Millstone Station
Unit 2 Operator Training

SIMULATOR EXERCISE GUIDE

I. Title: LOIT Simulator Evaluation #1

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SECTIONS LISTED IN ORDER:

EXERCISE OVERVIEW

1. Purpose:
   1. Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
   b. Evaluate licensees in the following areas, as applicable:
      1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
      2) Ability of individuals to perform critical tasks.
      3) Ability of the crew to:
         a) Understand/interpret alarms/annunciators
         b) Diagnose events/conditions based on signals/readings
         c) Understand plant/systems response
         d) Comply with/use procedures and Technical Specifications
         e) Properly communicate information/proper crew interactions
         f) Perform control board operations
      4) Ability of each individual 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) Properly perform control board operations

g) Demonstrate a responsible attitude

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

2. Exercise Brief:

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

The simulator will be initialized in Mode 1, NOP/NOT, EOL, Equilibrium Xe, 35 ppm boron, Z2 protected and 24E tied to 24D.

Four hours prior to taking the shift, an minor earth quake < 0.09g ZPA was felt and verified by the USGS Earthquake Information Center.

All actions for the AOP 2562, "Earth Quake" have been performed. A CTMT entry is being discussed by management. The decision has not been made.

Unit 3 declared an UE/D1. The event is now terminated.

SP-2654B "Forcing Sprays" is scheduled for the beginning of shift.

No equipment out of service.

3. Scenario Summary:

Shortly after taking the shift, the crew will experience the following:

- Force sprays per chemistry's recommendation to equalize boron in the pressurizer.
- Loss of "C" SW Pp. requiring the "B" SW Pp. be started on Z2.
- Failure of 6A Heater High Level Dump valve requiring the valve placed in manual and controlled from the Foxboro screen.
- The Pzr Safety "RC- 200" will develop a leak. This will puts the crew into TSAS 3.4.6.2.d "RCS Leakage". The US may have engineering evaluate the operability of the Safety to determine if TSAS 3.4.2 "Safeties Valves", needs to be entered.

- The crew commences a Rapid Downpower per "AOP 2575" and AOP 2568 "RCS Leakage".
- During the Rapid Downpower, the SAFETY degrades forcing the crew to trip.
- EOP 2525 will be followed by EOP 2532 "LOCA".
- The crew will start the cooldown in EOP 2532.
- While in EOP 2532, the "A" CAR Fan will experience high vibrations requiring it to be tripped.
- During the cooldown in EOP 2532, a SGTR occurs in #1 S/G, forcing the crew into EOP 2540.
- The crew will select success path "CI-1" and transition to EOP 2540E.

The scenario can be terminated when the "A" CAR is secured and the crew has successfully isolated the #1 S/G.

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

None

5. Duration: 2.0 hours

All Control Room Conduct, Operations and Communications shall be in accordance with Master Manual 14 (MP-14). Review the Simulator Operating Limits (design limits of plant) and Simulator Modeling Limitations and Anomalous Response List prior to performing this training scenario. The instructor should be aware if any of these limitations may be exceeded.

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Utilizing an open room, brief the crew on the conduct of the evaluation and the areas in which they will be evaluated.	INST		
		For Turnover Brief: Read "Exercise Brief" on pg. 36 to the examinees. 100% power, EOL, Equilibrium Xenon 35 ppm boron / Blend ratio – 165 PMW/1 BA SG Blowdown - ~25 gpm each 24E aligned to bus 24D Provide and review T/O sheet SP-2654B "Forcing Sprays" is scheduled for beginning of shift. Work Control is available to perform tasks outside the control room. Read "Dynamic Simulator Examination Briefing Sheet" from NTP 144	INST		
$T_{Initial}$	IC-92 or equivalent	Simulator Setup and Initial Conditions: EOC Eq Xe, LL = 6.85, SGBD = 25/25, EB Purge	INST		

