LaSalle County Station

Initial License Training Simulator Exercise Guide

2003-01 NRC Exam Scenario-01

Scenario-01

Revision: 00

Date: 12/13/2004

Exam Author: _____/_____
(Signature / Date)

Ops Facility Rep: _____/_____
(Signature / Date)

Ops Trng Mngr: _____/_____
(Signature / Date)


Exelon
SM
Nuclear

Facility: LaSalle County Station **Scenario No.:** Scenario-01 **Op Test No.:** 2003-01 NRC Exam

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions:

- Ramping to full power following a load drop
- Rated Rod Line with core flow at ~85 Mlbm/hour

Turnover:

- Continue the power ramp per the approved load profile

Event No.	Malf. No.	Event Type*		Event Description
1.	N/A	(R) (N)	RO SRO	Increase Power per the Unit Supervisor, using RR Flow Control Supervises crew activities
2.	k1n24bnmr0563	(C)	SRO	RCIC Drain Pot Failure Technical Specification Determination
3.	mrd280	(C)	RO SRO	CRD Pump trips/Start standby CRD pump Directs actions per the annunciator and normal procedures
4.	r1148		SRO	Loss of heat tracing to Division 2 Post LOCA Monitors Technical Specification Determination
5.	r0912	(C) (C)	RO SRO	1B RR FCV HPU Isolation Valve fails closed Directs crew activities per the annunciator procedures
6.	mrc041	(M) (M)	RO SRO	LOCA in the Drywell, with loss of High Pressure Injection sources. Automatic Scram Failure, manual scram works. LGA Entry Conditions

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

Narrative Summary NRC Scenario-01:

Event	Description
1.	Initial conditions have the plant returning to full power following a load drop. Power is approximately 93% RTP. The examinees are directed to continue ramping power to 100% using Reactor Recirculation Flow Control Valves.
2.	The RCIC drain pot high level alarm will annunciate. The examinees will recognize that the drain bypass valve 1E51-F054 has automatically opened. Following the annunciator procedure, when the high level alarm does NOT clear, they will have to close the RCIC Trip and Throttle Valve 1E51-F360. This will render the RCIC system inoperable and the Unit Supervisor will have to make a Technical Specification determination.
3.	The running CRD Pump will trip. Per the annunciator procedure, the NSO will verify that Charging Water Pressure is greater than 500 psig, and then start the standby CRD pump, and follow up with normal operating procedure.
4.	This event is a Technical Specification for the Unit Supervisor. The event starts with an annunciator indicating trouble at a heat-tracing panel. When sent to investigate, the NLO discovers that the breaker is tripped and will NOT reset. This makes both the Hydrogen and Oxygen Post-LOCA monitors inoperable. The Unit Supervisor will enter the appropriate time clock to restore the monitors to operable.
5.	This event simulates a blow fuse that causes an outboard RR HPU hydraulic isolation valve to fail closed. The RO is expected to follow the annunciator procedures and lockup the associated flow control valve.
6.	For this event a Reactor Recirculation line will break causing LOCA conditions in the Drywell. Automatic RPS Scram will fail however manual actions to scram will be successful. The Unit Supervisor will enter the EOPs and take actions to control Reactor Water Level and Drywell Pressure. The MDRFP trips shortly after starting. Bus 143 trips on overcurrent. RCIC is not available from an earlier event. This will require a blowdown for level control. MSIVs close when Mode Switch contacts fail such that the 854 psig interlock is not bypassed.
Termination	The scenario can be terminated when the examinees have RPV and Containment parameters stable and under control.

Critical Steps:

1. Manually scram the reactor when or before the automatic setpoint is exceeded.
2. Perform a blowdown per the EOPs when level cannot be restored and maintained above –150 inches.

Revision Synopsis:

Revision 00

- Scenario created for use on 2003-01 ILT NRC Exam scheduled to be given the week of 03/07/2005.

Shift Turnover Information:

⇒ **Day of week and shift**

- Today, Day Shift

⇒ **Weather Conditions**

- Cool, Sunny, Winds light 5 to 10 mph

⇒ **(Plant Power Levels)**

♦ Unit 1 – 93% Power, 107.5% FCL	♦ Unit 2 – 100% Power, 106 % FCL
♦ 1058 MWe	♦ 1171 MWe
♦ 3199 MWt	♦ 3488 MWt
♦ 85 Mlbm/hr CORE FLOW	♦ 100 Mlbm/hr CORE FLOW

⇒ **Thermal Limit Problems/Power Evolutions**

♦ Ramping to full power following a drop for load following. Ramp is 300 MWe/hr	♦ 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**

♦ None	♦ None
♦	♦
♦	♦

⇒ **Comments, Evolutions, Problems, etc.**

♦ Online Risk – Green	♦ Online Risk – Green
♦ Grid Status – Green	♦ Grid Status – Green
♦	♦

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Simulator Setup Instructions

A. Reset the Simulator:

- Use the current Full Power IC created for L1C11.
- Lower RR Flow to 85 M#/hr.
- Perform APRM AGAF Adjustments.

B. **Run the setup CAEP:**

- From the exam floppy disk, load "caep a: NRC-Scenario-01.0.cae."

C. Cards/Tags to be Hung:

- None

D. **Miscellaneous Setup:**

- None

E. Turnover Instructions:

- Verify the following available for the students:
  - REMA
  - LOP-RR-07
  - LGP-3-1
  - Brief sheet for load drop.
- SM Permission has been given to continue the ramp at 300 MWe/hr.

Key Events / Timeline	Expected Crew Response
Event No. 1	**Increase power using RR Flow**
RO	When directed, increase power using RR Flow. Per LOP-RR-07 step E.4.1.4, adjust RR flow by depressing the Ganged Flow Setpoint Station RAISE pushbutton as required. • MONITORS and MAINTAINS the power ramp rate less than 300 MWe per hour.
SRO	Direct RO to commence ramp to full power. Provide oversight for the reactivity maneuver.

Simulator Commands	Instructor Role Play and Information
Event No. 1	Continuing startup per the shift turnover. **Role Play:** As Power Team, when called acknowledge LaSalle Unit 1 ramping to full power. **Role Play:** Respond as appropriate to any in-plant calls. **NOTE:** Allow examinees to increase power by at least 50 MWe before inserting the next event.

Key Events / Timeline	Expected Crew Response
Event No. 2	**RCIC Drain Pot Failure**
BOP	Reports and takes actions per annunciator H13-P601-D502, RCIC TURB STM LINE DRN POT LVL HI: • Verify 1E51-F054 opens • If the alarm does not clear within approximately two minutes, CLOSE 1E51-F360, RCIC Trip and Throttle Valve. (NOTE – alarm does NOT clear)
SRO	When the RCIC Trip & Throttle valve is closed, declare RCIC inoperable. T.S. 3.5.3, Condition A • Verify HPCS operable immediately • Restore RCIC to operable within 14 days.

Simulator Commands	Instructor Role Play and Information
Event No. 2	Start this event as directed by the Lead Evaluator. See NOTE. *
Trigger 2	Manual Trigger 2 starts the event.
	Role-Play: If directed, as NLO, report no obvious problems with RCIC
	*** NOTE:** The crew may stop the load ramp while addressing this event. Make sure the evaluator has seen adequate reactivity maneuvering before starting this event.
Evaluator	**NOTE:** If the crew desires to look at On-Line-Risk, then tell them that the Unit-2 Unit Supervisor will look up the On-Line-Risk for them.

