor replacement
  6. Common SA Compressor is OOS for oil change



<b>Key Event 3-1</b>	<b>Initiation:</b> After completion of shift turnover and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Power Decrease with Recirculation Flow</b>
	<p><b>Reactor Operator Response:</b>  Takes actions to establish a power ramp per LGP-3-1 and LOP-RR-07, to decrease load:</p> <ul style="list-style-type: none"> <li>• VERIFY Manual light on Recirc Loop Flow Controller M/A station A/B is ON.</li> <li>• Change Flow evenly in both loops by pressing LOWER button and observing flow indication to Flow controller M/A Stations.</li> <li>• REDUCE core flow to approximately 70 Mlbm/hour using Attachment C unless otherwise directed by the QNE <ul style="list-style-type: none"> <li>• At a rate up to 100 MWe/hour</li> </ul> </li> </ul> <p>At a higher rate specified by a QNE</p>
	<p><b>BOP Operator Response:</b>  Takes actions to establish a power ramp per LGP-3-1 to decrease load:</p> <ul style="list-style-type: none"> <li>• REMOVE condensate polishers from service when no longer needed per LOP-CP-03.</li> <li>• MAINTAIN condensate flow through the polishers per LOP-CD-03.</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• DIRECTS crew to reduce power at &lt;300 MWe/hour to 70 Mlbm/hr</li> <li>• Notifies Electric Operations of power reduction</li> </ul>
<b>TERMINUS:</b>	Clearly observable plant response from change in power level.

<b>Key Event 3-2</b>	<b>Initiation:</b> After completion of shift turnover and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1A DG Monthly Surveillance Test (LOS-DG-M2)</b>
	<p><b>Reactor Operator Response:</b></p> <ul style="list-style-type: none"> <li>Monitors panel P603 panel for changes in reactor parameters.</li> </ul>
	<p><b>BOP Operator Response:</b> Performs actions per LOS-DG-M2, Step E.2, and Attachment 1A-IDLE:</p> <ul style="list-style-type: none"> <li>DIRECTS NLO to perform local steps 2.0 through 3.3.1</li> <li>RECORDS time DG is Started</li> <li>VERIFY 1A DG Cooling Water Pump Switch is in NORMAL</li> <li>VERIFIES 1A DG Cooling Water Pump is running</li> <li>VERIFIES 1A DG Voltage and Frequency</li> <li>PLACE Synchroscope to ON</li> <li>ADJUST 1A DG Speed and Voltage as required</li> <li>SYNCHRONIZE the 1A DG output breaker and CLOSE</li> <li>PLACE Synchroscope to OFF</li> <li>SLOWLY Load 1A DG as follows: <ul style="list-style-type: none"> <li>MAINTAIN 1000/1300 kW and 350/750 kvar for 2 minutes</li> <li>MAINTAIN 1750/2000 kW and 500/1300 kvar for 2 minutes</li> <li>MAINTAIN 2400/2600 kW and 650/1750 kvar for 60 minutes</li> </ul> </li> <li>RECORD Time and Date load is at or above 2400 kW</li> </ul> <p><b>Simulator operator:</b> If asked, send an NLO to the 1B DG, wait 2 minutes, then report that post start checks of the 1B DG indicate satisfactory operation of the Diesel.</p>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>VERIFY Surveillance is compatible with current plant conditions</li> <li>DETERMINE DG time clock (if applicable) and RECORD</li> </ul> <p><b>Note:</b> The Simulator Operator will not be able to observe actions at or near the 1A DG controls. His view from the control booth is obstructed. Therefore, the Chief Examiner will have to keep the Simulator Operator informed of the actions as the student operates at the 101J panel.</p>
<b>TERMINUS:</b>	1A EDG is running loaded.

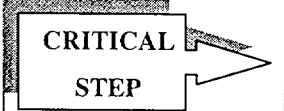
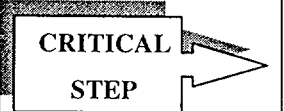
<b>Key Event 3-3</b>	<b>Initiation:</b> 1A EDG is loaded and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>1A DG Cooling Water Pump Trip</b> 1PM01J-B206 1A DG Trouble Local Alarm (R0993- DG-1A Clg Wtr Pmp Bkr- A-Trip)
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>Monitors panel P603 panel for changes in reactor parameters.</li> </ul>
	<b>BOP Operator Response:</b> Takes actions per LOR-1PM01J-B206: <ul style="list-style-type: none"> <li>DISPATCH NLO to 1A DG Control Panel to DETERMINE cause</li> <li>REFER to appropriate LOR procedures</li> <li>REFER to SOE typer</li> </ul> Takes actions to unload and shutdown 1A DG per LOP-DG-03: <ul style="list-style-type: none"> <li>PERFORM the following to unload the 1A DG               <ul style="list-style-type: none"> <li>CHECK bus is supplied by either SAT or UAT</li> <li>REDUCE load and vars</li> <li>When at or below 200 kW and 200 kvars then OPEN the 1A DG output breaker</li> </ul> </li> <li>DISPATCH NLO to place Speed Droop to 0</li> <li>VERIFY speed at 900 rpm</li> <li>Let 1A DG run unloaded for 5 to 10 minutes</li> <li>VERIFY 1A DG Engine Control Switch in AUTO</li> <li>PLACE 1A DG Control Switch to STOP</li> <li>CHECK DG shuts down</li> <li>PLACE 1A DG Maintenance Switch to MAINT</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>Refer to Technical Specifications 3.8.1.C, 3.7.2.A, 3.5.1.A, 3.6.2.3.A, 3.6.2.4.A, and 3.6.3.1.A. (Unit 2 is also affected by the loss of 1A DG, LCO 3.8.1.C)</li> <li>Calls WCC SRO for assistance and repairs.</li> </ul>
<b>TERMINUS:</b>	Operator places 1A DG in shutdown. US reviews Technical Specifications.

<b>Key Event 3-4</b>	<b>Initiation:</b> 1A EDG is loaded and after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>CRD Drift</b> Annunciator 1H13-P603-A504 CRD Drift
	<b>Reactor Operator Response:</b> Performs actions per LOA-RD-101 for Individual Rod Drift or Scram <ul style="list-style-type: none"> <li>• CHECK only one rod is drifting or scrammed (yes)</li> <li>• SELECT the drifting control rod</li> <li>• CHECK insert block light is off at rod select matrix</li> <li>• If not, then REMOVE the block by either BYPASSING the RWM or DISABLE blocks to 100%</li> <li>• INSERT the drifting rod to notch 00</li> <li>• CHECK the control rod remains at 00 (yes)</li> <li>• VERIFY cooling water is normal (&lt;63 gpm, &lt;30 psid)</li> <li>• OBTAIN OD-7 Option 2</li> <li>• RUN OD-20</li> <li>• NOTIFY QNE to MONITOR core parameters or RECOMMEND additional power level changes</li> <li>• CHECK all other rods are at correct positions</li> <li>• DECLARE the control rod inoperable</li> <li>• INVESTIGATE Cause of Rod Drift</li> <li>• CONTACT System Engineering to troubleshoot</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• Monitors panels</li> <li>• Assists RO as necessary</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• REFER to Technical Specification 3.1.3, enters Action Statement</li> <li>• Declares Rod Inoperable</li> </ul>
<b>TERMINUS:</b>	Drifted control rod inserted to 00. SRO reviews applicable Technical Specifications

