MILLSTONE POWER STATION

SIMULATOR EXAM GUIDE APPROVAL SHEET

Lesson Title: LOUT 2003 Simulator Exam #1

Revision: 1

ID Number: ES03LU1

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SIMULATOR EXAM GUIDE

SUMMARY OF CHANGES

1. Modified per NRC review comments. Removed the initial "Normal" action and replaced it with a "Component" malfunction.

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

Attachments

EXAM OVERVIEW

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

1. Purpose:

This examination is used to evaluate crew/individual performance in the simulator to satisfy the requirements of NUREG 1021 for SRO-U applicants. To meet these requirements, this exam is designed to:

a. Evaluate the licensees' ability, as a team and individually, to respond to an emergency event.

b. Evaluate licensees in the following areas:

   1) Ability of the crew to perform crew-dependent critical tasks.

   2) Ability of individuals to perform critical tasks.

   3) Ability of each applicant to:

      a) Respond and correctly interpret annunciators

      b) Correctly diagnose events

      c) Properly interpret integrated system response

      d) Comply with and use Technical Specifications

      e) Comply with and use procedures

      f) Demonstrate a responsible attitude

      g) Properly communicate information and interact with the rest of the crew

EXAM OVERVIEW

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

2. Exam brief:

The simulator and room will be prepared for the exam.

1. The Simulator will be initialized at IC-98, 28% power, MOL, or an equivalent IC.
2. Power is being held constant for turnover. The unit was shut down three days ago to repair a small unisolable steam leak in the Turbine Building.
3. Bus 24E is aligned to bus 24D.
4. The Terry Turbine is tagged out for packing replacement.
5. TSAS 3.7.1.2b, Action a, and TRM Table 7.15-1, Items A, B, and C, Action a, have been logged into for about 6 hours.

Shortly after the Crew takes the watch, per the Examiners direction, initiate a slow failure of the Letdown Backpressure Controller. This will result in a slow oscillation of letdown pressure, which will become more divergent as time continues. Manual control of the Letdown Backpressure Controller will be required to stop the oscillation.

Approximately 3 minutes after the failure of the Backpressure Controller has been resolved, the Containment Sump level transmitter will fail low. The crew will respond to the failure and log into Tech Spec action statement 3.4.6.1b for Reactor Coolant Leakage Detection Systems, and 3.3.3.8, action 7, for Accident Monitoring.

Shortly after the Containment Sump level transmitter failure is resolved, an RCS leak on the RX Vessel Head Vent will develop. After the crew has identified that RCS leakage exists, and AOP 2568, Reactor Coolant System Leak, is used to respond to the leakage, the crew should continue the downpower using AOP 2575, Rapid Downpower. After the downpower is initiated, the "A" RCP will trip due to a loss of oil in the upper reservoir; however the automatic reactor trip will NOT be initiated. The US should direct a manual reactor trip. When the PPO attempts to trip the reactor, the trip pushbuttons do NOT operate. The PPO will open the CEDM MG set breakers, which will result in a reactor trip. When the reactor is tripped, the RCS leak will degrade to a small break LOCA. Additionally, a fault in the RSST will result in a Loss of Normal Power. Both D/G's will automatically start and energize their respective buses. The "A" AFW pump should be manually started but will be in a severely degraded condition. The SPO should attempt to start the 'B' AFW pump, but its breaker will NOT close. During the performance of EOP 2525, the "C" HPSI Pump will trip. The "A" HPSI Pump is degraded to the point that adequate SI flow CANNOT be achieved. The US will direct the PPO to start the "B" HPSI Pump.

The crew should diagnose a LOCA with a concurrent Loss of Feedwater and enter EOP 2540, Functional Recovery.

Using the Resource Assessment Trees, the US will complete the Safety Function Status Page. If the "B" HPSI Pump was NOT started prior to this, the US will determine that RCS Inventory Control is the first priority and direct the PPO to start the "B" HPSI Pump. Otherwise, the US will determine that RCS Heat Removal is the first priority, which will require the initiation of Once-Through-Cooling.

The scenario will be terminated when RCS Heat Removal (Once-Through-Cooling) and RCS Inventory Safety functions are satisfied. When the session is terminated, the examiners shall ask any questions of the licensees that require clarification of their actions.

3. Plant/Simulator differences that may affect the scenario are:

   None

4. Duration of Exam: 1.5 hours.

SIMULATOR EXAM GUIDE

SCENARIO INITIAL CONDITIONS

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

Out of Service Equipment

"B" Charging Pump
Turbine Driven Auxiliary Feed Pump

Crew Instructions

After assuming the shift, hold power while placing "B" RBCCW Pump in operation and stopping "C" RBCCW Pump in preparation for performing maintenance on the "C" RBCCW Pump. Place a yellow caution tag on the "C" RBCCW Pump hand switch.

SIMULATOR EXAM GUIDE

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

All Control Room Conduct, Operations and Communications shall be in accordance applicable Unit Procedures.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_0		Initial Conditions Initialize the simulator to IC-98 (or equivalent), 28% power, MOL, Load Limit set to 1.39. RPS pot settings: A ΔT 4.00 Nuclear 4.35 B ΔT 4.42 Nuclear 4.52 C ΔT 4.00 Nuclear 4.08 D ΔT 4.42 Nuclear 4.08			
T_0	EDR14 (RO) EDR15 (RI) SWR22 (22F)	Bus 24E is powered from bus 24D. Ensure all loads powered from bus 24E are properly aligned to Facility 2.			
T_0	FWR22 (LOCL) MSR13 (RI) MSR12 (RO) MSR13 (RO)	Insert remote functions to remove the terry turbine from service. Close MS-201 and 202. **Place yellow tags on MS-201, 202 and steam supply valve.**			
T_0	ED02 (BT1)	Insert malfunction to cause a loss of RSST when the reactor is tripped.			**MA**
T_0	FW30A (100%)	Insert malfunction to cause the 'A' AFW pump degraded performance.			**TM EM**
T_0	FW20B	'B' AFW pump trip.			**MA**
T_0	RC03A (0.2%) (BT1)	Insert a malfunction to cause a small break LOCA in the Loop 1A cold leg when the reactor is tripped.			**MA**
T_0	SI05A (75%)	"A" HPSI Pump degraded performance.			**TM EM**

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_0	RP04A RP04B RP04C RP04D	Manual reactor trip failure			**TM**
	RP27B	Automatic reactor trip failure.			**TM AE**
T_0		Brief the "oncoming" SM. In addition to using the Turnover Sheet, provide the following information: The plant is at 28% power and is holding for turnover. The unit was shut down to repair a small unisolable steam leak in the Turbine Building and is returning to 100% RCS Boron concentration is 1175 ppm. The blend ratio is 3.5:1. Adding 20 gals of PMW every 15 minutes. Bus 24E is being supplied by bus 24D in preparation for swapping RBCCW Pumps for scheduled maintenance. Vital Switchgear Room temperature is being logged once per shift. All switchgear room conditions are normal. The Terry turbine is tagged out for packing replacement. After you assume the shift, start the "B" RBCCW Pump on facility 2 and stop the "C" RBCCW Pump. Place a yellow caution tag on the hand switch and inform Work Control. When you are ready to take the shift, please inform me.			