		- Hang the Z2 Protected Sign
		- Shift the Xties for RBCCW, SW and HPSI
		  - Close SI-411 & 655, Open SI 412 & 653 (C-01)
		  - Close RB 211C, Open RB 211D (C-06)
			INST		

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
	EDR14 (RO) EDR15 (RI) SWR22 (22F) CVR11 (22F) RC-27	- Close SW 97A, Open SW 97B (C-06) - BKR 24E from 24C (A305) - BKR 24E from 24D (A408) - 'B' SW Pp. Strainer power supply . - 'B' SW Pp. Charging Pp. kirk key supply - "RC 200 AVMS" failure. - On the Foxboro display, insure you can bypass the 6A Feedwater Heater level detector L5043A. - Ensure "RC200 AVMS" does not alarm or cause the annunciator on C-02 or indicate on RC05E - Ensure BKR A408 "24E to 24D" is closed. - Reset the RCS Leak Rate.			
T1		If the crew is delaying forcing sprays, call as Jim Kunze and prompt the crew to start.	US PPO PPO	US directs the PPO to commence forcing sprays. - Crew may have a short briefing - SP 2654B is approved for implementation. - Backup Heaters are placed to 'CLOSE' - PIC-100Y setpoint is lowered - 50% output - HIC-110E/F controller start to rise. - Pzr Press adjusted to ~ 2250 psia	SP-2654B
			PPO	Annunciator 'PZR PRESS DEVIATION' - Informs the US this is an expected	ARP 2590B (C06/D37)

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				alarm for Forcing Sprays. - The ARP does not have to opened or implemented.	
		Trip of 'C' SW Pump			**AE-1** **TM-1**
T2	SW-01C	After crew completes Forcing Sprays, trip the "C" SW Pp.			
		The SPO has several options to mitigate this event. He may: - Start the "B" SW Pp. and align it to the "B" SW HDR, Per GDL-200, "Skill of Trade." - Uses the ARP to start the "B" SW Pp . - Wait for the US to direct his actions per AOP-2565 "Loss of SW".			
		While one attempt to restart the 'C' SW Pp. is allowed by GDL 600, the US should not direct a restart for the following reasons: - Annunciator (C-06,BA4) indicates a faulted	SPO	Reports the "C" SW Pp tripped and Annunciator, "SW PUMP 'C' OVERLOAD/TRIP (C-06, BA4) - With US direction, reset the "C" SW Pp and attempt one restart. or - With US permission, starts the "B" SW Pp and aligns it to the "B" SW HDR.	GDL-600 GDL-200 ARP

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		pump motor. - The "B" SW Pp. is available to replace the "C" SW Pp.			C06/BA4 AOP-2565
		The US may first enter AOP-2565 or the ARP, the sequence is not critical. It is important that both procedures are eventually checked for complete implementation.			
		Response to Annunciator C-06 BA-4, "SW PUMP C OVERLOAD/TRIP".			ARP 2590E
			US	Enters the ARP, or directs the SPO to enter the ARP.	ARP 2590E
			SPO	Checks the following to determine if alarm is valid (C-06) - Pump red light is not lit and amber light is lit, with 0 amps. - Low flow on components served by header. - If alarm is valid, Go To AOP 2565, "Loss of SW" Refer to OP 2326A, "SW System" and perform actions to place "B" SW pump in service on Fac. 2.	ARP 2590E
		Entry into AOP 2565 "Loss of SW"			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		US should not direct an attempt to restart the 'C' SW Pp	US	Determines that Annunciator (C-06/BA4) "SW PUMP C OVERLOAD/TRIP" is lit. - If lit, do not restart the "C" SW Pp.	AOP 2565
			US	Directs the SPO to start the 'B' SW Pp.	AOP 2565
		US enters Section 6.0 of AOP 2565.			
			US SPO	Directs the SPO from Section 6 of AOP 2565. - Place the "C" SW Pp. in "PTL" - Ensure SW-97A, "Discharge Xtie" Closed - Ensure SW-97B "Discharge Xtie" Open. - Start the 'B' SW Pp. - Check Ann. (C06/A19A) "SW Pp. 'B' SIAS/LNP Start Manually Blocked" lit.	AOP 2565
			US/SPO	Direct a PEO to place the "SIAS/LNP Actuation Signal HS 6484A" in NORMAL.	
			US	Directs a PEO to Stop Sodium Hypochlorite to the "C" SW Pp.	OP 2328A
			SPO	Monitors - 'B' SW Header Flow - Pump Pressure - Motor Amps	AOP 2565