Key Events / Timeline	Expected Crew Response
Event No. 3	**1A CRD Pump Auto Trip**
RO	Reports and takes actions per annunciator 1H13-P603-A103, 1A CRD FEED PUMP AUTO TRIP: • If CRD Header Pressure is greater than 500 psig in Mode 1, immediately starts 1B CRD pump and has it checked for proper operation. (Pressure is > 500 psig)
SRO	Directs RO actions to start standby CRD pump. Refers to Tech Spec 3.1.5 and 3.9.5 (No actions required) • T.S. 3.1.5 is for CRD Accumulators • T.S. 3.9.5 is for Refueling Operations

Simulator Commands	Instructor Role Play and Information
Event No. 3	As directed by the lead evaluator, start this event when the Unit Supervisor has addressed the appropriate Technical Specifications for the previous event.
Trigger 3	Manual Trigger 3 starts the event. **Role Play:** As NLO dispatched to CRD Pump Room, 1B CRD pump post-start checks are sat. 1A CRD pump has a very hot bearing.

Key Events / Timeline	Expected Crew Response
Event No. 4	**Division 2 Post-LOCA, Panel 1HT02E Trouble**
BOP	Responds to panel 1HT02E trouble per LOR-1PM13J-B104: • DISPATCHES an operator to panel 1HT02E • Has NLO check for condensate in the sample line • IF sample line temperature is <270°, declare both Hydrogen and Oxygen analyzers inoperable and refer to Technical Specification 3.3.3.1 • Tell Unit Supervisor to refer to T/S 3.3.3.1 • Directs NLO to attempt to reset the trouble alarm
RO	Assists the NSO as requested.
SRO	Refers to Technical Specification 3.3.3.1: • Determines Condition A is applicable for Oxygen monitor, 30 day time clock to restore, and • Determines Condition A is also applicable for the Hydrogen Monitor, 30 day time clock to restore.

Simulator Commands	Instructor Role Play and Information
Event No. 4	As directed by the lead evaluator, start this event when the crew has started the standby CRD pump.
Trigger 16	Manual Trigger 16 starts the event. Also – use the Remote Function to enable the PowerPlex Out of Range Abort. **Role Play:** As the NLO dispatched to 1HT02E in Unit-2, Division 2 switchgear room, make the following reports when asked: • No visible condensation in the sample lines • Under temperature alarm LEDs are lit • Sample line temperature is approximately 220°F and slowly decreasing • The temperature alarms will not reset • Breaker at MCC 136X-1 Compartment E1 for heat tracing circuits 32 and 34 are tripped and will not reset

Key Events / Timeline	Expected Crew Response
Event No. 5	**Blown Fuse (1B33-FU1BA) for HPU isolation valve 1B33-F339B.**
RO	Responds to annunciator per LOR-1H13-P602-B408: • Announces the annunciator to the Crew • Lockup 1B FCV by depressing the 1B HPU trip pushbutton • CHECKS 1B RR FCV Stable (yes) • ENTERs LOA-RR-101 • CHECK for core instability per Section B.1 • DETERMINES that a Group 2 PCIS Isolation does NOT exist • Dispatches an NLO to the AEER to check for blown fuses
RO	Responds to annunciator per LOR-1H13-P602-B101: • Announces annunciator to the Crew • Verifies annunciator due to R-point R1108, (yes) • Announces that 1H13-P602-B101 is an expected alarm for locking up the 1B RR HPU
SRO	Supervises crew response to the above annunciators

Simulator Commands	Instructor Role Play and Information
Event No. 5	Start this event after the Unit Supervisor has had an opportunity to make a Technical Specification determination in the previous event, and with the concurrence of the lead evaluator.
Trigger 18	Initiate this event using Manual Event Trigger 18.
	Role Play: When dispatched to panel 1H13-P644, then report that valve 1B33-F339B Outboard HPU Isolation Valve is CLOSED.
	Role Play: As the NLO at panel 1H13-P644, if asked to check fuses, wait 2 minutes then report that fuse 1B33-FU1BA is blown.
	Simulator Operator: When directed to replace the fuse, then wait 2 minutes and delete malfunction r0912. Call and report the fuse 1B33-FU1BA was replaced like-for-like per the procedure.

Key Events / Timeline	Expected Crew Response
Events No. 6	**RR Line Break with Auto SCRAM Failure.**
RO *Critical Task*	Manually scrams the reactor and takes actions per LGP-3-2, Reactor Scram Hard Card: ❖ Arm & Depress SCRAM pushbuttons. • Mode Switch to Shutdown. • Report all rods in. • Operate Feedwater per listed steps.
SRO *Critical Task*	Direct NSO to manually SCRAM Enter LGA-001 on High Drywell Pressure or Reactor Power above 3% when SCRAM required. Direct actions per LGA-001: ❖ SCRAM, Mode Switch to Shutdown. • Stabilize pressure below 1059 psig. • Control level between 11 in. and 59.5 in.
BOP	Take SCRAM actions: • Silence annunciators until level & pressure reports are made. • Take actions as directed by SRO.

Simulator Commands	Instructor Role Play and Information
Events No. 6	Start this event after the NLO reports that fuse 1B33-FU1BA is blown OR as directed by the Lead Evaluator.
Trigger 5	Manual Trigger 5 starts the event.

Key Events / Timeline	Expected Crew Response
Event No. 6	**RR Line Break with Auto SCRAM Failure.**
RO	Control Level in band directed by SRO. Report failure of MDRFP, inability to maintain level band. Report level below –150 in.
Critical Task	❖ When directed by SRO, Initiate ADS.
BOP	Attempt to inject using HPCS. Report failure of HPCS / Bus 143.
SRO	Directs Actions per LGA-001: • Maintain level above –150 in. • When level can not be maintained above –150 inches, enter LGA-004. Directs actions per LGA-004: • Prevent LPCS/LPCI not needed for core cooling. (BOP)
Critical Task	❖ Initiate ADS. (NSO)
	Directs actions per LGA-003: • Suppression Chamber Sprays before reaching 12 psig. (BOP) • Drywell Sprays when Chamber pressure is above 12 psig. (BOP)
BOP	As directed by SRO: • Prevent LPCS/LPCI not needed for core cooling. • Initiate Suppression Chamber Sprays. • Initiate Drywell Sprays.

Simulator Commands	Instructor Role Play and Information
Event No. 6	**Role Play:** Respond as requested.
Termination Conditions	• RPV level under control • Containment Parameters under control • Lead Evaluator Concurrence

OSG Validation Checklist

Scenario Number: Scenario-01

1._____ Verify that if not run from a protected IC that setup information is provided to reproduce the stated initial conditions.

2._____ Verify that all stated objectives are identified in the body of the OSG.

3._____ Verify that turnover sheets are completed, and are in agreement with both the narrative summary and shift turnover information sheet. Turnover sheets are not required for initial license scenarios.

4._____ Verify that if the scenario requires documents to be provided to the crew, they are filled out as appropriate (i.e., if an LOS is used, it is filled out).

5._____ If this is the initial validation of the revision affects ramp times, event triggers, malfunctions, overrides, remote functions or procedure changes that could affect the scenario, then validate the scenario for proper response using a crew. It is preferable to use a crew unfamiliar with the scenario when ever possible. Verify the following while running the scenario:

- The scenario runs as written and all tasks are performed.
- The stated time line agrees with actual times.
- Critical task statements clearly define the expected plant and student response. They should also be written so that they are achievable as written. If any questions exist, it is preferable to have operations management participate in the validation.
- Anticipate instructor role-play / cues are identified.
- Management expectations are captured and re-enforced.
- Verify administrative documentation requirements (i.e., ARs) are identified.
- Verify Technical Specifications items / LCO declarations are correct.
- Verify soft skills expectations are captured and are re-enforced.
- If procedure steps may cause confusion or disagreement between higher level procedures and LOPs / LORs that operations management is consulted.

6._____ Shutdown scenarios include shutdown risk assessment, time to boil calculations and shutdown status board information.

7._____ QNE review if needed.