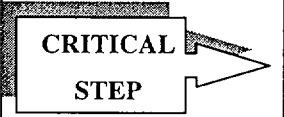
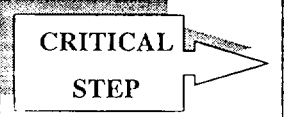
<b>Key Event 3-5</b>	<b>Initiation:</b> Event 3-4 complete, and after cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Inadvertent HPCS Initiation</b> 1H13-P601-A205 HPCS SYS Actuated 1H13-P601-A204 HPCS Pmp Bkr 2 Closed 1H13-P601-A406 HPCS Hdr Press Hi
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>Monitors changes in core reactivity from cold water injection</li> </ul>
	<b>BOP Operator Response:</b> Recognizes HPCS inadvertent initiation DISPATCHES NLO to 1B DG room SECURES 1B DG By pressing STOP pushbutton PREVENTS re-start of 1B DG by placing Maintenance Switch in MAINT Takes actions per LOR-1H13-P601-A205 for HPCS Initiation <ul style="list-style-type: none"> <li>VERIFY automatic actions (HPCS aligns for injection)</li> <li>CHECK initiation signal present</li> <li>NOTIFY Shift Manager to classify GSEP (make notifications too)</li> <li>If HPCS is not required then SHUTDOWN per LOP-HP-04</li> </ul> Takes actions per LOP-HP-04 to shutdown HPCS <ul style="list-style-type: none"> <li>VERIFY HPCS injection is NOT needed by multiple indications</li> <li>VERIFY Initiation Signals Clear</li> <li>RESET the HPCS logic by DEPRESSING both reset pushbuttons</li> <li>CLOSE 1E22-F004 Injection Valve</li> <li>VERIFY 1E22-F012 Minimum Flow Valve OPENS</li> <li>STOP HPCS pump</li> <li>VERIFY 1E22-F012 Minimum Flow Valve CLOSES</li> <li>When HPCS room fan automatically stops, then SHUTDOWN the 1B DG Cooling Water Pump</li> <li>When plant conditions permit, PLACE HPCS in standby per LOP-HP-03</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>Refers to Tech Spec 3.5.1 and declares HPCS INOP</li> <li>Contacts IMD and System Engineering for assistance in troubleshooting</li> <li>Refers to Technical Specification 3.8.1 condition F. action I (both 1A and 1B DGs are inoperable)</li> </ul>
<b>TERMINUS:</b>	Crew secures HPCS pump. SRO reviews applicable Technical Specifications.

Simulator Commands	Instructor Role Play and Information
<p><b>Trigger 1</b></p>	<p><b>Scenario Segment Description:</b> This event simulates and inadvertent initiation of HPCS system logic. The crew will have to recognize that it is a spurious initiation and then take actions to secure the HPCS system and the 1B DG. The Unit Supervisor should call the HPCS system Inoperable.</p> <p><b>Simulator Operator:</b> Wait until the crew has paralleled the 1A DG to the SAT and then with the concurrence of the Chief Examiner, initiate the spurious initiation of the Division 3 initiation logic by activating Event 3-5, HPCS initiation.</p> <p><b>NOTE:</b> When Event Trigger 1 is activated, it will initiate the Division 3 initiation logic causing the HPCS pump to start and the 1B DG. Event Trigger 1 also hides the Low Level annunciators. When the 1B DG gets up to speed the Bus Alive light will come on activating Event Triggers 20, 21 and 22. Event Triggers 20, 21 and 22 delete the spurious initiation malfunction and the annunciator overrides that were installed by Event Trigger 1. This will allow the students to shutdown the HPCS system using LOP-HP-04.</p> <p>•</p> <p><b>Trigger 16</b></p> <p><b>Role Play:</b> If asked, have NLO place the 1B DG in Maintenance Switch in the Maintenance position, wait 1 minute then activate Event Trigger 16 (ior iadgmanb maint).</p>

<b>Key Event 3-6</b>	<b>Initiation:</b> Event 3-5 is completed and after cued by lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>CRD Suction Filter Clogged</b> 1H13-P603-A303 CRD Feed Pmp Suct Filter DP Hi 1H13-P603-A203 CRD Feed Pmp Suction Press Lo 1H13-P603-A103 1A CRD Feed Pmp Auto Trip
	<b>Reactor Operator Response:</b> <u>Per P603-A303, CRD Feed Pmp Suct Filter DP Hi:</u> <ul style="list-style-type: none"> <li>• Dispatches NLO to CRD Pump area</li> <li>• Directs an NLO to switch to the STBY suction filter per LOP-RD-14 (Local operation of valves)</li> </ul> <u>Per P603-A203 CRD Feed Pmp Suction Press Lo:</u> <ul style="list-style-type: none"> <li>• REDUCEs system flow by closing FCV to clear alarm and keep pump from tripping on low suction pressure.</li> <li>• THROTTLEs down on drive water pressure to maintain about 280 psid.</li> <li>• Places standby CRD suction filter in service</li> </ul> <u>Per P603-A103 1A CRD Feed Pmp Auto Trip:</u> <ul style="list-style-type: none"> <li>• Has the NLO expedite switching filters.</li> <li>• STARTs STBY pump:               <ol style="list-style-type: none"> <li>1. If CRD pressure is &gt;500 psig then immediately starts pump, or</li> <li>2. Starts pump per LOP-RD-03.</li> </ol> </li> </ul> <p>Receives multiple accumulator alarms – Directed to scram reactor)</p>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• Monitors panels for alarms/abnormal conditions</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Refers to Tech Spec 3.1.5 after first CRD Accumulator alarm</li> <li>• DIRECTS Actions to manually scram when multiple accumulator alarms are received</li> </ul>
<b>TERMINUS:</b>	Reactor Scram by crew.