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Sends, or directs Work Control to send a PEO - to check the 'C' SW Pp. breaker A407 - to check the 'C' SW Pp. - Directs Work Control to contact maintenance to assist in determining the condition of the 'C' SW Pp.	AOP 2565
		As PEO, wait 5 min. then report - Sodium Hypochlorite is secured to the "C" SW Pp. - The 'C' SW Pp looks normal. - 'B' SW Pp. Packing Leakoff, Lube Water Flow, Noise and Vibration and Discharge Press are satisfactory. - Strainer D/P cell is vented and satisfactory.			
		As Electrical Maintenance and PEO wait 10 min. then report: - Breaker A407 is tripped and has one dropped flag. - Looks like the breaker opened on Over Current. *If asked, report it will take hours to determine if and where the fault is.*			
			US	Logs into LCO 3.7.4.1 "SW SYSTEM" and	AOP 2565

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				TRM 7.1.21 "APPEN R SW SYSTEM"	
		"B" SW Pp won't auto start on a SIAS until HS-6484A "SIAS /LNP Start Signal" is placed in the NORMAL. - LCO 3.7.4.1 applies until HS 6484 is placed in the normal position. This guidance is not in AOP 2565, but is in the following: - OP-2326A "SW System". - ARP-2590E (C06/7, AA19)			
			US	Directs a PEO to place the "SIAS /LNP Start Signal HS 6484A" to NORMAL	OP 2326A step 4.5.20 ARP-2590E C06, AA19
	SWR 31 (NORM)	Wait 5 min. and insert the remote. "SIAS/LNP Actuation Signal HS 6484A" in NORMAL. Call the CR and report switch in NORMAL.	INST		
		Section 7 evaluates key plant parameters to ensure there are no other problems. - The US may direct the PPO or SPO to complete Section 7 and advise for any parameters not in the normal range.	Inst.		
			US	Logs out of LCO 3.7.4.1 and TRM 7.1.21	

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Heater 6A Level Hi Annunciator			
T3	FW 38B @0% 180 sec ramp	Fail FW Heater 6A level transmitter (LT5043A) fails downscale. - Actual level in the heater rises to ~ 20 inches due to the "averaged" level lowering.	Inst.		**AE-2** **TM-2**
		If necessary, modify the FW 38B to ensure level does not reach 34 inches. Use the PPC to monitor the actual heater level. - Heater 6A level stabilized at ~ 20" during the validation with no adjustment to the malfunction.	Inst		
		US can direct the SPO to implement the ARP or direct the steps himself.	US	Responds to alarm C05, BA-20, "HEATER 6A LEVEL HI"	ARP 2590D, BA-20, "HEATER 6A LEVEL HI"
			SPO	Displays "Heaters 4A/5A/6A" screen on the Foxboro display.	ARP 2590D
			US	Directs a PEO to check - local level gauge. - Valve lineup - Controller malfunction and air connection.	ARP 2590D

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The actual heater level should stabilize at ~ 20 ", no reason to trip the plant.	US	If Foxboro indications reaches 34 inches or local level gage exceeds 34 inches - Trip the Rx, Trip turbine, - Close both MSIVs, - Stop all condensate pumps and perform EOP2525.	ARP 2590D
		As PEO wait 3 minutes and report: - All air lines are intact. - Heater 6A siteglass reads. ~ 20 inches - Display the Feedwater heater level on the PPC, and report the level of the good transmitter.	Inst		
			SPO	If one transmitter does not agree with the other transmitter and sight glass, Bypass the faulty transmitter on the Foxboro display.	ARP 2590D