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_0 + var.	CV06C (100%) 300 Sec.	Shortly after the Crew has taken the watch, insert malfunction to cause increasingly divergent oscillations of the Letdown Backpressure Controller	Inst.		TM
			PPO/US	Note oscillations in letdown backpressure or letdown flow.	
			US	Direct the PPO to take MANUAL control of the Backpressure Controller and stabilize letdown backpressure.	
			US	The US may have a board operator, or himself, reference the ARP (C02/3-C8) for Hi/Low Letdown Backpressure. This may be done **before or after** the backpressure controller is placed in manual.	
			US	Notify/direct I&C to investigate the malfunction.	
T_1 + 15 min.	WD03 (0%) Ramp = 150 sec.	After the crew has resolved the backpressure control problem, insert a malfunction to fail the Containment Sump level transmitter to zero.	SPO	Observe the "CTMT Norm Sump Level; Hi/Lo" annunciator and report that the CTMT Sump level is trending to or reading zero.	MP-14-OPS-GDL02 **TM AE**
			US	Direct the SPO to obtain the appropriate ARP	MP-14-OPS-GDL02
			US	Determine that the level instrument has failed and report failed CTMT Sump level indication to the I&C Department.	MP-14-OPS-GDL02
			US	Obtain Tech Specs and log into TSAS 3.4.6.1b and 3.3.3.8, Table 3.3-11, Action 7.	Tech Specs
T_1 + 30 min.	RC04 (5%) Ramp = 200	Shortly after the crew resolves the level instrument failure, insert a malfunction to cause a 35 gpm leak	PPO	Observe and report indications of RCS leak: Rising CTMT press, rising CTMT temp, rising gas	MP-14-OPS-GDL02

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
	sec.	on the Rx Vessel Head Vent.		and particulate RM readings. Also report letdown lowering and backup charging pumps starting. Determines leak rate of greater than 10 gpm, but less than 50 gpm.	**TM AE**
			US	Enter AOP 2568, Reactor Coolant System Leak: 1. Ensure adequate SHUTDOWN MARGIN. 2. Verify Pressurizer level 35 –70%. 3. Maintain Pressurizer pressure 2225 to 2300 psia. 4. Maintain SG level 55 – 75% 5. Ensure RBCCW and Service Water are operating properly. 6. Ensure at least 2 CARS operating with RBCCW flow to them.	AOP2568
			US	Direct PPO to obtain a leak rate from PPC or other indications.	AOP 2568
		Event classification may be asked as a follow-up question after the exam is complete.	SM	When it is determined that the RCS leakage exceeds 10 gpm, then classify the event as a UE/D-1 (BU2).	MP-26-EPI-FAP06-002
			US	When leak rate is determined to be greater than Tech Spec allowed value, log into TSAS 3.4.6.2b Action b.	Tech Specs
			US	Determine that the plant shutdown must continue.	AOP 2568
		Because the crew will be able to determine the location of the leak from available indications and due to the limited resources, the remaining	US	Reference AOP 2575, Rapid Downpower, and coordinate a plant shutdown.	AOP 2575

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		actions for determining the leak location per AOP 2568 may be performed after commencing the down power.			
			US	*Direct SPO to determine whether leakage in into a Steam Generator per step 5.1.*	*AOP 2568*
			US	*Direct PPO to determine whether leakage in into Containment per step 5.2.*	*AOP 2568*
			US	*Direct PPO to determine whether leakage is pasta PORVs of Pressurizer safeties per step 5.3.*	*AOP 2568*
			US	*Direct SPO to determine whether leakage is into RBCCW per step 5.4.*	*AOP 2568*
			US	*Direct SPO to determine whether leakage is into the Auxiliary Building per step 5.5.*	*AOP 2568*
			US	*Direct PPO to determine whether leakage is into the Safety Injection system.*	*AOP 2568*
			US	Ensure board operators maintain parameters specified in Attachments 1, 5, and 6.	AOP 2575
			US	Direct board operator to inform HP of the power change and rise in Letdown flow.	AOP 2575
		The required notifications may be completed with one phone call.	US	Direct or perform: 1. Inform CONVEX and ISO New England or rapid down power. 2. Refer to MP-01-SM-GDL01.01 and perform notifications as required. 3. Notify Unit 3 of rapid down power.	AOP 2575

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Inform board operators of manual reactor trip requirements.	AOP 2575
			US	Direct the SPO to maintain SG levels 55 to 70% and FRV D/P greater than 20 psid.	AOP 2575
		The US may opt to borate directly from the RWST. Applicable steps are contained in AOP 2575. However, with an RCS leak, boration to the charging pump suction would allow a blended make up to the VCT while maintaining a constant down power rate.	US	Determine the appropriate down power rate and direct the PPO to confirm the corresponding Boric Acid addition rate. Direct the PPO to continue boration to the charging pump suction. Direct SPO to maintain temperature control with the main turbine until the PPO is able to do so.	AOP 2575 MP-14-OPS-GDL02
		This action was performed earlier to commence the down power; however, they may be verified by the PPO.	PPO	Perform the following: 1. Ensure the Makeup Mode Selector switch is in DILUTE and the Primary Makeup Water Flow controller is set to zero. 2. Ensure CH 512 and CH-196 are closed. 3. Ensure Boric Acid Flow controller is in AUTO. 4. Adjust Boric Acid Flow controller to the previously determined Boric Acid flow rate. 5. Open CH-504. 6. Place Makeup Mode Selector switch in MANUAL. 7. Start a Boric Acid Pump and ensure discharge pressure is greater than 90 psig. 8. When ready, open CH-196	AOP 2575
			PPO	When (If) required, raise Boration and dilution flow	AOP 2575,