Time/Notes	Expected Crew Response
<b>Key Event</b> <b>3-6</b>	<b>CRD Suction Filter Clogged (Cont'd)</b> <b>Manual Scram after Receiving Multiple Accumulator alarms</b>
	<b>Reactor Operator Response:</b> <ul style="list-style-type: none"> <li>• ARM and DEPRESS Scram Pushbuttons</li> <li>• PLACE Reactor Mode Switch in SHUTDOWN</li> <li>• INSERT IRMs and SRMs</li> <li>• CHECK all Control Rods in and Power Decreasing</li> <li>• REPORTS ATWS conditions to Unit Supervisor</li> <li>• INFORM Unit Supervisor Of Rod Status and Reactor Power</li> <li>• Operate FW as necessary within the level bank 32 to 45 inches</li> <li>• REPORT to the Unit Supervisor the status (and trend) of RPV Level and Pressure</li> <li>• VERIFY Reactor Recirculation Pumps have downshifted</li> <li>• GO TO Step E.2 of LGP-3-2</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• VERIFY Main Turbine and Generator Trip</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E.2 of LGP-3-2</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Take actions per LGA-001.</li> <li>• When reactor power is greater than 3% and/or all rods are <u>NOT</u> in to at least 02 and the reactor will not stay shutdown without Boron then EXITs LGA-001 and ENTERs LGA-010</li> </ul>



Time/Notes	Expected Crew Response
Key Events 3-7 & 3-8	ATWS Failure of SBLC Squibb Valves to Open
<div data-bbox="185 951 467 1066">  <p>CRITICAL STEP</p> </div>	<p><b>Panel Operator Response:</b></p> <p>Per LGA-010:</p> <ul style="list-style-type: none"> <li>• Inhibit ADS</li> <li>• Prevent injection form HPCS, LPCS and LPCI</li> <li>    <u>LGA010 Power Leg</u></li> <li>• INITIATE ARI</li> <li>• RUNBACK Reactor Recirculation flow to minimum</li> <li>• If power is &gt;3% then TRIP RR Pumps</li> <li>• ENTER LGA-NB-01, Alternate Rod Insertion               <ol style="list-style-type: none"> <li>1. Remove Scram Solenoid Fuses and SDV vent and drain fuses (NLO)</li> <li>2. Depressurize scram air header (NLO local operation)</li> <li>3. Single rod insertion (RO bypasses RWM and drives rods in)</li> </ol> </li> <li>• If power is &gt;3% then START SBLC               <ol style="list-style-type: none"> <li>1. Places 1A/B SBLC Pump keylock switch to Sys A/Sys B position</li> <li>2. Checks C41-F004A/B SBLC Inj Squib Vlv ON light extinguishes (ON light does <u>NOT</u> extinguish)</li> <li>3. SBLC Squib Vlv Continuity Loss alarm (A105) does <u>NOT</u> alarm</li> </ol> </li> <li>• Identifies that SBLC does not initiate</li> <li>• Attempts to initiate Alternate Boron Injection using RWCU               <ol style="list-style-type: none"> <li>1. Authorizes NLO to use submersible pump with FP hose attached and run hose from SBLC tank to RWCU precoat tank.</li> <li>2. Defeat RWCU/SBLC isolations per Att. A. LGA-RT-103</li> <li>3. Switch jumpers per Att B.</li> <li>4. Remove RWCU Filter Demins from service per LOP-RT-04</li> <li>5. Pump SBLC solution to RWCU precoat tank</li> <li>6. Transfer RWCU precoat tank contents to RWCU filter demineralizer</li> <li>7. Place RWCU filter demineralizer in service.</li> </ol> </li> <li>• WAIT until Cold Shutdown Boron (&lt;3100 gal in SBLC Tank)</li> </ul>
<div data-bbox="185 1535 467 1650">  <p>CRITICAL STEP</p> </div>	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Acknowledges that SBLC does not actuate</li> <li>• Directs actions per LGA-NB-01, (See panel operator response above)</li> <li>• Directs actions per LGA-001 and LGA-010, (See panel operator response above)</li> <li>• Authorizes Alternate Boron injection using RWCU per LGA-RT-103</li> </ul>

Time/Notes	Expected Crew Response
Key Events 3-7 & 3-8	ATWS (Cont'd) Failure of SBLC Squibb Valves to Open (Cont'd)
<div data-bbox="191 940 456 1052" data-label="Text"> <p><b>CRITICAL STEP</b></p> </div>	<p><b>Panel Operator Response:</b></p> <p><u>LGA-010 Pressure Leg</u></p> <ul style="list-style-type: none"> <li>• If SRVs are cycling then OPEN SRVs to lower pressure to 935 psig</li> <li>• STABILIZE pressure &lt;1043 psig using main turbine bypass valves</li> <li>• Okay to reduce pressure so CB pumps can be used to control RPV level before stabilizing pressure. Do NOT exceed cooldown rate of 100°F /hr.</li> <li>• Use Alternate Pressure Control Systems if needed</li> <li>• EHC Pressure Set at 870 psig keeps SRVs closed when LLS is reset.</li> <li>• WAIT until Reactor is Shutdown or Cold Shutdown Boron is injected (&lt;3100 gal in SBLC Tank)</li> </ul> <p><u>LGA-010 Level Leg</u></p> <ul style="list-style-type: none"> <li>• VERIFY Automatic actions occur (Isolations and DGs Start)</li> <li>• If Steam Lines are open then BYPASS MSIV isolations per LGA-MS-01</li> <li>• If reactor power &gt;3% or unknown then Rapidly LOWER Level to at least -60 inches and use only preferred systems to hold level between -150 and -60 inches.</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs actions per LGA-010 (See panel operator response above)</li> <li>• EXITs LGA-010 and ENTERs LGA-001 when all rods are in, or Cold Shutdown Boron is injected, or the reactor will stay shutdown without Boron.</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Event</b> <b>3-7</b> <b>3-8</b>	<b>ATWS (Continued)</b> <b>Failure of SBLC Squib Valves to Open (Cont'd)</b>
<div> <div>CRITICAL STEP</div> <div></div> </div>	<p><b>Panel Operator Response:</b>  The following actions will only be taken if level drops below -150 inches  Take actions per LGA-006 when directed by LGA-010:</p> <ul style="list-style-type: none"> <li>• VERIFY Suppression Pool Level is greater than -18 feet</li> <li>• PREVENT all RPV injection except Boron, CRD and RCIC</li> <li>• INITIATE ADS (using BOTH pushbuttons)</li> <li>• VERIFY 7 ADS Valves are OPEN</li> <li>• RETURN to LGA-010 at Step 10</li> <li>• Commence re-injection when Reactor Pressure reaches 160 psig</li> <li>• WAIT until Shutdown Cooling Interlocks clear (143 psig)</li> <li>• WAIT until Reactor is shutdown or cold shutdown boron is injected</li> <li>• COOLDOWN to Cold Shutdown using Shutdown Cooling (per LOP-RH-07)</li> </ul>
<div> <div>CRITICAL STEP</div> <div></div> </div>	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs actions per LGA-010</li> <li>• Directs actions per LGA-006</li> </ul>
	<p><b>Simulator Operator:</b> Insert Control Rods as RO either pulls fuses or drives rods in manually (one at a time).</p>
<b>Terminating Conditions</b>	<ul style="list-style-type: none"> <li>• Maintain level 11" to 59.5"</li> <li>• All rods are in, or Cold Shutdown Boron is injected, or the reactor will stay shutdown without Boron.</li> <li>• Cue from lead examiner</li> </ul>

## LaSalle County Station

### Operations Scenario #4

April 8, 2002

Developed By: Raymond Keith Walton Date: March 24, 2002

Reviewed By: \_\_\_\_\_ Date \_\_\_\_\_

- Scenario #4

## NARRATIVE SUMMARY

### Current plant operating status.

The Unit is at 85% power. Crew will reduce reactor power using RR flow to less than 82% power. Perform a LOS-RP-Q3 for 'A' inboard and outboard MSIVs. The RO will identify the 'B' RR FCV slowly drifting closed. The RO may or may not compensate with the 'A' RR FCV depending on the mismatch between loop flows. Containment Chill water pump 'B' trips. 'C' APRM fails upscale without RPS half-trip. The operating 1A IN compressor will fail. A small break LOCA due to a recirc pump seal failure occurs followed by trip of bus 142Y.