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

References:

Reference	Title	Revision
1. LGP-3-1	POWER CHANGES	33
2. LOP-RR-07	OPERATION OF THE REACTOR RECIRCULATION FLOW CONTROL SYSTEM	27
3. 1H13-P601-D502	RCIC TURBINE STM LINE WTR DRN POT LVL HI	01
4. 1H13-P603-A103	1A CRD FEED PMP AUTO TRIP	03
5. 1PM13J-B104	PRIMARY CONTAINMENT POST LOCA HEAT TRACE PNL 1HT02E TROUBLE	02
6. 1H13-P602-B408	1B HPU ISOL VLVS CLOSED	02
7. 1H13-P602-B101	1B RR FLOW CONTROL VLV TROUBLE	02
8. LGP-3-2	REACTOR SCRAM	50
9. LGA-001	RPV CONTROL	06
10. LGA-003	PRIMARY CONTAINMENT CONTROL	05
11. LGA-004	RPV BLOWDOWN	04

Computer Aided Exercise Programs (CAEPs)

Initial Scenario Setup CAEP (a:2003ESG1.0.cae)

```
# Setup for 2003-01 ILT NRC Exam Scenario-01
#
# Author: John E. Ross
# Date Written: October 25, 2004
# Filename: A:\NRC-Scenario-01.0.cae
##############################################################################
# Revision: 01
# Revision Date: January 27, 2005
# Revised By: jer
##############################################################################
# This CAEP sets the initial conditions and events
# associated with the ILT Class 2003-01 NRC Exam Scenario-01. This
# CAEP sets up the following events:
# 1.
#
##############################################################################
#

# Cleanup IC-118 - Simulator problems are causing spurious alarms, the
# following malfunctions and overrides prevent these alarms.
# Malfunction to override RB Radiation Monitor Downscale Alarm
imf r0485 0
# Malfunction to override Fuel Pool Radiation Monitor Downscale Alarm
imf r0483 0
# Malfunction to override EHC 400 Hz PMG Malfunction Alarm
#imf r0799 0
# Override EHC 400 Hz PMG Malfunction amber light on apron section
#ior q5k35sw6 0


# Initial Conditions Setup
# SRV 1B21-F013C OOS with fuses removed
# irf isrvfuse12 removed

# Manual Event Trigger 2
# Open 1E51-F054 and give RCIC Drain Pot High Level Alarm
ior k1n24bnm(2) open
imf r0563(2) on


# Manual Event Trigger 3
# Trips the 1A CRD pump
imf mrd280(3)

# Manual Event Trigger 4
# Insert instrument line reference leg break
#imf mnb059(4) 5000 5:00

# Manual Event Trigger 5
```

```
# 1A RR Loop suction rupture
imf mrc041(5) 1.0 120 0.5

# Manual Event Trigger 16
# Division 2 Post LOCA heat tracing trouble
imf r1148(16) 1

# Automatic Event Trigger 8
# Trips Bus 143 and trips MDRFP with time delay
trgset 8 "q4k004by .GE. 0.9"
imf mee021(8)
imf mcf113(8 60)

# Auto SCRAM Failure
imf mrp005

# MSIVs close on press drop:
ior k3g09w17 false
ior k3g09w47 run

# End of CAEP file.
```

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LaSalle County Station

Initial License Training Simulator Exercise Guide

2003-01 NRC Exam Scenario-02

Scenario-02

Revision: 00

Date: 12/13/2004

Exam Author: _____/_____
(Signature / Date)

Ops Facility Rep: _____/_____
(Signature / Date)

Ops Trng Mngr: _____/_____
(Signature / Date)


Exelon
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Facility: LaSalle County Station **Scenario No.:** Scenario-02 **Op Test No.:** 2003-01 NRC Exam

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions:

- Full power

Turnover:

- Start the 1B CRD, shutdown 1A CRD for oil change

Event No.	Malf. No.	Event Type*		Event Description
1.	N/A	(N) (N)	RO SRO	Swap running CRD pumps
2.	r0601	 (C)	RO SRO	Low ADS Bottle Bank Nitrogen Pressure Technical Specification Determination
3.	various overrides	(C) (C)	RO SRO	1B TDRFP Seal Injection Pump trips and standby fails to start
4.	zc11025	 (C)	RO SRO	CRD Accumulator Trouble Alarm (low pressure) Technical specification Determination
5.	mcf114	(C) (C)	RO SRO	Loss of "A" Heater Drain Pump
6.	mcf117	(R) (C)	RO SRO	Reduced Heater Drain Pump-Forward Flow
7.	mrc033	(M) (M)	RO SRO	Recirculation loop rupture – LOCA conditions in the Drywell
8.	mrp018	(C) (C)	RO SRO	B RPS Fails to scram (Electrical ATWS)

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

Narrative Summary NRC Scenario-02:

Event	Description
1.	This event is a normal swap of the running CRD pump (from 1A to 1B) per the procedure.
2.	Drywell pneumatic trouble alarm is received, an NLO is send to investigate. The NLO reports back to the control room that the South Bottle bank pressure is actually below the alarm setpoint. The Unit Supervisor is expected to make a Technical Specification determination.
3.	The running TDRFP Seal Injection Pump will trip and the standby pump will fail to automatically start. The NSO will take actions per the annunciator procedure.
4.	Next a CRD HCU Accumulator will alarm. The examinees are expected to dispatch an NLO to the effected HCU. The NLO reports that the accumulator has low pressure. The Unit Supervisor is expected to declare the accumulator inoperable and make a Technical Specification determination.
5.	"A" Heater Drain Pump trips. The RO starts the standby Heater Drain pump.
6.	The second Heater Drain Pump trips. The examinees are expected to enter LOA-HD-101 and reduce power. If this is not done before Heater Drain Tank level increases to 9-feet the HD Flushing valves will fully open and the Feedwater Pumps will trip on low suction pressure.
7.	Next a LOCA will develop in the Drywell. The event is entered when directed by the lead examiner or immediately if the reactor automatically scrams due to loss of Feedwater. The examinees are expected to enter the EOP based on RPV Level and Containment Pressure.
8.	This event is an electrical ATWS when RPS B fails to trip when required. The examinees are expected to enter LGA-010 and LGA-NB-01 and take actions to shutdown the reactor. When the first fuse is pulled rods will start to move however the SDV will fill and they will have to reset the scram, drain the SDV and re-scram reactor to get rods to go full-in.
Termination	Scenario can be terminated when the examinees have Control Rods inserted and Containment parameters stable and under control.

Critical Steps:

1. Reduce power per the abnormal operating procedure following the loss of HD pump forward.
2. Use multiple methods per LGA-NB-01 to insert control rods during an ATWS.
3. Initiate Suppression Chamber and Drywell sprays for containment control.

Revision Synopsis:

Revision 00

- Scenario created for use on 2003-01 ILT NRC Exam scheduled to be given the week of 03/07/2005.

Shift Turnover Information:

⇒ **Day of week and shift**

- Today, Day Shift

⇒ **Weather Conditions**

- Cool, Sunny, Winds light 5 to 10 mph

⇒ **(Plant Power Levels)**

♦ Unit 1 – 100% Power, 107% FCL	♦ Unit 2 – 100% Power, 106 % FCL
♦ 1165 MWe	♦ 1171 MWe
♦ 3488 MWt	♦ 3488 MWt
♦ 99 Mlbm/hr CORE FLOW	♦ 100 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**

♦ Swap to 1B CRD pump for run prior to taking 1A CRD pump OOS.	♦ None
♦	♦
♦	♦

⇒ **Comments, Evolutions, Problems, etc.**

♦ Online Risk – Green	♦ Online Risk – Green
♦ Grid Status – Green	♦ Grid Status – Green
♦	♦

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Simulator Setup Instructions

A. Reset the Simulator:

- Use the current Full Power IC created for L1C11.