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				and perform a blended make up to the VCT while maintaining the appropriate boration (down power) rate.	Attachment 3
			US	Direct PPO to insert CEAs as required to maintain ASI within 0.01 of ESI.	AOP 2575
T_1 + 45 min.	RC12A (100%) Ramp = 180 sec.	Shortly after the crew initiates a down power, insert a malfunction for an oil leak on "A" RCP	PPO	Observe annunciators associated with loss of oil in "A" RCP.	MP-14-OPS-GDL02
				Obtain ARP 2590B	**TM**
T_1 + 47 min.	RC11A	**This action must be performed prior to the US directing a manual Reactor trip.** Approximately 1-2 minutes after the low oil level alarm, insert a malfunction to seize the "A" RCP. (This will result in an RPS trip signal, but the reactor will NOT automatically trip.)	US	Direct PPO to check "A" RCP upper oil reservoir level indication and determine the rate of level decrease.	ARP 2590B
			Crew	Observe the trip of the "A" RCP, but the reactor does NOT automatically trip.	MP-14-OPS-GDL02
					AE
		SPTA-5: MANUALLY SHUT DOWN THE REACTOR.	US	Direct a manual reactor trip and carry out EOP 2525, Standard Post Trip Actions.	MP-14-OPS-GDL02
					CT
			PPO / SPO	Push the 4 reactor trip push buttons and observe a failure to trip.	EOP 2525
					EC
		The PPO may open the CEDM MG output breakers without direction from the US.	US	Direct a manual reactor trip by opening the CEDM MG output breakers.	EOP 2525

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Place Master Alarm Silence in SILENCE. Announce "Unit 2 trip" on the plant paging system.	OP 2260
			PPO	Complete and report SPTA for PPO per EOP 2525: - Ensures Reactivity safety function is being met: Reactor is tripped All CEAs are inserted. Power is going down. SUR is negative. Manual reactor trip buttons failed to operate. Opened the CEDM MG set feeder breakers. Reports to US. - Verifies RCS Inventory and Pressure safety functions are being met (Reports Letdown is isolated and all available Charging Pumps are running). - If Pressurizer pressure falls to less than 1800 psia, manually initiates SIAS. - Verifies Core Heat Removal established. NO RCPs are operating due to loss of RSST. - Verifies Containment Integrity safety function is being met by verifying CTMT pressure, temperature, and rad monitor readings. - Observes rad monitors in CTMT are in alarm and rising; all other rad monitors are normal. - Performs and reports subsequent actions.	EOP 2525
		PPO may report degradation of "A" HPSI Pump.			
			SPO	Completes SPTA for SPO per EOP 2525 correctly: - Vital Auxiliaries are satisfied:	EOP 2525

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				The Main Turbine is tripped All main stop valves are closed Megawatts are zero 8T & 9T are open Reports to US Reports that a loss of RSST has occurred Buses 25A and B are deenergized Buses 24A and B are deenergized Buses 24C and 24D energized on their respective D/Gs VA-10 and 20 are energized Both DC busses are energized Both facilities of RBCCW & SW are operating. - Verifies RCS heat removal (S/G pressures and RCS Tave). - Verifies S/G feed established: - Starts the 'A' AFW pump, but performance is degraded. (SPO may secure the 'A' AFW pump.) 'B' AFW pump breaker will NOT close. Reports status of Aux Feedwater. - Performs and reports subsequent actions.	
T_1 + 55 min.	SI04C	Approximately 5 to 10 minutes after entry into EOP 2525, insert a malfunction to trip the "C" HPSI Pump.	PPO	Observe and report the loss of the "C" HPSI Pump and that the "A" HPSI Pump is degraded. (low discharge pressure) Determine and report that the Safety Injection flow rate is less than required.	MP-14-OPS-GDL02
		The direction to start the "B" HPSI Pump might not be given until after entry into EOP 2540.	US	Direct the PPO to start "B" HPSI	MP-14-OPS-GDL02 **CT**

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		SPTA-4: Manually establish the minimum design Safety Injection System flow.			
			PPO	Start "B" HPSI and verify Safety Injection flow is adequate.	EOP 2525
	EGR16 (RESET)	If directed, as a PEO to acknowledge D/G alarms then reset local trouble alarms.	SPO	Requests PEO to check out the D/Gs.	MP-14-OPS-GDL02
	IAR10 (OPEN)	When directed, as a PEO to cross-tie Station Air with U-3, then perform actions to crosstie Station Air.	SPO	Requests PEO to cross-tie SA with U-1	EOP 2525
		If directed to investigate the AFW Pumps, report: "B" AFW Pump breaker is 'hung up' and cannot be racked down. Must deenergize the bus to troubleshoot. "A" AFW Pump is making a grinding noise and is running very hot. Need another day to complete repairs to the TDAFP.	US	Requests PEO/Electrician to check out the "A" and "B" AFW pumps. Direct the SPO to stop the "A" Aux Feed Pump and place Auto Aux Feed hand switches in Pull-To-Lock.	MP-14-OPS-GDL02
			US	Use the Diagnostic Flow Chart: Reactivity Safety Function is met. At least 1 vital AC bus and one DC are energized (same train) NO RCPs are operating (Consider EOP 2528) Inadequate flow to Steam Generators (Consider EOP 2537) Pressurizer pressure is less than 1850 and is lowering.	EOP 2525

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				SG pressures are greater than 800 psia CTMT pressure is greater than 1 psig CTMT Rad monitors are going up (Consider EOP 2532)	
				Transition to EOP 2540, Functional Recovery	**EU EC**
		EAL classification may be asked as a follow-up question after the exam is complete.	SM	Classifies event as Alert/C-1, based on RCB2 (BA1) or EA1. If vessel level is observed to be less than 7%, then classification is a Site Area Emergency based on RCB2 and FCB4 (BS1).	MP-26-EPI-FAP06-002
			US	Place Master Alarm silence switch in NORMAL.	EOP 2540
			US	Enter the time on the Safety Function Tracking Page.	EOP 2540
			US	Ensure SIAS has been initiated and direct the following: - Place both spray valve controllers in MANUAL and closed. - Ensure HIC-4165 is in MANUAL and closed.	EOP 2540
			US	Direct the SPO to open the Steam Generator sample valves and direct Chemistry to sample both Steam Generators for Boron and activity.	EOP 2540
			SPO	Open both Steam Generator sample valves. Direct Chemistry to sample both Steam Generators for Boron and activity, frisk the samples and report the frisk results. When the frisk results are reported, obtain concurrence form the US and close the Steam Generator sample valves.	EOP 2540
			US	Direct the PPO to place both Hydrogen analyzers in operation per Appendix 19.	EOP 2540