### Scenario segments

- Reduce reactor power to less than 82% power
- 'A' inboard and outboard MSIV Surveillance Test
- 'B' RR FCV Drifts Closed
- Containment chill water pump 'B' trips
- APRM 'C' Fails High without an RPS half-trip occurring
- Trip of 1A IN compressor
- SBLOCA in drywell
- Bus 142Y trips

Facility: LaSalle County Station Scenario No.: 4 Op-Test No.: 2002301

Examiners: \_\_\_\_\_ Operators: \_\_\_\_\_

Initial Conditions: Reactor power 85%. 'B' IN compressor out of service

Turnover: Perform MSIV Surveillance Test for only 'A' Inboard and Outboard Isolation valves IAW LOS-RP-Q3.

Event No.	Malf. No.	Event Type*	Event Description
1		R (RO)	Reduce Reactor Power using RR flow to less than 82% pwr
2		N (BOP)	Performs LOS-RP-Q3 for 1A Inboard and Outboard MSIVs
3		I (RO)	RR FCV Controller output drifts causing 'B' RR FCV to drift closed, operator may need to decrease RR flow on 'A' RR loop at M/A station
4		C (BOP)	Containment Chill Water Pump 'A' trips
5		I (RO)	'C' APRM Fails Upscale without RPS half-trip
6		C (BOP)	Trip of 'A' Instrument Nitrogen (IN) compressor.
7		M	SBLOCA in Drywell
8		C	Bus 142Y trips

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

LGA-001, RRM Control

LGA-004, RPV Blowdown

## SHIFT TURNOVER INFORMATION

- |   |                                    |  |
|---|------------------------------------|--|
| ⇒ Day of week and shift   |                                    |  |
| ♦ Today, Day Shift  |                                    |  |
| ⇒ Weather conditions  |                                    |  |
| ♦ Warm, mid-summer  |                                    |  |
| ♦ Windy   |                                    |  |
| ⇒ (Plant power levels)  |                                    |  |
| ♦ Unit 1 - 85 % Power, 100% FCL   | ♦ Unit 2 - 100 % Power, 108.5% FCL |  |
| ♦ 2965 MWt  | ♦ 3489 MWt                         |  |
| ♦ 945 MWe   | ♦ 1189 MWe                         |  |
| ♦ 85 Mlbm/hr CORE FLOW  | ♦ 93 Mlbm/hr CORE FLOW             |  |
| ⇒ Thermal Limit Problems/Power Evolutions   |                                    |  |
| ♦ None  | ♦ None                             |  |
| ♦   | ♦                                  |  |
| ♦   | ♦                                  |  |
| ⇒ Existing LCOs, date of next surveillance  |                                    |  |
| ♦   | ♦ None                             |  |
| ♦   | ♦                                  |  |
| ♦   | ♦                                  |  |
| ⇒ LOSs in progress or major maintenance   |                                    |  |
| ♦ None  | ♦ None                             |  |
| ♦   | ♦                                  |  |
| ♦   | ♦                                  |  |
| ⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment |                                    |  |
| ♦ 1B IN compressor OOS  | ♦ None                             |  |
| ♦   | ♦                                  |  |
| ♦   | ♦                                  |  |
| ⇒ Comments, evolutions, problems, etc.  |                                    |  |
| ♦ Online Risk is Green  | ♦ Online Risk is Green             |  |
| ♦ 3 CW pumps operating  | ♦ 3 CW pumps operating             |  |

## **SIMULATOR SETUP**

**A. CARDS/TAGS TO BE HUNG:**

- Place the >95.2% FCL placard on near the mode selector switch
- Place OOS tags on 1B IN compressor

**B. MISCELLANEOUS:**

- **Time Clock Board**  
None

**C. EQUIPMENT:**

- 

**D. TURNOVER INSTRUCTIONS:**

Gather the crew in an appropriate classroom setting; use the turnover sheets to provide a shift turnover. Stress the following items:

1. Unit 1 is at 85% power holding steady
2. Decrease power to perform LOS-RP-Q3 for 'A' MSIVs only
3. FCL >95.2%
4. Unit 2 is at rated power



<b>Event 4-1</b>	<b>Initiation:</b> After completion of shift turnover and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Power Decrease with Recirculation Flow</b>
	<p><b>Reactor Operator Response:</b> Takes actions to establish a power ramp per LGP-3-1 to decrease load:</p> <ul style="list-style-type: none"> <li>Decrease core flow per LOP-RR-07 <ul style="list-style-type: none"> <li>At a rate up to 300 MWe/hour</li> <li>At a higher rate specified by a QNE</li> </ul> </li> </ul> <p>LOP-RR-07:</p> <ul style="list-style-type: none"> <li>Verify manual light on recirculation loop flow controller M/A station A/B is ON.</li> <li>Change flow evenly in both loops by pressing LOWER button and observing flow indication to flow controller M/A station.</li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>MAINTAIN condensate flow through the polishers per LOP-CD-03</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>DIRECTS crew to decrease power at &lt;300 MWe/hour to 100% power using recirculation flow</li> <li>Notifies Electric Operations of power change</li> <li>Enforces OPS expectations and standards</li> <li>Ensures RO monitors critical parameters carefully</li> <li>Ensures operations are conducted within bounds of TS</li> </ul>
<b>TERMINUS:</b>	Clearly observable plant response from change in power level.