B. Run the setup CAEP:

- From the exam floppy disk, load "caep a: NRC-Scenario-02.0.cae."

C. Cards/Tags to be Hung:

- None

D. Miscellaneous Setup:

- None

E. Turnover Instructions:

- The crew is to swap CRD pumps.
- Make sure LOP-RD-03 is available.
- The Simulator Operator will also need a copy of LOP-RD-03.

Key Events / Timeline	Expected Crew Response
Event No. 1	**CRD Pump Swap**
RO	When directed, takes actions per LOP-RD-03: • Have NLO perform pre-start checks. • May shutdown CRD ventilation to aid communication. • Have NLO close 1B CRD Pump discharge valve. • Start 1B CRD Pump • Take BOTH pump control switches to Start and hold. • When 1B CRD pump starts, release both switches. • Have NLO slowly open 1B discharge valve. • Have NLO slowly close 1A discharge valve. • Trips 1A CRD pump. • Have NLO open 1A Discharge valve. • If secured earlier, then re-start a CRD cubicle ventilation fan.
SRO	Direct RO to swap CRD pumps per LOP-RD-03.

Simulator Commands	Instructor Role Play and Information
Event No. 1	Per Shift Turnover. **Simulator Operator:** Follow along in LOP-RD-03 to perform actions as directed by the crew. **Role Play:** Take local actions as requested by the crew using Instructor Station simulator drawing RD1. (Ramp CRD pump discharge valves open/closed over 1 minute.) **Role Play:** As NLO, if asked, request securing CRD ventilation to aid communications. (Securing CRD ventilation is not required for this event)

Key Events / Timeline	Expected Crew Response
Event No. 2	Low ADS Bottle Bank Pressure
RO	Report and take actions per annunciator 1PM13J-A404, INSTRUMENT NITROGEN SYS TROUBLE: • If alarm is due to R0601, refer to LOP-IN-05 (yes-R0601). Actions per LOP-IN-05: • Direct bottles replaced when pressure is less than 600 psig. • NOTE that 4 bottles should be replaced when PM13J-A404 alarms.
SRO	Direct RO Actions Refer to T.S. 3.5.1 • Condition D is applicable if Bottle Bank pressure drops to less than 500 psig. Enter 72 hour timeclock to restore bottle bank pressure or declare ADS inoperable.

Simulator Commands	Instructor Role Play and Information
Event No. 2	Start this event as directed by the Lead Evaluator
Trigger 2	Manual Trigger 2 starts the event. **Role-Play:** As the NLO, report that the South Bottle pressure is 490 psig.

Key Events / Timeline	Expected Crew Response
Event No. 3	**1B TDRFP Seal Injection Pump trips and Standby Pump fails to start.**
RO	Reports and takes action per annunciators LOR-1PM03J-A207 and –A208: • Verify both TDRFP Seal Injection Pumps operating. • Manually starts 1A TDRFP Seal Injection Pump.
SRO	Directs RO actions to start the 1A TDRFP Seal Injection Pump.

Simulator Commands	Instructor Role Play and Information
Event No. 3	Start this event as directed by the Lead Evaluator
Trigger 3	Manual Trigger 3 starts the event.
	Role Play: 1B Pump motor is very hot.
	Role Play: If asked, seal leakoff temperature is 160^0F.

Key Events / Timeline	Expected Crew Response
Event No. 4	**Rod 14-51 Accumulator Trouble**
RO	Reports and takes actions per annunciator 1H13-P603-A503, CRD HYD ACCUM TROUBLE: • Determine the cause of the alarm. • Direct NLO to recharge the accumulator per LOP-RD-20.
SRO	Direct RO actions. Refer to T.S. 3.1.5 • Enter Condition A and declare the control rod "slow" or inoperable within 8 hours.

Simulator Commands	Instructor Role Play and Information
Event No. 4	Start this event as directed by the Lead Evaluator
Trigger 4	Manual Trigger 4 starts the event.
	Role Play: As NLO, report that accumulator pressure is 920 psig on rod 14-51.
	Role Play: If contacted as QNE / System Engineer, there are no slow control rods.

Key Events / Timeline	Expected Crew Response
Events No. 5 and 6	**Heater Drain Pump Trip, Reduced HD Pump Forward**
RO	Reports trip of "A" HD pump Takes actions per LOR 1PM03J-B504, HTR DRN PMP AUTO TRIP • Starts standby HD pump.
RO *Critical Task*	Reports trip of second HD pump, decreasing RFP suction pressure and increasing HD Tank Level. Takes actions per LOR 1PM03J-B503, HTR DRN TANK LVL HI/LO ❖ Lower reactor power as necessary while maintaining: • RPV Level greater than 31.5 inches • CP Differential Pressure less than 60 psid, and • RFP Suction Pressure greater than 250 psig
Critical Task	Takes action per LOA-HD-101: ❖ Lower reactor power by reducing RR Flow and insert CRAM Array control rods as necessary without entering Region B.
SRO *Critical Task*	Directs crew actions: ❖ Directs power reduction. (NSO)

Simulator Commands	Instructor Role Play and Information
Events No. 5 and 6	Start this event as directed by the Lead Evaluator
Trigger 5	Manual Trigger 5 starts the event.
	Role Play: As NLO, make reports as requested.
	Simulator Operator Information: If the RO does not reduce power, (with the concurrence of the lead evaluator) trip the 1D HD pump (*imf mcf117*). This event is designed to give the RO both a reactivity maneuver and a component failure.

Key Events / Timeline	Expected Crew Response
Event No. 7 and 8	**RR Line Rupture with failure of B RPS to trip.**

RO	Takes actions per LGP-3-2 Hard Card and LGA-010:
	• Inform SRO no rod motion, power > 3%
	• Initiate SBLC
	• Attempt to initiate ARI (ARI fails)
	Critical Task
	❖ Insert control rods per LGA-NB-01
	  • Method 1, Pull SCRAM fuses. (Phone call to Simulator Operator)
	  • Method 3, Drive rods using normal means (as time permits).
	• Rapidly lower level to –60 in.

SRO	Directs RO/BOP actions. Enters LGA-001 on Low Level or Hi DW Pressure. • Determines LGA-010 entry is required. Exits LGA-001, enters and directs actions per LGA-010: • Inhibit ADS, prevent ECCS injection. (BOP) • Bypass isolations per LGA-MS-01 • Rapidly lower level to at least –60 in. (NSO) • Stabilize pressure below 1059 psig. • Initiate SBLC. (NSO) • Trip RR Pumps. (BOP) *Critical Task* ❖ Insert control rods per LGA-NB-01
BOP	As directed: • Inhibits ADS, Prevents ECCS Injection. • Trips RR Pumps • Bypass isolations per LGA-MS-01 (Phone call to Simulator Operator)

Simulator Commands	Instructor Role Play and Information
Event No. 7 and 8	Start this event as directed by the Lead Evaluator
Trigger 7	Manual Trigger 7 starts the event.
	Simulator Operator Actions: Pull fuses for LGA-NB-01 Method 1 as requested. Trg 8 to pull fuses Trg 9 to reinstall fuses
	Simulator Operator Actions: Defeat isolations per LGA-MS-01 as requested.

Key Events / Timeline	Expected Crew Response
Event No. 7 and 8	**RR Line Rupture with ATWS (CONTINUED)**
RO/BOP *Critical Task*	Continue actions per LGA-010: ❖ Insert control rods per LGA-NB-01: • Method 4, Reset SCRAM / Drain SDV / RE-SCRAM. (Phone call to Simulator Operator for jumpers) • Method 3, Drive rods using normal means (as time permits). Control level between –150 in to –60 in.
SRO *Critical Task* *Critical Task* *Critical Task*	Directs actions per LGA-010: ❖ Continue with LGA-NB-01 Method 4 after Method 1 is partially successful. Enters and directs actions per LGA-003: ❖ Suppression Chamber Sprays before reaching 12 psig. ❖ Drywell Sprays when Chamber pressure is above 12 psig.
BOP *Critical Task* *Critical Task*	Operates ECCS as directed by SRO. ❖ Suppression Chamber Sprays. ❖ Drywell Sprays.