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		# If the "B" HPSI Pump is NOT started prior to this or if vessel level is less than 7%, then the first priority will be for Inventory Control, IC-2. When the "B" HPSI Pump is started and vessel level is 7% or greater, the Inventory Control safety function will be met and RCS Heat Removal, HR-3, will become the next priority. * If RCS pressure is less than 1200 psia, then the acceptance criteria for HR-3 will be met, resulting in a 'Y'. HR-3 will still be the first priority.	US	With the assistance of the crew, identify and prioritize the success paths to be used: SAFETY FUNCTION Name Equip Met Name Equip Met RC-1 Y Y HR-3 Y N* MVA-DC-1 Y Y CI-1 Y Y MVA-AC-2 Y Y CTPC-3 Y Y IC-2 Y Y# CCGC-1 Y Y PC-2 Y Y **Heat Removal, HR-3 will be the first priority.**	EOP 2540
		HR-1: Establish Once-Through-Cooling. **The US should direct early initiation of Once-Through-Cooling due to the unlikelihood of establishing feed to the S/Gs and because only one HPSI Pump is running/available.**	US	Direct the crew to initiate Once-Through-Cooling: 1. Ensure all proportional heaters are tripped and all backup heaters are in Pull-To-Lock. 2. Open both ADVs. 3. Ensure all RCPs are stopped. 4. Ensure SIAS is actuated. 5. Ensure HPSI Pumps have started. 6. Ensure all HPSI Injection Valves are open. 7. Ensure all available Charging Pumps are running. 8. Ensure both PORV Block Valves are open. 9. Open both PORVs.	EOP 2540D **CT**
			PPO / SPO	Perform the actions directed by the US as listed above.	EOP 2540D
		If not performed earlier, the US should direct someone to investigate the status of the Aux Feed Pumps	US	Continue efforts to restore Auxiliary Feedwater.	EOP 2540D

Title: LOUT 2003 Simulator Exam #1 ID Number ES03LU1 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		and/or their respective breakers.			
			US	Direct the PPO to ensure Safety Injection is optimized.	EOP 2540D
			PPO	Perform the following: 1. Check at least on train of SIAS, CIAS, and EBFAS has actuated on C-01X. 2. Check Safety Injection Flow is adequate per Appendix 2 of EOP 2541. 3. Ensure all available Charging Pumps are operating. 4. Ensure Vital Switchgear Cooling is operating for each ECCS train.	EOP 2540D
		The session may be terminated when the crew has verified that RCS Heat Removal is being satisfied and efforts are continuing to restore Auxiliary Feedwater.			

EXAM GUIDE SUMMARY

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

I. Critical Tasks

1. **SPTA-5: Manually shutdown the reactor.**

   BASES: If the reactor is not shutdown all safety functions may be in jeopardy.

2. **SPTA-4: Manually establish the minimum design Safety Injection System flow.**

   BASES: Inadequate Safety Injection flow may result in loss of subcooled margin and core uncovery, and thus increase the risk of core damage.

3. **HR-1: Establish Once-Through-Cooling.**

   BASES: If steam generator heat removal is inadequate, then another form of core and RCS heat removal must be implemented to prevent degradation of the fuel cladding barrier to fission product release.

III. FOLLOW-UP QUESTIONS

1. What was the initial classification prior to the trip of the RCP?

   Answer: Unsual Event/D-1 (BU2), RCS leakage > 10 gpm.

2. What was the classification at the completion of EOP 2525?

   Answer: Classifies event as Alert/C-1 (BA1), RCB2, RCS subcooling < 30°F.

   OR EA1, Failure of automatic trip and manual trip was successful.

   If vessel level was less than 7%, then the classification is a Site Area Emergency/C-2 (BS1), RCB2, RCS subcooling < 30°F. AND FCB4, RVLMS reading = 0%.

SIMULATOR EXAM GUIDE
VALIDATION CHECKLIST

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

Initial Conditions: Verified By:

The initial condition(s) contained in the guide are certified or have been developed from certified ICs.

Test Run:

The scenario contained in the guide has been test run on the simulator. Simulator response is reasonable and as expected.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

For Examination Scenario:

The Scenario Attributes Checklist is complete and attached. This is not required for Progress Review Exams

Action Complete

9/17/03
Date

SIMULATOR GUIDE REUSE APPROVAL CHECKLIST

Title: LOUT 2003 Simulator Exam #1

ID Number: ES03LU1 Revision: 1

Review of Simulator Exam Guide	Verified (Initials)
• The procedure references used in this guide are appropriate and support the learning objectives.	NA
• There are no simulator model changes that would negatively impact the reuse of this guide.	NA
• There are no simulator discrepancies that would negatively impact the reuse of this guide.	NA
• Validation, if necessary, has been accomplished.	NA

Authorization for reusing this Simulator Exam Guide

NA	NA
Operator Training Branch Supervisor	Date

SIMULATOR EXAM GUIDE
SCENARIO ATTRIBUTES CHECKLIST

ID Number: ES03LU1 Revision: 1 Date:

Technical Reviewer:

SIMULATOR EXAM GUIDE
SCENARIO ATTRIBUTES CHECKLIST

1. Total Malfunctions (TM) - Include EMs - 5 to 8 required	Total 7
2. Malfs after EOP entry (EMs) - 1 to 2 required	Total 4
3. Abnormal Events (AE) - 2 to 4 required	Total 4
4. Major Transients (MA) - 1 to 2 required	Total 3
5. EOPs Used (EU) beyond primary scram response - 1 to 2	Total 1
6. EOP Contingencies/Transitions (EC) - 0 to 3 required	Total 2
7. Crew Critical Task (CT)- 2 to 3 required	Total 3
8. Approximate Scenario Run Time: 60 to 90 min.	Total 90
9. EOP run time: 40 to 70 percent of scenario run time	Total 50
Technical Specifications are exercised during the scenario.	(Y/N) Y

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

MODE:	1	*RX POWER:*	28%
MEGAWATTS:	Thermal: 770 MWTH	*PZR PRESS:*	2250 psia
	Electric: 257 MWe	*RCS T-AVE:*	545 degrees F
RCS LEAKAGE:	Identified: 0.005 gpm	*PROTECTED:*	Train/Facility
	Unidentified: 0.036 gpm		Z2 (YELLOW)
	Date/Time:Today 0015		

TS LCO and TRM ACTION Statements Coming Due (if more than one ACTION requirement per LCO, list each separately)

Date	Time	LCO	Action	Action Requirement	Equipment	Reason
Today	1334	3.7.1.2	a	Restore within 72 hours or be in at least Hot Standby within the next 6 hours	TDAFP	Bearing replacement
Today	1334	TRMAS 7.1.15, Item A, B, and C	a	Restore to Operable within 7 days or perform actions b.1 and b.2 for fire area R-1, R-2, R-3, R-11, R-13, R-16, and R-17	TDAFP	Bearing replacement
3/20/03	0900	TRMAS 7.1.1, Item B	c	With P18B inoperable for >60 days, prepare an Engineering evaluation for continued operation. Engineering assessment carried on OD No. MP2-043-03 for 60 day TRM requirement.	P18B, "B" Charging Pump	Compliance with Charging System OD