<b>Event 4-2</b>	<b>Initiation:</b> Following Shift turnover on signal from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Key Event: Perform LOS-RP-Q3 MSIV Scram Functional Test</b>
	<p><b>BOP Operator Response:</b>  Takes actions to perform LOS-RP-Q3, MSIV Scram Functional Test for 1A inboard MSIV and 1A outboard MSIV:</p> <ul style="list-style-type: none"> <li>• VERIFIES Rx Power &lt;82%, all MSIV switches in AUTO, Scrams RESET, and MSIV Relays energized.</li> <li>• One at a time, places 1A inboard MSIV control Sw. in OPEN SLOW TEST</li> <li>• Depresses and Holds PB until 2 relays deenergize or for about 10 sec. After receiving dual indication.</li> <li>• Then Releases PB.</li> <li>• VERIFIES 1A inboard MSIV reopens and 2 relays deenergize then reenergize.</li> <li>• Checks that 1A/1B MSIV inbd/outbd Not Full Open alarm received.</li> <li>• Verify 1A inboard MSIV open.</li> <li>• Verify all MSIV relays energized (1C71A-K3A through K3H).</li> <li>• Reset 1A/1B MSIV Inbd/Otbd Not Full Open alarm.</li> <li>• Place 1B21-F022A, Inbd MSIV control switch in AUTO.</li> <li>• Waits 2 minutes to stabilize flows.</li> <li>• Repeats above steps with 1A outboard MSIV. <ol style="list-style-type: none"> <li>1. Except that 2 scram relays (K3A and K3B) do <u>NOT</u> deenergize after holding PB for greater than 10 secs.</li> </ol> </li> </ul>
	<p><b>Reactor Operator Response:</b></p> <ul style="list-style-type: none"> <li>• VERIFIES Rx Power &lt;82%, all MSIV switches in AUTO, Scrams RESET, and MSIV Relays energized.</li> <li>• Monitors plant parameters for alarms/unusual conditions</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• HOLDS power decrease to perform MSIV surveillance test</li> <li>• MONITORS crew performing LOS-RP-Q3</li> <li>• Refers to TS 3.3.1.1</li> </ul>
<b>TERMINUS:</b>	Completion of surveillance test

<b>Key Event 4-3</b>	<b>Initiation:</b> After SRO reviews TS for MSIVs and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>'B' RR FCV Controller Output Drifts – Closure of 'B' FCV</b> 1H13-P602-B101, 'B' RR Flow Control Vlv Trouble
	<p><b>Reactor Operator Response:</b>            Immediate Response: Lockup 'B' RR FCV HPU  <u>Per P602-B101, 'B' RR Flow Control Vlv Trouble:</u></p> <ul style="list-style-type: none"> <li>CHECKS computer for alarm R0968, 1B FCV Servo Amp Cont. Sig Abnormal and initiates corrective actions to reset alarm.  <u>REFERS to LOA-RR-101, Reactor Recirculation System Abnormal</u></li> <li>CHECKS FCV position Stable (no)</li> <li>If not done previously, Locks up 'B' FCV locked up by tripping RR FCV HPU.</li> <li>CHECKS for core instabilities (none)</li> <li>CHECK recirculation loop jet pump flows less than TS MISMATCH:               <ol style="list-style-type: none"> <li>Within 5.425 Mlb/hr as read on B21-R611A/B or greater than or equal to 75.95 Mlbm/hr.</li> <li>Within 10.85 Mlb/hr as read from B21-611A/B if core flow less than 75.95 Mlbm/hr.</li> </ol> </li> </ul> <p><b>NOTE: If candidates detect failure quickly and take immediate actions by locking up 1B RR FCV by tripping HPU, may not exceed TS Mismatch.</b></p> <ul style="list-style-type: none"> <li>If &gt;TS MISMATCH:               <ol style="list-style-type: none"> <li>Restore flow mismatch within 1 hour.</li> <li>Initiate TADS.</li> <li>Zero servor error on 1B FCV M/A Station</li> <li>Check HPU Subloop available</li> <li>Verify HPU subloop is in lead</li> <li>Check "Pump Motor Running" indicates False @ DS001 Operator Station in both subloops</li> <li>Select Start/Stop pump motor, Press START</li> <li>Check pump motor running &amp; Pressure normal.</li> <li>Push 1B FCV Inhibit Reset PB &amp; verify Motion Inhibit light clears.</li> <li>Push LOWER PB at 1A FCV M/A station...</li> </ol> </li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>MONITORS panels for abnormal conditions and alarms.</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>Refers to Tech Spec 3.4.1, Condition F.</li> </ul>
<b>TERMINUS:</b>	RO balances loop flows, if required. SRO reviews applicable Technical Specifications

<b>Key Event 4-4</b>	<b>Initiation:</b> Event 4-3 complete, and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Containment Chill Water Pump 'A' Trips</b> PM06J-A201, Primary Ctmt Water Chiller Pump VP01PA Trip PM06J-A501, Primary Ctmt Vent. Water Chiller VP01CA Trouble
	<p><b>BOP Operator Response:</b></p> <p><u>Response to PM06J-A201:</u></p> <ul style="list-style-type: none"> <li>• VERIFY Automatic Isolations Occur:               <ol style="list-style-type: none"> <li>1. TRIPS Primary Containment Water Chiller Pump 1VP01PA, (Loss of Primary Containment Cooling).</li> <li>2. TRIPS Primary Containment Water Chiller Unit 1VP01CA.</li> </ol> </li> <li>• MONITORS Drywell temperature and pressure</li> <li>• DISPATCH operator to CHECK Protective Relays at compressor motor starter panel. 'A' chill water pump is fed from MCC 133-1.</li> <li>• OPERATE available chillers per LOP-VP-02 to maintain adequate Drywell Cooling.</li> <li>• MONITOR Drywell Temperature (Reference LOP-CM-04).</li> <li>• MONITOR Drywell Pressure from recorders 1PR-CM027 and 1PR-CM028 on panel 1PM13J.</li> </ul> <p><u>Response to PM06J-A501:</u></p> <ul style="list-style-type: none"> <li>• Start 1B Primary containment chill water compressor and vent system per LOP-VP-02</li> </ul> <p><u>Response to LOP-VP-02:</u></p> <ul style="list-style-type: none"> <li>• Coordinates with NLO and Starts the 1B VP Chill water pump from CR.</li> <li>• After more local checks, Starts the 'B' Supply fan from PM06J.</li> <li>• After 30 seconds, ensures 'B' Supply Fan is still running .</li> <li>• Local operator starts chiller unit.</li> <li>• CLOSES 1B VP Chiller Supply Bkrs to VP01CB (action doesn't start the VP chiller).</li> <li>• Locally, NLO starts 1B VP chiller and checks for proper local operation.</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Event</b> <b>4-4</b> <b>(cont'd)</b>	<b>Containment Chill Water Pump 'A' Trips</b> PM06J-A201, Primary Ctmt Water Chiller Pump VP01PA Trip PM06J-A501, Primary Ctmt Vent. Water Chiller VP01CA Trouble
	<b>Reactor Operator Response:</b> Monitors for alarms/abnormal conditions on P603 panel.
	<b>BOP Operator Response:</b> (See previous page)
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• May REFER to LGA-003, Containment Control if receive high containment temperature alarms.</li> <li>• Refers to Tech Specs ?</li> </ul>
<b>TERMINUS:</b>	Orders NLO to locally reset RCIC trip throttle valve. <b>Simulator Operator: DO NOT</b> reset RCIC trip Throttle Valve!