Simulator Commands	Instructor Role Play and Information
Event No. 7 and 8	Continued **Simulator Operator Actions:** Re-insert fuses for LGA-NB-01 Method 1 and install jumpers for LGA-NB-01 Method 4 as requested. Trg 9 reinstalls the fuses. If only part of the fuses are directed to be reinstalled, use the individual Remote Functions.
Termination Conditions	• Adequate progress on control rod insertion. • Containment parameters under control. • Lead Evaluator Concurrence.

OSG Validation Checklist

Scenario Number: Scenario-02

1._____ Verify that if not run from a protected IC that setup information is provided to reproduce the stated initial conditions.

2._____ Verify that all stated objectives are identified in the body of the OSG.

3._____ Verify that turnover sheets are completed, and are in agreement with both the narrative summary and shift turnover information sheet. Turnover sheets are not required for initial license scenarios.

4._____ Verify that if the scenario requires documents to be provided to the crew, they are filled out as appropriate (i.e., if an LOS is used, it is filled out).

5._____ If this is the initial validation of the revision affects ramp times, event triggers, malfunctions, overrides, remote functions or procedure changes that could affect the scenario, then validate the scenario for proper response using a crew. It is preferable to use a crew unfamiliar with the scenario when ever possible. Verify the following while running the scenario:

- The scenario runs as written and all tasks are performed.
- The stated time line agrees with actual times.
- Critical task statements clearly define the expected plant and student response. They should also be written so that they are achievable as written. If any questions exist, it is preferable to have operations management participate in the validation.
- Anticipate instructor role-play / cues are identified.
- Management expectations are captured and re-enforced.
- Verify administrative documentation requirements (i.e., ARs) are identified.
- Verify Technical Specifications items / LCO declarations are correct.
- Verify soft skills expectations are captured and are re-enforced.
- If procedure steps may cause confusion or disagreement between higher level procedures and LOPs / LORs that operations management is consulted.

6._____ Shutdown scenarios include shutdown risk assessment, time to boil calculations and shutdown status board information.

7._____ QNE review if needed.

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

References:

Reference	Title	Revision
1. LOP-RD-03	STARTUP OF STANDBY CRD PUMP IN NON-EMERGENCY CONDITIONS	12
2. 1PM13J-A404	INSTRUMENT NITROGEN SYS TROUBLE	04
3. LOP-IN-05	REPLACING NITROGEN BOTTLES ON INSTRUMENT NITROGEN SYSTEM	08
4. 1PM03J-A207	1B TDRFP SEAL INJ PMP PRESS LO	00
5. 1H13-P603-A503	CRD HYD ACCUM TROUBLE	01
6. 1PM03J-B504	HTR DRN PMP AUTO TRIP	00
7. 1PM03J-B503	HTR DRN TANK LVL HI/LO	01
8. LOA-HD-101	HEATER DRAIN SYSTEM TROUBLE	11
9. LGP-3-2	REACTOR SCRAM	50
10. LGA-NB-01	ALTERNATE ROD INSERTION	07
11. LGA-001	RPV CONTROL	06
12. LGA-010	FAILURE TO SCRAM	06
13. LGA-003	PRIMARY CONTAINMENT CONTROL	05

Computer Aided Exercise Programs (CAEPs)

Initial Scenario Setup CAEP (a:2003ESG2.0.cae):

```
# Setup for 2003-01 ILT NRC Exam Scenario-02
#
# Author: John E. Ross
# Date Written: October 25, 2004
# Filename: A:\NRC-Scenario-02.0.cae
##########################################################################
# Revision: 00
# Revision Date: October 25, 2004
# Revised By: jer
##########################################################################
# This CAEP sets the initial conditions and events
# associated with the ILT Class 2003-01 NRC Exam Scenario-02.

##########################################################################
#

# Cleanup IC-118 - Simulator problems are causing spurious alarms, the
# following malfunctions and overrides prevent these alarms.
# Malfunction to override RB Radiation Monitor Downscale Alarm
imf r0485 0
# Malfunction to override Fuel Pool Radiation Monitor Downscale Alarm
imf r0483 0
# Malfunction to override EHC 400 Hz PMG Malfunction Alarm
#imf r0799 0
# Override EHC 400 Hz PMG Malfunction amber light on apron section
#ior q5k35sw6 0

# Initial Setup
# Pull fuse to make 1B21-F013C SRV inoperable
##irf isrvfuse12 removed
# Electrical ATWS, 1B RPS fails to trip
imf mrp018

# Prevent ARI
irf iaaribp bypass

# Manual Event Trigger 1
# Setpoint Drift on 1B21-F013V
##imf mnb039(1) 0

# Manual Event Trigger 2
# Pull fuses for 1B21-F013V
##irf isrvfuse18(2) removed
imf r0601 (2) on

# Manual Event Trigger 3
# Prevent auto start of the 1A TDRFP Seal Injection pump
# Trip the 1B TDRFP Seal Injection Pump
ior k4l03wpy(3) stop
```

```
ior k4l06wpy(3) stop
ior k4l06wby(3) false
ior q4l06may(3) on

# Automatic Event Trigger 26
# Allow manual start of 1A Seal Injection Pump
trgset 26 "k4l03wby .GE. 0.9"
#cae a:NRC-Scenario-02.6.cae /trig 26
trg 26 "dor k4l03wpy"

# Manual Event Trigger 4
# Cause HCU Accumulator low pressure alarm on rod 14-51 by changing
# the alarm setpoint to 1600 psig
trg 4 "set zc11025 = 1600"

# Manual Event Trigger 5
# Loss of 141X
##ior k6k07wt8(5) trip
##trg 5 "dor k6k07wt8"
# No overcurrent imf r0193 off ##
#imf mee017(5)
# Trip "A" HD pump:
imf mcf114 (5)

# Manual Event Trigger 7
# RR suction rupture, LOCA in the Drywell
imf mrc033(7) 0.5 5:00

# Manual Event Trigger 8
# Pull 1B RPS Fuses
cae a:NRC-Scenario-02.1.cae /trig 8

# Manual Event Trigger 9
# Install RPS Fuses
cae a:NRC-Scenario-02.2.cae /trig 9

# Manual Event Trigger 10
# Install Jumpers per LGA-NB-01 method 4
cae a:NRC-Scenario-02.3.cae /trig 10

# Manual Event Trigger 11
# De-energize ARI per LGA-NB-01 method 4
##cae a:NRC-Scenario-02.4.cae /trig 11

# Manual Event Trigger 12
# Install Temp Configuration Changes per LGA-MS-01
##cae a:NRC-Scenario-02.5.cae /trig 12

# Manual Event Trigger 16
# Simulate closing 1C11-F385, 1B CRD Discharge Valve by closing
# 1C11-F014B.
irf vhrd14b(16) 0 60

# Manual Event Trigger 17
# Simulate opening 1C11-F385, 1B CRD Discharge Valve by opening
```

```
# 1C11-F014B.
trg 17 "irf vhrd14b 100 60"

# Manual Event Trigger 18
# Simulate closing 1C11-F386, 1A CRD Discharge Valve by closing
# 1C11-F014A.
irf vhrd14a(18) 0 60

# Manual Event Trigger 19
# Simulate opening 1C11-F386, 1A CRD Discharge Valve by opening
# 1C11-F014A.
trg 19 "irf vhrd14a 100 60"



# Manual Event Trigger 3
# Install fuses for 1B21-F013V
##trg 3 "irf isrvfuse18 installed"
##See Below


# Manual Event Trigger 4
# Pull fuses for 1B21-F013V again
##trg 4 "irf isrvfuse18 removed"

# End of CAEP file.
```