Continuous TS LCO and TRM ACTION Statements in effect (if more than one ACTION requirement per LCO, list each separately)

Action Requirement	LCO	Action	Equipment	Reason
Maintain the inoperable vent path closed with power removed from the valves. Maintain one PORV and block valve OPERABLE.	TSAS 3.4.11.b	a	Pzr Vent Solenoids	Manually isolated due to leakage (2-RC-440 is closed).
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	a	See AIL	See Active Impairment List.
Item B: Ensure P18C is operable from C10 and perform b.1 and b2 for Fire Area R-4	TRM 7.1.1, Item B	a	P18B	Compliance with Charging System OD

OD COMPENSATORY ACTIONS / Temp LOGS (Bold: Tech Specs, Italics: TRM)	
None	

EVOLUTIONS IN PROGRESS & NOTES	*Reference/Date*
Holding power @ 28% for turnover. "A" MFW Pump operating, "A" Condensate Pump, GP 7 CEAs at 152 steps. Xenon building in. Diluting 20 gals every 15 minutes.	OPS/Today
Bus 24E is aligned to Bus 24D to allow for planned maintenance on "C" RBCCW Pump	OPS/Today

Unit 2 Chemistry
ON-LINE STATUS REPORT

REACTOR COOLANT		Time 06:25	
Parameter	**Reading**	**Parameter**	**Reading**
Power	100 %	Fluoride	0.81 ppb
Tave	545 deg F	Chloride	1.75 ppb
Boron	1175 ppm	Oxygen	<5 ppb

MILLSTONE POWER STATION

SIMULATOR EXAM GUIDE APPROVAL SHEET

Lesson Title: LOUT 2003 Simulator Exam #2

Revision: 1

ID Number: ES03LU2

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Submitted by:	R. J. Ashey R. J. Ashey	09/05/03
	Developer	Date
Reviewed by:	R. L. Cimmimo Robert L. Cimmimo	9/5/03
	Technical Reviewer	Date
Approved by:	Randil E. Padgette	9-17-03
	Manager, Operations (Optional)	Date
Approved by:		
	Supervisor, Training	Date

SIMULATOR EXAM GUIDE

SUMMARY OF CHANGES

1. Modified per NRC review comments. Removed the initial "Normal" action and replaced it with a "Component" malfunction.

SIMULATOR EXAM GUIDE

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER

Attachments

EXAM OVERVIEW

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

1. Purpose:

This examination is used to evaluate crew/individual performance in the simulator to satisfy the requirements of NUREG 1021 for SRO-U applicants. To meet these requirements, this exam is designed to:

a. Evaluate the licensees' ability, as a team and individually, to respond to an emergency event.

b. Evaluate licensees in the following areas:

   1) Ability of the crew to perform crew-dependent critical tasks.

   2) Ability of individuals to perform critical tasks.

   3) Ability of each applicant to:

      a) Respond and correctly interpret annunciators
      b) Correctly diagnose events
      c) Properly interpret integrated system response
      d) Comply with and use Technical Specifications
      e) Comply with and use procedures
      f) Demonstrate a responsible attitude
      g) Properly communicate information and interact with the rest of the crew

EXAM OVERVIEW

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

2. Exam brief:

The simulator and room will be prepared for the exam.

1. The Simulator will be initialized at IC-24, 100% power, MOL, or an equivalent IC.
2. "B" Charging Pump is tagged to prevent automatic start.
3. Bus 24E is aligned to bus 24D to allow for "C" HPSI Pump work later today.

Shortly after the Crew takes the watch, Main Feed Flow transmitter on #2 SG will begin to fail low. This will result in a slow rise in SG level requiring the selection of the Alternate Feed Flow transmitter to mitigate. Alternatively, the #2 SG Main FRV can be controlled in manual until level is stabilized at setpoint, at which time the Alternate Feed Flow transmitter can be selected and the system returned to auto.

Approximately 2 minutes after the SG level control failure has been mitigated, Channel 'Y' of Reactor Reg will fail. The crew will respond to the failure by entering the applicable ARPs for pressurizer level.

When the required actions to stabilize pressurizer level and pressure have been completed, the #1 SIT will develop a nitrogen leak requiring entry into Technical Specifications.

When the crew has completed logging TSAS 3.5.1, action b, the Main Control Valves will ramp close causing a rapid rise in RCS pressure and temperature. When the control valves close, the steam dump valves will NOT receive a 'quick open' signal (previous Reactor Reg. Failure) resulting in a continued rise in RCS temperature and pressure. The reactor will fail to automatically trip on high RCS pressure requiring a manual reactor trip.

As a result of the trip, a Steam Generator Tube Rupture will occur on #2 S/G. As a result of the high RCS pressure, a Pressurizer Safety will stick partially open. Additionally, the RSST will be lost and the "A" DG breaker will fail to close resulting in the need to emergency trip the "A" DG and the loss of vital bus 24C.

The crew should perform the actions of EOP 2525, Standard Post Trip Actions, and diagnose a LOCA with a SGTR on the #2 S/G. This will require entry in EOP 2540, Functional Recovery.

The crew will determine that Containment Integrity is NOT met and must implement EOP 2540E, Functional Recovery of Containment Isolation.

During the performance of EOP 2540E, The "C" Service Water Pump will trip, requiring the crew to start the "B" Service Water Pump on Facility 2.

The scenario may be terminated when #2 SG is isolated.

3. Plant/Simulator differences that may affect the scenario are:

None

4. Duration of Exam: 1.5 hours.

SIMULATOR EXAM GUIDE
SCENARIO INITIAL CONDITIONS

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

Out of Service Equipment

"B" Charging Pump

Crew Instructions

Maintain the plant at 100% power, steady state.

SIMULATOR EXAM GUIDE

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

All Control Room Conduct, Operations and Communications shall be in accordance applicable Unit Procedures.