<b>Key Event 4-5</b>	<b>Initiation:</b> After Event 4-4 complete and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>APRM C Fails High, No Half-Trip of RPS</b> 1H13-P603-A405, Channel A APRM Hi-Hi/Inop 1H13-P603-A308, Rod Out Block 1H13-P603-A108, APRM Hi 1H13-P603-B507, OPRM Inop/Trouble
	<b>Reactor Operator Response:</b> Announces 'C' APRM Upscale Trip without corresponding trip of 'A' RPS. <u>Per H13-P603-A405:</u> <ul style="list-style-type: none"> <li>• VERIFIES Automatic Actions Occurred (no)               <ol style="list-style-type: none"> <li>1. Trip of RPS Channel 'A' (no)</li> <li>2. INSERTS trip of RPS Channel A.</li> </ol> </li> <li>• Determine if one APRM has failed upscale or is inoperable.               <ol style="list-style-type: none"> <li>1. Checks LPRM inputs to APRM on back panels to determine if any LPRM upscale alarms are in (none)</li> </ol> </li> <li>• BYPASS Inoperable/Upscale 'C' APRM               <ol style="list-style-type: none"> <li>1. On H13-P603 panel, takes 'A' Channel APRM Joy stick to 'A' position</li> </ol> </li> <li>• RESET RPS Channel A (May decide not to do – investigate cause of 'A' RPS not tripping)</li> </ul> <u>Per H13-A308 &amp; H13-A108:</u> <ul style="list-style-type: none"> <li>• Verifies Rod Block occurs (yes)</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• Monitors plant conditions</li> <li>• Assists Reactor Operator as needed to investigate cause of LPRM/APRM failure.</li> </ul>
	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Orders RO to BYPASS C APRM</li> <li>• May order RO to RESET RPS channel A</li> <li>• Refers to Tech Spec 3.3.1.1 and 3.3.2.1</li> <li>• Declares APRM C inoperable</li> <li>○ Refers to TRM 3.3.C, conditions 1 &amp; 2.</li> </ul>
<b>TERMINUS:</b>	Crew bypasses 'C' APRM and SRO reviews applicable Tech. Specs.

<b>Key Events 4-6</b>	<b>Initiation:</b> After completion of Event 4-5 and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<p><b>Reactor Operator Response:</b></p> <p><u>Per PM03J-B503:</u></p> <ul style="list-style-type: none"> <li>Decreases power to approximately 63% at a rate up to 300 MWe/hour by inserting CRAM rods and/or recirculation flow by: <ol style="list-style-type: none"> <li>VERIFY Manual light on Recirc Loop Flow Controller M/A station A/B is ON.</li> <li>Change Flow evenly in both loops by pressing LOWER button and observing flow indication to Flow controller M/A Stations.</li> </ol> </li> <li>Must maintain: <ol style="list-style-type: none"> <li>Condensate Polisher D/P less than 60 psid</li> <li>Feedwater pump suction pressure greater than 250 psig</li> <li>Reactor water level greater than 31"</li> <li>Core Flow greater than 49 Mlbm/hr</li> </ol> </li> </ul> <p><u>Per B504, Htr Drain Pump Auto Trip:</u></p> <ul style="list-style-type: none"> <li>Refer to LOA-HD-101, Heater Drain System Trouble: <ol style="list-style-type: none"> <li>Do NOT reduce core flow to the instability region (or below 49Mlb/hr).</li> <li>Monitor Feedwater temperature.</li> <li>REDUCE core flow at least 5Mlbs/hr for every 10°F drop in FW temp.</li> <li>If below FWHOOS line in Fig. 1, contact a QNE to adjust MCPR limits for FW htrs OOS and evaluate core performance.</li> </ol> </li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>DIRECTS crew to reduce power at &lt;300 MWe/hour to &lt;63% power</li> <li>Notifies Electric Operations of power reduction</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Events</b> <b>4-6 &amp; 4-7</b> <b>(Cont'd)</b>	<b>Heater Drain Tank Level Controller HK-HD-310 Fails Open</b> PM03J-B503, Htr Drain Tank Level Hi/Lo PM03J-B504, Htr Drain Pump Auto Trip <b>Power Decrease with Recirculation Flow</b>
	<b>BOP Operator Response:</b> <u>Per PM03J-B504:</u> <ul style="list-style-type: none"> <li>• VERIFIES that HD pumps tripped and observes low level condition in heater drain tank.</li> <li>• VERIFIES Heater Drain Tank Level Controller operating properly (Determines that HK-HD-310, Heater Drain Tank to Condenser Level Controller <u>NOT</u> operating properly).</li> <li>• Takes HK-HD-310 controller to Manual and decreases demand signal.</li> <li>• HD171A/B/C indicate closed.</li> <li>• Level starts to increase in Heater Drain Tank</li> <li>• Restarts heater drain pumps per LOP-HD-02:             <ol style="list-style-type: none"> <li>1. Locally NLO latches LSV-HV239, 240 &amp; 241 (A, B &amp; C HD pump forward control valve solenoid valves)</li> <li>2. ADJUST HK-HD066, setpoint to 7 feet</li> <li>3. DEPRESS output increase (UP arrow) to open HD pump forward control vlvs until controller deviation is at or near 0.</li> <li>4. Transfer the HD pump Forward controller to AUTO by depressing the PB</li> <li>5. SLOWLY adjust setpoint to 9 feet on HK-HD310. The low flow flushing valves HD171A, B &amp; C will go closed and Pump forward valves HD045A, B &amp; C will control heater drain tank level.</li> <li>6. START/STOP HD pumps as necessary to maintain HD tank level.</li> </ol> </li> <li>• REFERS to LOA-HD-101, Heater Drain System Trouble             <ol style="list-style-type: none"> <li>1. Check Main Turbine on line.</li> <li>2. Monitor Feedwater temperature on computer points B744 – B747 or CRT Screen #46 or OD3 (Heat Balance Printout)</li> <li>3. CHECK all 13 A/B/C FW heaters are on line.</li> </ol> </li> </ul>
<b>TERMINUS:</b>	Crew regains level in heater drain tank and reduces reactor power to 63%. Or results in reactor scram on low feedpump suction pressure.