Addition CAEP (a:2003ESG2.1.cae):

```
# Pull RPS Fuses per LGA-NB-01 Method 4
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.1.cae
##########################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
##########################################################################
# This CAEP supports NRC-Scenario-02 by pulling RPS fuses per
# LGA-NB-01 Method 4. Bravo RPS fuses are pulled first.
##########################################################################
#

# Remove 1B RPS Group Scram Fuses
irf iasff18b removed | 60 | 1
irf iasff18d removed | 80 | 2
irf iasff18f removed | 100 | 3
irf iasff18h removed | 120 | 4

# Remove 1A RPS Group Scram Fuses
irf iasff18a removed | 130 | 6
irf iasff18c removed | 140 | 7
irf iasff18e removed | 150 | 8
```

```
irf iasff18g removed | 160 | 9

# Remove Scram Discharge Volume VV and DV Fuses
irf isdvf18a removed | 180 | 11
irf isdvf18b removed | 200 | 12

# End of CAEP file.
```

Addition CAEP (a:2003ESG2.2.cae):

```
# Install RPS Fuses per LGA-NB-01
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.2.cae
##############################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
##############################################################################
# This CAEP supports NRC-Scenario-02 by pulling RPS fuses per
# LGA-NB-01 Method 4. Bravo RPS fuses are pulled first.
##############################################################################
#

# Remove 1B RPS Group Scram Fuses
irf iasff18b installed | 30 | 1
irf iasff18d installed | 40 | 2
irf iasff18f installed | 50 | 3
irf iasff18h installed | 60 | 4

# Remove 1A RPS Group Scram Fuses
irf iasff18a installed | 70 | 6
irf iasff18c installed | 80 | 7
irf iasff18e installed | 90 | 8
irf iasff18g installed | 100 | 9

# Remove Scram Discharge Volume VV and DV Fuses
irf isdvf18a installed | 110 | 11
irf isdvf18b installed | 120 | 12

# End of CAEP file.
```

Addition CAEP (a:2003ESG2.3.cae):

```
# Install RPS jumpers per LGA-NB-01
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.2.cae
##############################################################################
# Revision: 00
# Revision Date: October 26, 2004
```

```
# Revised By: jer
#########################################################################
# This CAEP supports NRC-Scenario-02 by installing RPS jumpers per
# LGA-NB-01 Method 4.
#########################################################################
#

# Install RPS Jumpers
irf ianb1jpm installed

# End of CAEP file.
```

Addition CAEP (a:2003ESG2.4.cae):

```
# De-energize ARI per LGA-NB-01
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.4.cae
#########################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
#########################################################################
# This CAEP supports NRC-Scenario-02 by de-energizing Division 1 and
# Division 2 ARI per LGA-NB-01 Method 4.
#########################################################################
#

# De-energize Division 1 ARI
irf iaaride1 de-energize | 30 | 1

# De-energize Division 2 ARI
irf iaaride2 de-energize | 60 | 3

# End of CAEP file.
```

Addition CAEP (a:2003ESG2.5.cae):

```
# Install Temp Changes per LGA-MS-01
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.5.cae
#########################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
#########################################################################
# This CAEP supports NRC-Scenario-02 by Installing Temporary Changes
# per LGA-MS-01, including control room back panel manipulations. Each
# step takes 10 seconds to run therefore this CAEP will take
#########################################################################
#
```

```
# Attachment 1A - Jumper to defeat Off-Gas Isolation Logic
irf iamsogjp installed | 10 | 1

# Bypass Division 1 Steam Tunnel Differential Temperature Logic
# Key 84 and Key 86 on panel 1H13-P632
ior km203bew bypass    | 20 | 3
ior km204bew bypass    | 30 | 4

# Bypass Division 2 Steam Tunnel Differential Temperature Logic
# Key 85 and Key 87 on panel 1H13-P642
ior kk103bew bypass    | 40 | 6
ior kk104bew bypass    | 50 | 7

# Defeat -129 inch 1IN017 Isolation
irf iams1jmp installed | 60 | 9

# Bypass Condenser Low Vacuum Trip by placing key 23 and key 14 on
# panel 1H13-P609 in bypass
ior kr305bg7 bypass    | 70 | 11
ior kr315bg7 bypass    | 80 | 12

# Bypass Condenser Low Vacuum Trip by placing key 40 and key 32 on
# panel 1H13-P611 in bypass
ior kt205ge7 bypass    | 90 | 14
ior kt214ge7 bypass    | 100 | 15

# End of CAEP file.
```

Addition CAEP **(a:2003ESG2.6.cae):**

```
# Allow manual start of 1A TDRFP Seal Injection Pump
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-02.1.cae
#############################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
#############################################################################
# This CAEP supports NRC-Scenario-02 by removing overrides that were
# inserted to prevent automatic start of the 1A TDRFP Seal Injection
# pump. Deleting override on handswitch will allow the pump to
# automatically start.
#############################################################################
#

# Delete override handswitch to STOP
dor k4l03wpy

# End of CAEP file.
```

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LaSalle County Station

Initial License Training Simulator Exercise Guide

2003-01 NRC Exam Scenario-03

Scenario-03

Revision: 00

Date: 12/13/2004

Exam Author: _____/_____
(Signature / Date)

Ops Facility Rep: _____/_____
(Signature / Date)

Ops Trng Mngr: _____/_____
(Signature / Date)


Exelon
SM
Nuclear

Facility: LaSalle County Station **Scenario No.:** Scenario-03 **Op Test No.:** 2003-01 NRC Exam

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions:

- Startup in progress per LGP-1-1 at step E.5.1
- Pulling rods to 1½-bypass valves open in preparation to roll the main turbine.
- Reactor Power is <20%

Turnover:

- Continue to pull rods per the sequence package

Event No.	Malf. No.	Event Type*		Event Description
1.	N/A	(R) (N)	RO SRO	Continue pulling control rods per the sequence package
2.	mrd207	(C) (C)	RO SRO	Stuck control rod, (18-19) moves after increasing Drive Water pressure
3.	mrd078	(C) (C)	RO SRO	Rod 26-23 starts to drift in, must be fully inserted. Technical Specification Determination
4.	mrm017		BOP SRO	Failure of 1C VR Fuel Pool Exhaust Radiation Monitor upscale Technical Specification Determination
5.	mcn002 mrd212 mrd218 mrd213	(M) (M)	RO SRO	Off-Gas suction rupture and loss of vacuum and manual scram, 3 stuck rods (ATWS), manually drive rods in
6.	mnb105 mca015	(M) (M)	RO SRO	Small Steam LOCA with containment bypass path

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

Narrative Summary NRC Scenario-03:

Event	Description
1.	The RO will continue to pull control rods per the startup sequence package.
2.	One control rod is determined to be stuck. Several attempts to free the rod using the normal operating procedure (LOP) will fail. The LOP will direct the operator to take actions per the abnormal operating procedure. When drive water pressure is increased sufficiently, the rod will free itself. And the startup can continue.
3.	One control rod will start to drift in. The crew will take actions per the abnormal operating procedure and the SRO will make a Technical Specification determination.
4.	One of the four Reactor Building Ventilation Fuel Pool Exhaust Radiation Monitors fails upscale. This will cause an annunciator to alarm in the control room. The Unit Supervisor is expected to make a Technical Specification determination.
5.	A rupture in the Off-Gas 2nd Stage Air Ejector line will cause a slow loss of vacuum. The crew will have time to dispatch operators to look for air leakage into the main condenser. The size of the leak continues to increase until the crew is forced to manually scram the reactor. When the reactor is scrammed, 3 control rods will stick full-out rendering a low power ATWS. The RO will be able to close the Drive Water Pressure control valve and then manually drive the three control rods full-in.
6.	Next a steam leak LOCA will develop with a containment bypass path.
Termination	The scenario can be terminated when the examinees have RPV and Containment Parameters stable and under control.