"Review the Simulator Operating Limits (design limits of plant) and the Simulator Modeling Limitations and Anomalous Response List prior to performing this exam scenario on the simulator. The evaluators should be aware if any of these limitations may be exceeded." (NSEM 6.02)

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_0		Initial Conditions Initialize the simulator to IC-24, 100% power, MOL, simulator in run.			
T_0	EDR14 (RO) EDR15 (RI) SWR22 (22F)	Bus 24E is powered from bus 24D. **Ensure all loads powered from bus 24E are properly aligned to Facility 2.**			
T_0	ED02 BT 1	Insert malfunction to cause a loss of the RSST when the reactor is tripped.			
T_0	EG08A	"A" DG output breaker fails to close on the LNP.			**TM EM**
T_0	RC05A (15%) BT 21	A Pressurizer Safety valve sticks partially open after the trip.			**TM EM MA**
T_0	RP28D RP28E RP28H	Failure of RPS to automatically trip on low SG level or high RCS pressure.			**TM EM**
T_0	SG02B (20%) BT 1	SGTR in #2 SG on the trip.			**TM EM MA**

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_0		Using the turnover sheet, brief the "oncoming" US. In addition to the Turnover Sheet, provide the following: The plant is at 100% power and has been at 100% power for the past 9 months. RCS Boron concentration is 820 ppm with a blend ratio of 6.3:1. Bus 24E is being supplied by bus 24D in preparation for removing "C" HPSI Pump from service for inspection later today. All other conditions are normal. When you are ready to take the shift, please inform me.			
T_1	RX10C (50%) 300 Sec.	Shortly after Crew takes the watch, insert a malfunction to slowly fail the Main Feed Flow Transmitter low.	Inst.		TM
			US/SPO	Observe rising water level in #2 SG. Note: The ARP for SG Level Hi/Lo (C05 A8) should be referenced at some time by the Crew to verify actions taken are correct and complete.	
			US	Direct SPO to take MANUAL control of #2 SG FRV and stabilize or select Alternate Feed Flow Transmitter.	
			SPO	Performs above actions as directed by US.	

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Note failure of Main Feed Flow Transmitter and (if not already done so) direct SPO to select Alternate Feed Flow Transmitter.	
			US	Once level is stabilized and failed transmitter is deselected, return FRV control to auto if required	
			US	Direct/Notify I&C of Feed Control System failure.	
T_2	RX6B (0) Ramp = 180 sec.	Once FRV control failure is mitigated and system has been returned to automatic control, insert malfunction for a failure of channel 'Y' of Reactor Reg.	Crew	Observe indications and diagnose a failure of the channel 'Y' Tave calculator. • Lowering Tave reading on Channel 'Y'. • Annunciators on C-02/3 to include: – PRESSURIZER CH X LEVEL HI/LO (A38) – PRESSURIZER CH Y LEVEL HI/LO (A39) • PZR PRESSURE SELECTED CHANNEL DEVIATION HI/LO (D37)	MP-14-OPS-GDL02 and various ARPs **TM AE**
			US	Direct the PPO to take manual control of Letdown Flow Controller, HIC-110 and restore Letdown to 40 gpm.	ARP 2590B
			PPO	Place HIC-110 in manual and lower Letdown flow to 40 gpm.	ARP 2590B
			US	Direct the PPO to perform either of the following: 1. Commence forcing sprays 2. Place Backup heaters in Pull-To-Lock.	ARP 2590B
			PPO	Performs either: • Places all Backup Heaters in Pull-To-Lock • Lowers Pressurizer pressure controller to obtain a 50% output on the controller.	ARP 2590B

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Direct the PPO to shift Reactor Reg to Channel 'X'.	ARP 2590B
			PPO	Places Reactor Reg switch in Channel 'X'.	ARP 2590B
		The US may decide to continue forcing sprays.	US	When pressurizer level is restored to 65%, direct the PPO to return HIC-110 to automatic and to restore pressurizer pressure control to normal.	ARP 2590B
			PPO	Shifts HIC-110 to automatic and performs one of the following: • Returns the pressurizer pressure controller to the previous set point and secures the backup heaters • Removes backup heaters from Pull-To-Lock.	AOP 2590B
T_3	SI03A (100%)	When pressurizer pressure and level are returned to normal, insert a malfunction for a Nitrogen leak on #1 SIT.	PPO	Observe and report value and trend of pressure on #1 SIT along with SAFETY INJECTION TANK 1 PRESS LO annunciator.	MP-14-OPS-GDL02 and various ARPs **TM AE**
			US	Direct PPO to perform the following: • Ensure level indicates between 55.2 and 59.7% • Ensure Leakage Drain Stop, SI-618, closed. • Attempt to determine the cause of the low pressure.	ARP 2590A

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	PPO reports: • Ensure level indicates between 55.2 and 59.7% • Ensure Leakage Drain Stop, SI-618, closed. • Attempt to determine the cause of the low pressure.	ARP 2590A
			US	Request maintenance to investigate the cause of the low SIT pressure Log into TSAS 3.5.1.	ARP 2590A
T_4	TC06A-D (10%) 30 sec. ramp	When the US has logged into TSAS 3.5.1, insert a malfunction to cause the Main Control Valves to close.	Crew	Observe rising RCS temperature, rising RCS pressure, and numerous annunciators.	MP-14-OPS-GDL02 **MA**
			Crew	Observe RCS pressure rising to the trip set point and a failure to automatically trip.	MP-14-OPS-GDL02
		SPTA-5: Manually shutdown the reactor. **This action may be performed by the PPO WITHOUT direction from the US.**	US	Direct the PPO to manually trip the plant and the crew to perform EOP 2525, Standard Post Trip Actions.	MP-14-OPS-GDL02 **CT**
			US	Place Master Alarm Silence in SILENCE. Announce "Unit 2 trip" on the plant paging system.	OP 2260
			US	Begin querying board operators on the status of EOP 2525.	EOP 2525

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Complete and report SPTA for PPO per EOP 2525: - Ensures Reactivity safety function is being met: Reactor is tripped All CEAs are inserted Power is going down. SUR is negative. - Verifies RCS Inventory and Pressure safety functions are being met (Reports Letdown is isolated, all available Charging Pumps are running, a Pressurizer Safety indicates open, and SIAS has actuated on Facility 2.) - Verifies Core Heat Removal established. NO RCPs are operating due to loss of RSST. - Verifies Containment Integrity safety function is being met by verifying CTMT pressure, temperature, and rad monitor readings. Observes CTMT temperature and pressure rising; rad monitors in CTMT are in alarm and rising; all other rad monitors are normal. - Performs and reports completion of subsequent actions.	EOP 2525

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			SPO	Completes SPTA for SPO per EOP 2525 correctly: - Vital Auxiliaries are satisfied: The Main Turbine is tripped All main stop valves are closed Megawatts are zero 8T & 9T are open Reports that a loss of RSST has occurred Buses 25A and B are deenergized Buses 24A and B are deenergized "A" DG breaker failed to close, bus 24C is deenergized - Bus 24D is energized by its respective diesel generator. - Buses 201A and B are energized. - Buses VA-10 and VA-20 are energized.	EOP 2525
			SPO	– Verifies RCS heat removal (S/G pressures and RCS Tave). – Verifies S/G feed established by starting Aux feedwater. – Reports unusual rise in #2 SG level with NO (or very little) feed flow. – Performs and reports completion of subsequent actions.	EOP 2525
	EGR16 (RESET)	If directed as a PEO, acknowledge D/G alarms, then reset local alarms.	SPO	Requests PEO to check out the D/Gs.	MP-14-OPS-GDL02
	IAR10 (OPEN)	When directed as a PEO to cross-tie Station Air with U-3, then perform actions to crosstie Station Air.	SPO	Requests PEO to cross-tie SA with U-1	EOP 2525