<b>Key Event 4-8</b>	<b>Initiation:</b> Event 4-7 completes, or reactor scram results or cue from lead examiner. Events 4-8, 4-9 and 4-10 can be initiated at the same time.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>RR Line Break/ Small LOCA</b> IH13-P603-B501 Pri Cnmt Pressure Hi/Lo IPM13J-A302 RB North/DW Flr Sump Trouble IPM13J-A204 DW Cooler Cond Flow Rate Hi
	<b>Reactor Operator Response:</b> Takes actions per LGP-3-2, completes the actions of the Scram Hard card and follows up with the procedure; <ul style="list-style-type: none"> <li>• ARM and DEPRESS Scram Pushbuttons</li> <li>• PLACE Reactor Mode Switch in SHUTDOWN</li> <li>• INSERT IRMs and SRMs</li> <li>• CHECK all Control Rods in and Power Decreasing</li> <li>• INFORM Unit Supervisor Of Rod Status and Reactor Power</li> <li>• Operate FW as necessary within the level bank 32 to 45 inches</li> <li>• REPORT to the Unit Supervisor the status (and trend) of RPV Level and Pressure</li> <li>• VERIFY Reactor Recirculation Pumps have downshifted</li> <li>• STABILIZE Reactor Pressure &lt;1020 psig</li> <li>• GO TO Step E.2 of LGP-3-2</li> </ul>
	<b>BOP Operator Response:</b> <ul style="list-style-type: none"> <li>• VERIFY Main Turbine and Generator Trip</li> <li>• GO TO Step E.2 of LGP-3-2</li> <li>• Takes actions per LGA-001 when level drops below 11 inches               <ol style="list-style-type: none"> <li>1. Scram Switch to SCRAM, MODE switch to SHUTDOWN</li> <li>2. Checks all rods in to at least 02 position.</li> </ol> </li> </ul> <p style="text-align: center;"><u>RPV Level Control Leg</u></p> <ol style="list-style-type: none"> <li>1. CONTROL Level between 11 to 59.5 inches using Feedwater and Condensate</li> </ol> <p style="text-align: center;"><u>RPV Pressure Control Leg</u></p> <ol style="list-style-type: none"> <li>1. Before RPV pressure reaches 440 psig, prevent LPCS and LPCI injection.</li> <li>2. Stabilize Pressure Below 1059 psig using Turbine Bypass Valves</li> <li>3. Depressurize RPV using Turbine Bypass Valves at &lt;100°F/hour</li> </ol>
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <b>CRITICAL STEP</b> </div>	<b>Unit Supervisor Response:</b> <ul style="list-style-type: none"> <li>• Directs actions per LGP-3-2 (See RO and BOP Response items above)</li> <li>• Directs actions per LGA-001 (See RO and BOP Response items above)</li> </ul>

Time/Notes	Expected Crew Response
<b>Key Event</b> <b>4-8</b> <b>(Cont'd)</b>	<b>RR Line Break/ Small LOCA (Continued)</b>
<div data-bbox="238 617 505 730"><b>CRITICAL STEP</b></div> <div data-bbox="238 789 505 903"><b>CRITICAL STEP</b></div>	<p><b>Panel Operator Response:</b>  Per LGA-003:</p> <p><u>Containment Pressure Leg</u></p> <ul style="list-style-type: none"> <li>• Start Suppression Chamber Sprays</li> <li>• When &gt;12 psig;</li> <li>• VERIFY within the Drywell Spray Initiation Limit (Figure D)</li> <li>• TRIP both RR pumps</li> <li>• START DW Sprays</li> </ul> <p><u>Drywell Temperature Leg</u></p> <ul style="list-style-type: none"> <li>• VERIFY all available Drywell Cooling is running (per LGA-VP-01, can't be used when Drywell Temperature is above 212°F)</li> <li>• If cannot restore and hold Drywell temperature below 340°F then: Blowdown per LGA-004</li> </ul> <p><u>Suppression Pool Temperature Leg</u></p> <ul style="list-style-type: none"> <li>• START all available Pool Cooling (LGA-RH-103) if temperature reaches 105°F/hour</li> <li>• Monitor Suppression Pool Level</li> </ul> <p><u>Containment Hydrogen Leg</u></p> <ul style="list-style-type: none"> <li>• START Hydrogen and Oxygen Monitors (LGA-CM-01)</li> </ul>
<div data-bbox="238 1190 505 1304"><b>CRITICAL STEP</b></div>	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• Directs actions per LGA-003 (See actions above)</li> </ul>

<b>Key Events 4-9 &amp; 4-10</b>	<b>Initiation:</b> Events 4-9 and 4-10 may be initiated at the same time that event 4-8 is initiated.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<p><b>Loss Of Bus 152</b>            1PM01J-A206, 6.9KV Bus 151/152 Overcurrent            1PM01J-A207, 6.9KV Bus 151/152 Undervoltage            1PM03J-A103, 1A/1B/1C FW Pmp Trip</p> <p><b>Loss of Feedwater</b>            1PM03J-A110, CD/CB Pump Auto Trip            1A/1B/1C FW Pump Trip</p> <p><b>'A' Condensate/Booster Pump fails to Auto Start</b></p>
	<p><b>Panel Operator Response:</b>  <u>Per PM01J-A206 &amp; A207:</u>            Announces loss of Bus 152, loss of B &amp; D condensate/booster pumps, and loss of both TDRFPs (low suction pressure).            A condensate/booster pump (in standby) fails to automatically start            Recognizes that Motor Driven RFP does not start (powered from Bus 152)            Reports loss of feedwater system.            Reports loss of 1B Recirculation pump (powered from Bus 152)            Takes actions per LOA-AP-101 for loss of Bus 152.  <u>Per LOA-AP-101:</u></p> <ul style="list-style-type: none"> <li>CHECKs 1PM01J-A206 (over current) CLEAR (no)</li> <li>DISPATCHES equipment operator to check Bus 152 for targets and damage.</li> </ul> <p><u>Per LOA-RR-01, for loss of 1B Recirculation Pump:</u>            CHECK at least one RR pump running (yes, 1A RR pump)</p> <ol style="list-style-type: none"> <li>1. Check RR Flow in the active loop &gt;21,000 gpm</li> <li>2. Check operating pump in fast speed (no)</li> <li>3. Open FCV on running pump</li> <li>4. Notify IMD</li> <li>5. Decrease FCV of non-operating pump to minimum</li> <li>6. When &lt; 350 rpm, place breakers on non-running pump in PTL.</li> </ol>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>Directs actions per LOA-AP-101, AC Power System Abnormal (See Panel Operators Response above)</li> <li>Directs actions per LOA-RR-101, Reactor Recirculation System Abnormal (See Panel Operators Response above)</li> </ul>
<b>Key Event Description:</b> The loss of 6.9 KV AC Bus 152 will cause a loss of Condensate Booster pumps. 1HD045B and C will close this trips the TDRFPs on low suction pressure.	