Critical Steps:

1. Initiate Suppression Chamber Sprays and Drywell Sprays to control containment parameters
2. Use EOP Support Procedures to insert control rods following the scram.

Revision Synopsis:

Revision 00

- Scenario created for use on 2003-01 ILT NRC Exam scheduled to be given the week of 03/07/2005.

Shift Turnover Information:

⇒ **Day of week and shift**

- Today, Day Shift

⇒ **Weather Conditions**

- Cool, Sunny, Winds light 5 to 10 mph

⇒ **(Plant Power Levels)**

- Unit 1 – 7% Power
- 0 MWe
- 245 MWt
- 30 Mlbm/hr CORE FLOW

- Unit 2 – 100% Power, 106 % FCL
- 1171 MWe
- 3488 MWt
- 100 Mlbm/hr CORE FLOW

⇒ **Thermal Limit Problems/Power Evolutions**

- Startup in progress
- 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**

- None
- None

⇒ **Comments, Evolutions, Problems, etc.**

- Rod Step 17 in progress
- 26-35, 26-27, 34-27, 34-35 pulled
- 18-43 next rod to move
- Online Risk – Green
- Grid Status – Green

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Simulator Setup Instructions

A. Reset the Simulator:

- Recall saved IC 110

B. **Run the setup CAEP:**

- From the exam floppy disk, load "caep a: NRC-Scenario-03.0.cae."

C. Cards/Tags to be Hung:

- None

D. **Miscellaneous Setup:**

- VERIFY the startup sequence is loaded (remasu.CD8D)
- As required, REINITIALIZE the RWM.
- Verify RWM sequence on Step 17, with rods 26-35, 26-27, 34-27, and 34-35 withdrawn. Rod 18-43 should be next.
- Verify sequence book steps signed off to reflect the above lineup.
- Remove the "Flow Control Line Above 95.2%" placard from 1H13-P603.

E. Turnover Instructions:

- Verify the crew has the following available:
  - LGP-1-1 marked up to step E.5.1
  - Startup REMA
  - LOP-RM-01

Key Events / Timeline	Expected Crew Response
Event No. 1	**Withdraw Control Rods for Startup**

RO	Continues Startup per LGP-1-1
	Withdraws Control Rods per LOP-RM-01
	• Makes appropriate communications with verifier.
	• Withdraws control rod (Continuously or single notch as determined by SRO.)
	• At position 48, performs Coupling Check.
	  • Push both Continuous Withdraw and Withdraw buttons.
	  • Verify no Overtravel alarm.

BOP	Performs duties to verify Control Rod moves.
SRO	Directs NSOs to continue Startup. Monitors reactivity maneuver.

Simulator Commands	Instructor Role Play and Information
Event No. 1	Continuing startup per shift turnover. **Role Play:** Respond to any crew requests. At this point there are no abnormalities.

Key Events / Timeline	Expected Crew Response
Event No. 2	**Stuck Control Rod**

RO	Withdraws Control Rods per LOP-RM-01:
	• Attempts to Withdraw control rod.
	• Raises Drive Pressure by no more than 100 psid.
	• Attempts to Withdraw control rod.
	• Attempts to "Double Clutch" control rod (apply Continuous Insert signal until the rod lifts) (Will not be successful)
	• Raises drive pressure up to 450 psid.
	• Repeats actions to withdraw rod. (Will not be successful)
	• Enters LOA-RD-101
	Performs actions per LOA-RD-101:
	• Check control rod position indication normal
	• Verifies normal CRD parameters.
	  • Flows, Pressures.
	  • Insert/Withdraw/Settle light indications.
	• Raises Drive pressure to 500 psid.
	• Attempts to withdraw Control Rod.
	• When rod moves, return Drive pressure to normal.

SRO	Directs actions per LOA-RD-101

Simulator Commands	Instructor Role Play and Information
Event No. 2	This event automatically occurs when rod 18-19 is moved. **Simulator Operator:** Manually actuate Trigger 20 when the crew enters LOA-RD-101. (478# on P603 Panel Drawing or Monitor variable g3f02g1d ≥ 0.79) **NOTE:** Automatic Trigger 20 deletes the stuck rod when pressure is increased. **Role-Play:** As NLO, if dispatched to CRD area, report nothing abnormal. If asked for local drive pressure, make the report using the Instructor Station drawings.

Key Events / Timeline	Expected Crew Response
Event No. 3	**Rod 26-23 Drifts In**
RO	Reports and responds to annunciator 1H13-P603-A504. Takes action per LOA-RD-101. • Verify only one rod moving - yes • Verify rod not moving - no • Select rod • If Required – bypass RWM (yes – required) • Insert rod to position 00 (Second Verifier required with RWM bypassed) • Verify CRD parameters • Run PPC printouts • Notify QNE • Notify SRO to refer to T.S. 3.1.3 and 3.1.6 • Restore RWM
SRO	Directs RO actions of LOA-RD-101 Verifies compliance with T.S. 3.1.3 Condition C • C.1 Fully insert rod within 3 hours. • C.2 Disarm the CRD within 4 hours. Verifies compliance with T.S. 3.1.6 Condition A • Return to in-sequence position or declare inoperable in 8 hours.

Simulator Commands	Instructor Role Play and Information
Event No. 3	Start this event as directed by the Lead Evaluator
Initiate Event	Initiate with Manual Trigger 3.
	Simulator Operator: Verify automatic trigger #30 goes true when rod 26-23 is driven full in.

Key Events / Timeline	Expected Crew Response
Event No. 4	**One FC Radiation Monitor Fails Upscale**
BOP	Report and respond per annunciator 1H13-P601-E205 • Check Channel C and D monitors at H13-P636. • Report only one channel (channel 1C) is tripped, no other indications of high radiation.
SRO	Directs operator actions. Refers to T.S. 3.3.6.1 and 3.3.6.2 • Condition A, place the inoperable channel in the tripped condition within 24 hours.

Simulator Commands	Instructor Role Play and Information
Event No. 4	Start this event as directed by the Lead Evaluator. (Wait until RWM is returned to service before continuing)
Trigger 4	Manual Trigger 4 starts the event.

Key Events / Timeline	Expected Crew Response
Events No. 5	**SJAE Suction Rupture, Loss of Vacuum, 3 Rod ATWS.**
BOP	Reports and responds to annunciator 1N62-P600-B204, OFF GAS OUTLET FLOW ABNORMAL. • Dispatch NLO to perform in-plant actions
RO *Critical Task*	Reports and responds to annunciator 1PM03J-B511, CNDSR VAC LO Manually Scrams reactor when directed by SRO. Takes actions per LGP-3-2 Hard Card: • Inform SRO 3 rods out, power < 3% ❖ Insert control rods per LGA-NB-01 • Method 3, Drive rods using normal means. • OK to increase drive water pressure.
SRO *Critical Task*	Directs RO/BOP actions. Directs manual SCRAM. Enters LGA-001 on Low Level or Hi DW Pressure (later) • Determines LGA-010 entry is required. Exits LGA-001, enters and directs actions per LGA-010: • Inhibit ADS and prevent ECCS injection. • Bypass isolations per LGA-MS-01 • Control level between –150 in. and 59.5 in. • Stabilize pressure below 1059 psig. ❖ Insert control rods per LGA-NB-01

Simulator Commands	Instructor Role Play and Information
Events No. 5	Start this event as directed by the Lead Evaluator
Trigger 5	Manual Trigger 5 starts the event.
	Role Play: Perform in-plant actions as requested by the crew.
NOTE	The crew may anticipate a blowdown and rapidly depressurize if they quickly insert rods and exit LGA-010.
	Simulator Operator: If the Off-Gas filter differential pressure alarm cycles (N62-P600-B105) override it on. (*imf r1451 on*)

Key Events / Timeline	Expected Crew Response
Event No. 6	**Small MSL Break with Bypass Path**
RO	Monitors & Controls level and pressure as directed. Continues efforts to manually drive in Control Rods.
BOP	Operates ECCS as directed by SRO. • Inhibits ADS, Prevents ECCS injection
Critical Task	❖ Suppression Chamber Sprays.
Critical Task	❖ Drywell Sprays.
SRO	Enters LGA-003 on High Drywell Pressure. Determines that a bypass path exists. Directs actions per LGA-003:
Critical Task	❖ Suppression Chamber Sprays before reaching 12 psig.
Critical Task	❖ Drywell Sprays when Chamber pressure is above 12 psig.