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		If the unusual rise in #2 SG is initially missed or determined to be 'not significant enough to warrant attention', the US may direct entry into EOP 2532, LOCA. When the unusual rise is determined to be indicative of a SGTR, the US will transition to EOP 2540.	US	Use the Diagnostic Flow Chart: Reactivity Safety Function is met. At least 1 vital AC bus and one DC are energized (same train) NO RCPs are operating (Consider EOP 2528) Adequate flow to Steam Generators Pressurizer pressure is less than 1850 and is lowering. SG pressures are greater than 800 psia with lowering subcooling. CTMT pressure is greater than 1 psig and rising. CTMT Rad monitors are going up (Consider EOP 2532) Other SGTR indications: feed flow – steam flow mismatch and unusual rise in #2 SG level.	EOP 2525
				Transition to EOP 2540, Functional Recovery, based on LOCA and SGTR.	**EU**
		EAL classification may be asked as a follow-up question after the exam is complete.	SM	Classifiy event as an Alert/Charlie-1 based in RCB3, RCB4, or EA1	MP-26-EPI-FAP06-002
			US	Place Master Alarm silence switch in NORMAL.	EOP 2540
			US	Enter the time on the Safety Function Tracking Page.	EOP 2540
			US	Ensure SIAS has been initiated and direct the following: - Place both spray valve controllers in MANUAL and closed. - Ensure HIC-4165 is in MANUAL and closed.	EOP 2540

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Direct the SPO to open the Steam Generator sample valves and direct Chemistry to sample both Steam Generators for Boron and activity.	EOP 2540
		Approximately 20-30 minutes after a request is made to sample both SGs for activity, report as Chemist: #1 SG - <MDA #2 SG – 250 cpm above background.	SPO	– Open both Steam Generator sample valves. – Direct Chemistry to sample both Steam Generators for Boron and activity, frisk the samples and report the frisk results. – When the frisk results are reported, obtain concurrence form the US and close the Steam Generator sample valves.	EOP 2540
T_6	SW01C	While the SPO is performing steps to obtain SG samples, insert a malfunction to trip the "C" Service Water Pump.	SPO	Observe indications of a loss of Facility 2 Service water. – SW PUMP C OVERLOAD/TRIP annunciator. – "B" Service Water header low flow. Report loss of Service Water.	MP-14-OPS-GDL02 **TM EM**
		MVA2: Energize at least one vital electrical AC bus.	US	Direct SPO to start "B" Service Water Pump on Facility 2.	MP-14-OPS-GDL02 AOP 2565 **CT AE**
			SPO	Start "B" Service Water Pump on Facility 2, place "C' Service Water Pump hand switch in Stop, and report restoration of Service Water.	MP-14-OPS-GDL02 AOP 2565
			US	Direct the PPO to place both Hydrogen analyzers in operation per Appendix 19.	EOP 2540

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The US will determine that Containment Integrity, CI-1, acceptance criteria are NOT met and immediately enter EOP 2540E.	US	With the assistance of the crew, identify and prioritize the success paths to be used: SAFETY FUNCTION Name Met Equip Name Met Equip RC-1 Y Y HR-2 Y Y MVA-DC-1 Y Y CI-1 N Y MVA-AC-2 Y Y CTPC-2 Y Y IC-2 Y Y CCGC-1 Y Y PC-2 Y Y **Containment Integrity, CI-1, will be the first priority.**	EOP 2540
	CVR09 (RI)	When requested, rack in "B" Charging Pump breaker on Facility 2.	US	Ensure SIAS, CIAS EBFAS, and MSI have actuated. Direct the following: – Ensure all required Facility 2 components are in their accident condition. – Ensure at least one train of Control Room Air Conditioning is in recirc. – Ensure facility vital switchgear cooling is operating.	EOP 2540E **EC**

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO / SPO	To ensure Facility 2 CRAC is in recirc, perform the following: 1. F21B Exhaust Damper, HV 203B is open. 2. CRACS Supply Fan, F21B is running. 3. F31B Exhaust Damper, HV 206B, is open. 4. CRACS Exhaust Fan, F31B, is running. 5. F32B Exhaust Damper, HV 212B, is open. 6. CRACS Filter Fan, F32B, is running. 7. Fresh Air Makeup Damper, HV 495 is closed. 8. Exhaust Air Damper, HV-496, is closed 9. Cable Vault Exhaust Damper, HV-497 is closed.	EOP 2540E
		HR-7: Perform a plant cooldown.	US	Direct the SPO to initiate a cool down at the maximum controllable rate to a Th of <515°F using the ADVs.	EOP 2541, Appendix 12 **CT EC**
			SPO	Commence a cool down by throttling open both ADVs.	EOP 2541, Appendix 12
			US	Direct the PPO to depressurize the RCS while maintaining the following parameters: – RCS pressure less than 920 psia – Within 50 psia of #2 S/G – Within the confines of the P/T curve.	EOP 2541, Appendix 12
			PPO	Operate Pressurizer heaters and auxiliary spray to ensure RCS pressure is maintained within the directed parameters.	EOP 2541, Appendix 12

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		HR-6: Isolate the affected or most affected Steam Generator.	US	When both hot leg temperatures are less than 515°F, then direct the SPO to: – Record the time and Tc in the operating loop. – Isolate the #2 S/G per step 6 of EOP 2541, Appendix 12.	EOP 2541, Appendix 12 **CT**
	MSR13 (RI)	When directed, close the disconnect for MS-202.	US/SPO	Direct a PEO to close the disconnect for Steam Supply to the Turbine Driven Aux Feed Pump, 2-MS-202.	
			SPO	1. Ensure #2 ADV is in AUTO and closed with a set point of 920 psia. 2. Ensure #2 MSIV is closed. 3. Ensure #2 MSIV Bypass Valve is closed. 4. Close Main Feed Reg Valve Bypass Valve, 2-FW-41B. 5. Ensure Main Feedwater Block Valve, 2-FW-42B, is closed. • Ensure Feedwater Reg Valve, 2-FW-51B is closed. 6. Place Main Feed Isolation Air Assist Check Valve, 2-FW-5B, in CLOSE. 7. Ensure SG Blowdown Isolation Valve, 2-MS-220B, is closed. 8. Place both Aux Feed OVERRIDE/MAN/STRART/RESET hand switches are in Pull-To Lock. 9. Close Aux Feed Reg Valve, 2-FW-43B. 10. Place Aux Feed Isolation Air Assist Check Valve, 2-FW-12B, to CLOSE. 11. Close the Steam Suppl;y Valve to the Turbine	EOP 2541, Appendix 12

Title: LOUT 2003 Simulator Exam #2 ID Number ES03LU2 Revision: 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				Driven Aux Feed Pump, 2-MS-202.	
				12. Close Low Point Drain, 2-MS-266B.	
				13. Check Main Steam Safety Valves are closed.	
			US	Direct SPO to maintain #2 Steam Generator pressure less than 920 psia.	EOP 2541, Appendix 12
		The session may be terminated when the crew has completed isolating #2 Steam Generator.			