Time/Notes	Expected Crew Response
<b>Key Events</b> 4-8 4-9 4-10	<b>Loss of Bus 152/Loss of FW (Cont'd)</b> <b>RR Line Break/ Small LOCA (Cont'd)</b> <b>'A' Condensate/Booster Pump Fails to Auto Start (Cont'd)</b>
<div data-bbox="240 961 508 1073"> <b>CRITICAL STEP</b> </div>	<p><b>Panel Operator Response:</b>  Takes actions per LGA-001 when level drops below 12.5 inches:  <u>RPV Pressure Control Leg</u>  Depressurize RPV using Turbine Bypass Valves at &lt;100°F/hour  <u>RPV Level Control Leg</u></p> <ul style="list-style-type: none"> <li>• CONTROL Level +11 to +59.5 inches using Preferred Systems (FW Pumps unavailable, CRD pumps and 'C' condensate/booster pump available at &lt;500 gpm)</li> <li>• If cannot restore level above 11 inches and hold it there then hold level above -150 inches.</li> <li>• If cannot hold level above -150 inches, Enter LGA-004, Blowdown</li> </ul> <p><u>Per LGA-004</u></p> <ul style="list-style-type: none"> <li>• VERIFY Drywell Pressure is greater than 1.69 psig</li> <li>• VERIFY Suppression Pool Level is greater than -18 feet</li> <li>• INITIATE ADS (using BOTH pushbuttons)</li> <li>• VERIFY 7 ADS Valves are OPEN</li> <li>• WAIT until Shutdown Cooling Interlocks clear (135 psig)</li> <li>• COOLDOWN to Cold Shutdown using Shutdown Cooling (per LOP-RH-07)</li> </ul>
<div data-bbox="240 1283 508 1394"> <b>CRITICAL STEP</b> </div> <p><b>TERMINUS:</b></p>	<p><b>Unit Supervisor Response:</b>  Directs actions per LGA-001 (See Panel Operator Response above)  Directs actions per LGA-004, Blowdown (See panel operator response above)</p> <p>?</p>

Scenario #4

**Simulator Operator:**

Event 3 imf mrc 040 20 120

Event 4

Event 5 imf mcp 005

imf mni 098 125

Event 6 imf mai 003 ; then take stby IN comp to STOP

From dwg IN1

Event 7 imf mrdc 036 5 300

Event 8 mnb 080 0

# **LaSalle County Station**

## **Operations Scenario #5**

**Exam Date:      April 8, 2002**

Developed By:      Raymond Keith Walton      Date: March 24, 2002

## NARRATIVE SUMMARY

The unit is increasing power from 85% . The SRO will direct shutting down of RCIC after which a spurious Div 1 RCIC isolation signal will occur but 2 valves will not automatically isolate. The RO will receive a call from the field indicating a high flow condition in the CRD system due to the CRD flow control valve failing open. A pre-inserted failure will simulate a broken containment monitoring instrument line result in a failure of division 1 drywell pressure indication and fail division 1 ECCS and EDG automatic initiation and prevent remote operation of Division 1 drywell spray. This will be followed by a major steam leak inside containment.

### Scenario segments

- Power ramp (from 85% to 100% power)
- Shutdown RCIC
- Spurious RCIC isolation with failure of two valves to automatically isolate.
- CRD FCV fails open
- Steam leak inside containment
- Broken Containment monitoring instrument line

## SHIFT TURNOVER INFORMATION

- ⇒ Day of week and shift
  - ◆ Today, Day Shift
- ⇒ Weather conditions
  - ◆ Warm, mid-summer
  - ◆ Windy
- ⇒ (Plant power levels)
 

<ul style="list-style-type: none"> <li>◆ Unit 1 – 88% Power, 109% FCL</li> <li>◆ 2960 MWt</li> <li>◆ 1017 MWe</li> <li>◆ 77 Mlbm/hr CORE FLOW</li> </ul>	<ul style="list-style-type: none"> <li>◆ Unit 2 – 100 % Power, 108.5% FCL</li> <li>◆ 3489 MWt</li> <li>◆ 1189 MWe</li> <li>◆ 93 Mlbm/hr CORE FLOW</li> </ul>
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- ⇒ Thermal Limit Problems/Power Evolutions
 

<ul style="list-style-type: none"> <li>◆ Power Ascension for load following (300Mwe/hr)</li> <li>◆</li> <li>◆</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>
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- ⇒ Existing LCOs, date of next surveillance
 

<ul style="list-style-type: none"> <li>◆ RCIC inop for testing</li> <li>◆</li> <li>◆</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> <li>◆</li> </ul>
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- ⇒ LOSs in progress or major maintenance
 

<ul style="list-style-type: none"> <li>◆ Shutdown RCIC IAW LOP-RI-Q3. step E.3.</li> <li>◆ 1A RHR Pump in Suppression Pool Cooling Mode.</li> <li>◆</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> <li>◆</li> </ul>
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- ⇒ Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
 

<ul style="list-style-type: none"> <li>◆ None</li> </ul>	<ul style="list-style-type: none"> <li>◆ None</li> </ul>
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- ⇒ Comments, evolutions, problems, etc.
 

<ul style="list-style-type: none"> <li>◆ Online Risk is Green</li> <li>◆ Unit 1 is in a Division 1 work week</li> <li>◆ TLO Temperature controller in manual</li> </ul>	<ul style="list-style-type: none"> <li>◆ Online Safety is Green</li> <li>◆</li> </ul>
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## **SIMULATOR SETUP**

### **A. CARDS/TAGS TO BE HUNG:**

1. None

### **B. MISCELLANEOUS:**

#### **Timeclock Board**

- 1.

### **C. TURNOVER INSTRUCTIONS:**

- Gather the crew in an appropriate classroom setting and turnover sheet to provide a shift turnover. Stress the following items:
  1. Unit is at 88% power increasing power using recirc FCV.
  2. RCIC started for post maintenance testing after an oil change.
  3. Shutdown RCIC IAW LOP-RI-03, Step E.3.
  4. 1A RHR in suppression pool cooling mode.
  5. Unit 2 at Full Power.
  6. Complete all pre-evolutionary briefs before taking the watch.

<b>Event 5-1</b>	<b>Initiation:</b> After completion of shift turnover and cue from lead examiner.
<b>Time/Notes</b>	<b>Expected Crew Response</b>
	<b>Power Increase with Recirculation Flow</b>
	<p><b>Reactor Operator Response:</b>  Takes actions to establish a power ramp per LGP-3-1 to increase load:</p> <ul style="list-style-type: none"> <li>• INCREASE core flow per LOP-RR-07 <ul style="list-style-type: none"> <li>• At a rate up to 300 MWe/hour</li> <li>• At a higher rate specified by a QNE</li> </ul> </li> </ul> <p>LOP-RR-107:</p> <ul style="list-style-type: none"> <li>• Verify manual light on recirculation loop flow controller M/A station A/B is ON.</li> <li>• Change flow evenly in both loops by pressing RAISE button and observing flow indication to flow controller M/A station.</li> </ul>
	<p><b>BOP Operator Response:</b></p> <ul style="list-style-type: none"> <li>• Places additional Condensate polishers in service as necessary per LOP-CP-02</li> <li>• MAINTAIN condensate flow through the polishers per LOP-CD-03</li> </ul>
	<p><b>Unit Supervisor Response:</b></p> <ul style="list-style-type: none"> <li>• DIRECTS crew to increase power at &lt;300 MWe/hour to 100% power using recirculation flow</li> <li>• Notifies Electric Operations of power change</li> <li>• Enforces OPS expectations and standards</li> <li>• Ensures RO monitors critical parameters carefully</li> <li>• Ensures operations are conducted within bounds of TS</li> </ul>
<b>TERMINUS:</b>	Clearly observable plant response from change in power level.