Simulator Commands	Instructor Role Play and Information
Event No. 6	This event automatically starts on the SCRAM. Automatic Trigger 19 starts the event.
NOTE	The crew may determine that with a bypass path present they will not be able to hold Suppression Chamber Pressure within PSP and therefore enter LGA-004 to blowdown (if in LGA-001).
Termination Conditions	• Adequate progress on control rod insertion. • Containment parameters under control. • Lead Evaluator Concurrence.

OSG Validation Checklist

Scenario Number: Scenario-03

1._____ Verify that if not run from a protected IC that setup information is provided to reproduce the stated initial conditions.

2._____ Verify that all stated objectives are identified in the body of the OSG.

3._____ Verify that turnover sheets are completed, and are in agreement with both the narrative summary and shift turnover information sheet. Turnover sheets are not required for initial license scenarios.

4._____ Verify that if the scenario requires documents to be provided to the crew, they are filled out as appropriate (i.e., if an LOS is used, it is filled out).

5._____ If this is the initial validation of the revision affects ramp times, event triggers, malfunctions, overrides, remote functions or procedure changes that could affect the scenario, then validate the scenario for proper response using a crew. It is preferable to use a crew unfamiliar with the scenario when ever possible. Verify the following while running the scenario:

- The scenario runs as written and all tasks are performed.
- The stated time line agrees with actual times.
- Critical task statements clearly define the expected plant and student response. They should also be written so that they are achievable as written. If any questions exist, it is preferable to have operations management participate in the validation.
- Anticipate instructor role-play / cues are identified.
- Management expectations are captured and re-enforced.
- Verify administrative documentation requirements (i.e., ARs) are identified.
- Verify Technical Specifications items / LCO declarations are correct.
- Verify soft skills expectations are captured and are re-enforced.
- If procedure steps may cause confusion or disagreement between higher level procedures and LOPs / LORs that operations management is consulted.

6._____ Shutdown scenarios include shutdown risk assessment, time to boil calculations and shutdown status board information.

7._____ QNE review if needed.

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

_____ _____
SME / Instructor Date

References:

Reference	Title	Revision
1. LGP-1-1	NORMAL UNIT STARTUP	72
2. LOP-RM-01	REACTOR MANUAL CONTROL OPERATION	26
3. LOA-RD-101	CONTROL ROD DRIVE ABNORMAL	07
4. 1H13-P603-A504	CRD DRIFT	03
5. LOA-RM-101	RMCS ABNORMAL SITUATIONS	12
6. 1H13-P601-E205	DIV 2 FUEL POOL RAD HI-HI	02
7. 1N62-P600-B204	OFF GAS OUTLET FLOW ABNORMAL	06
8. 1PM03J-B511	CNDSR VAC LO	02
9. LGP-3-2	REACTOR SCRAM	50
10. LGA-NB-01	ALTERNATE ROD INSERTION	07
11. LGA-001	RPV CONTROL	06
12. LGA-010	FAILURE TO SCRAM	06
13. LGA-003	PRIMARY CONTAINMENT CONTROL	05

Computer Aided Exercise Programs (CAEPs)

Initial Scenario Setup CAEP (a:2003ESG1.0.cae):

```
# Setup for 2003-01 ILT NRC Exam Scenario-03
#
# Author: John E. Ross
# Date Written: October 29, 2004
# Filename: A:\NRC-Scenario-03.0.cae
#########################################################################
# Revision: 00
# Revision Date: October 25, 2004
# Revised By: jer
#########################################################################
# This CAEP sets the initial conditions and events
# associated with the ILT Class 2003-01 NRC Exam Scenario-03.
#
#########################################################################
#

# Cleanup IC-118 - Simulator problems are causing spurious alarms, the
# following malfunctions and overrides prevent these alarms.
# Malfunction to override RB Radiation Monitor Downscale Alarm
imf r0485 0
# Malfunction to override Fuel Pool Radiation Monitor Downscale Alarm
imf r0483 0
# Malfunction to override EHC 400 Hz PMG Malfunction Alarm
#imf r0799 0
# Override EHC 400 Hz PMG Malfunction amber light on apron section
#ior q5k35sw6 0

# Initial Setup
# Stick 3 Rods (18-15, 22-11, and 26-15) Full-Out (ATWS - <3%)
imf mrd212 100
imf mrd218 100
imf mrd213 100
# prevent automatic start of 1B GC pump
#ior k5e23wp8 stop
# Stick 1 Rod (18-19) during withdrawal
imf mrd207
# Notch 12 Reed switch stuck closed for rod 42-43
#imf mrd122 12
# Containment Bypass path (1C Vacuum Breaker Stuck OPEN)
##imf d1891 1
##imf d1893 1
##ior q1h18lgp on
##ior q1h18rrp off
##ior q1h22lgp on
##ior q1h22rrp off
##imf mca008
imf mca015 100

# Manual Event Trigger 1
```

```
# Trip of 1A GC pump with failure of 1B to automatically start
##imf mgc001(1)

#Manual trigger 3
imf mrd078 (3)
trgset 30 "rdzdisps(122) .lt. 12"
trg 30 "dmf mrd078"

# Manual Event Trigger 4
# Failed FC Radiation Monitor
imf mrm017 (4)

# Manual Event Trigger 5
# Off-Gas rupture and loss of vacuum
imf mcn002(5) 25 300

# Automatic Event Trigger 20
# Reduce Rod friction on 18-19 when Drive Pressure >490 psid
trgset 20 "g3f02g1d .GE. 0.89"
trg 20 "dmf mrd207"

# Automatic Event Trigger 17
# Allow manual start of 1B GC pump
##trgset 17 "k5e23wb8 .GE. 0.9"
##trg 17 "dor k5e23wp8"

# Automatic Event Trigger 18
# Reduce rod friction allowing manual insertion
trgset 18 "k3g09w17 .GE. 0.9"
cae a:\NRC-Scenario-03.1.cae /trig 18

# Automatic Event Trigger 19
# Small steam leak LOCA with a bypass path
trgset 19 "k3g09w17 .GE. 0.9"
imf mnb105(19) 200 5:00


# End of CAEP file.
```

Additional CAEP (a:2003ESG3.1.cae):

```
# Reduce Rod Friction to allow manually driving rods in
#
# Author: John E. Ross
# Date Written: October 26, 2004
# Filename: A:\NRC-Scenario-03.1.cae
#########################################################################
# Revision: 00
# Revision Date: October 26, 2004
# Revised By: jer
#########################################################################
# This CAEP supports NRC-Scenario-03 by ...
#########################################################################
#
```

```
# Reduce Rod Friction
mmf mrd212 10 | 60 | 1
mmf mrd218 10 | 60 | 2
mmf mrd213 10 | 60 | 3

# End of CAEP file.
```