EXAM GUIDE SUMMARY

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

I. Critical Tasks

1. **SPTA-5: Manually shutdown the reactor.**

   BASES: If the reactor is not shutdown all safety functions may be in jeopardy

2. **MVA2: Energize at least one vital electrical AC bus**

   BASES: Loss of vital AC bus is a significant reduction in safety margin.

3. **CI-1: Maintain Containment Isolation.**

   BASES: Failure to adequately isolate the containment in the event of a failure of the RCS and fuel cladding fission product barriers, may increase the potential for release to the environment.

4. **HR-7: Perform a plant cooldown.**

   BASES: If steam generator heat removal is inadequate, then another form of core and RCS heat removal must be implemented to prevent degradation of the fuel cladding barrier to fission product release.

5. **HR-6: Isolate the affected or most affected Steam Generator.**

   BASES: Isolation of the affected Steam Generator is assumed in the Safety Analysis. Failure to identify the most affected Steam Generator can result in the inability to isolate the most affected Steam Generator and reestablish the barrier to fission release.

III. FOLLOW-UP QUESTIONS

1. What was the classification for this event at the completion of EOP 2525?

   Answer: Classify event as an Alert/C-1 based on BS1 RCB2 (or RCB4) or EA1.

   RCB2 - RCS subcooling < 30°F.

   RCB4 - Reactor coolant leak > CVCS capacity and entry into EOP 2525, Standard Post Trip Actions.

   EA1 – Failure of automatic reactor trip and manual trip was successful.

SIMULATOR EXAM GUIDE
VALIDATION CHECKLIST

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

Initial Conditions: Verified By:

The initial condition(s) contained in the guide are certified or have been developed from certified ICs.

Test Run:

The scenario contained in the guide has been test run on the simulator. Simulator response is reasonable and as expected.

Simulator Operating Limits:

The simulator guide has been evaluated for operating limits and/or anomalous response.

For Examination Scenario:

The Scenario Attributes Checklist is complete and attached. This is not required for Progress Review Exams

R. Ashley
Action Complete

9/17/03
Date

SIMULATOR GUIDE REUSE APPROVAL CHECKLIST

Title: LOUT 2003 Simulator Exam #2

ID Number: ES03LU2 Revision: 1

Review of Simulator Exam Guide	Verified (Initials)
• The procedure references used in this guide are appropriate and support the learning objectives.	NA
• There are no simulator model changes that would negatively impact the reuse of this guide.	NA
• There are no simulator discrepancies that would negatively impact the reuse of this guide.	NA
• Validation, if necessary, has been accomplished.	NA

Authorization for reusing this Simulator Exam Guide

NA	NA
Operator Training Branch Supervisor	Date

SIMULATOR EXAM GUIDE

SCENARIO ATTRIBUTES CHECKLIST

ID Number: ES03LU2 Revision: 1 Date:

Technical Reviewer:

SIMULATOR EXAM GUIDE
SCENARIO ATTRIBUTES CHECKLIST

1. Total Malfunctions (TM) - Include EMs - 5 to 8 required	Total 9
2. Malfs after EOP entry (EMs) - 1 to 4 required	Total 6
3. Abnormal Events (AE) - 2 to 4 required	Total 4
4. Major Transients (MA) - 1 to 2 required	Total 4
5. EOPs Used (EU) beyond primary scram response - 1 to 2 required	Total 1
6. EOP Contingencies/Transitions (EC) - 0 to 2 required	Total 2
7. Crew Critical Task (CT)- 2 to 3 required	Total 4
8. Approximate Scenario Run Time: 60 to 90 min.	Total 90
9. EOP run time: 40 to 70 percent of scenario run time	Total 60

Technical Specifications are exercised during the scenario. (Y/N) Y

DATE-TIME	PREPARED BY	SHIFT
Today 0515	Unit Supervisor /"NIGHT" Shift	18:00 - 06:00

PLANT STATUS:

MODE:	1	*RX POWER:*	100 %
MEGAWATTS:	Thermal: 2699 MWTH	*PZR PRESS:*	2250 psia
	Electric: 903 MWe	*RCS T-AVE:*	572 degrees F
RCS LEAKAGE:	Identified: 0.005 gpm	*PROTECTED:*	Train/Facility
	Unidentified: 0.036 gpm		Z2 (YELLOW)
	Date/Time:Today 0015		

TS LCO and TRM ACTION Statements Coming Due (if more than one ACTION requirement per LCO, list each separately)

Date	Time	LCO	Action	Action Requirement	Equipment	Reason
3/20/03	0900	TRMAS 7.1.1, Item B	c	With P18B inoperable for >60 days, prepare an Engineering evaluation for continued operation. Engineering assessment carried on OD No. MP2-043-03 for 60 day TRM requirement.	P18B, "B" Charging Pump	Compliance with Charging System OD

Continuous TS LCO and TRM ACTION Statements in effect (if more than one ACTION requirement per LCO, list each separately)

Action Requirement	LCO	Action	Equipment	Reason
Maintain the inoperable vent path closed with power removed from the valves. Maintain one PORV and block valve OPERABLE.	TSAS 3.4.11.b	a	Pzr Vent Solenoids	Manually isolated due to leakage (2-RC-440 is closed).
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	a	See AIL	See Active Impairment List.
Item B: Ensure P18C is operable from C10 and perform b.1 and b2 for Fire Area R-4	TRM 7.1.1, Item B	a	P18B	Compliance with Charging System OD

OD COMPENSATORY ACTIONS / Temp LOGS (Bold: Tech Specs, Italics: TRM)

None	

EVOLUTIONS IN PROGRESS & NOTES	*Reference/Date*
None	

Unit 2 Chemistry
ON-LINE STATUS REPORT

REACTOR COOLANT		Time 06:25	
Parameter	**Reading**	**Parameter**	**Reading**
Power	100 %	Fluoride	0.81 ppb
Tave	545 deg F	Chloride	1.75 ppb
Boron	821 ppm	Oxygen	<5 ppb