		The crew may opt to place the High and Normal Level Dump valves into manual before bypassing LT 5043A to preclude another Feedwater heater transient caused by suddenly bypassing the faulted transmitter.
		- This is supported by GDL 600 step 2.2 "Manual Operation of Controllers".
		If the crew follows the ARP and does not go to manual first, the resultant transient will not trip the
			SPO	SPO selects and bypasses "LT 5043A".
				- If the SPO does not place the valves in manual.
				  - 6A Heater and 5A Heater Hi and Low level annunciators will alarm on C-05.
				  - The heater levels will stabilize within minutes.	

SECTION 4

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Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		plant.			
			US	Submit a TR/CR to I&C to repair "LT-5043A".	ARP 2590D

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		RC-200 "Pzr Safety" Leakage			
T4	RC05A @ 1.0% (300 sec)	RC-200 leakage Pzr Press will lower to ~ 2240 psia and stabilize.			**AE-3** **TM-3**
		Note: The "Acoustic Vlv Monitor" (AVMS) for RC-200 is inop, as indicated on the turnover sheet. - **Annunciator C02/3 A-11, "AVMS Alarm" will not energize.** - **The US may refer to this ARP knowing it would be required if the AVMS were operating properly.**			
	RC05A (Delete)	Delete RC05A when both annunciators C-03 A42 & C42 alarm "Pzr Safety Valve RC200 Dis Temp Hi" and "Pzr Relief Valve Dis Temp Hi".			
		Insert RC05A periodically to simulate an intermittently lifting relief valve. - The goal is to get the crew to start a down power without getting any Quench Tank Annunciators (C03, A36/B36/C36). These annunciators direct the operators to trip the plant which would bypass ½ of this guide and eliminate actions that the operators must be evaluated on.			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		If the crew calls the OMOC or Kunze, direct the crew to start a plant shutdown at a rapid controlled rate.			
			PPO	Report Annunciator "Pzr Safety Valve RC200 Dis Temp Hi" is alarming.	ARP 2590B C02/3, A42 Disch Temp Hi.
			PPO	Monitor for - Quench Tank Pressure, Temp, and Level. - Safety Tail Pipe Temp. TI-107. - Report Tail pipe temp rising.	ARP 2590B
		After 15 minutes, the PPC leak rate should be ~ 11gpm.	US	Monitor RCS Leak Rate - Leak rate should be rising.	ARP 2590B
		The US many not enter the TS 3.4.2. It is not clear that the RC-200 is inop. It may still lift at 2500#. - US may call for an engineering evaluation.	US	Refer to TS 3.4.2 "Safety Valves"	ARP 2590B
		The PPO should monitor the AVMS and determine they do not indicate RC-402, 404 (PORVs) or RC-201 (Safety) are leaking. - By the process of elimination, the only relief	PPO	If leaking PORV is possible, cycle each Block Valve and monitor AVMS and Tail Pipe temperatures.	ARP 2590B

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		that could cause rising Quench Tank parameters and Tail Pipe temperatures is RC-200.		- No need to cycle Block Valves.	
		Response to Annunciators C-03, A36 "QT Hi/Lo" and C-03, B36 "QT Press Hi"			
		NOTE 1: The crew may not respond to the above annunciators because they are in AOP -2568 "RCS Leak".			
		NOTE 2: If the crew implements the above ARPs, there is guidance to trip the plant. **If the crew orders the reactor tripped, insert T-5 (RC05A @ 20%, 300 sec)**			
			US/ CREW	If high pressure is due to relief or safety valve blowdown and cannot be isolated, Go to EOP 2525 "Standard Post Trip Actions" and perform required actions. - Trip the plant and carry out EOP 2525.	ARP 2590B-206 step 5 C-03, B36
		OP 2301A "PDT and QT Operation			
		NOTE 1: The crew may use OP 2301A to reduce QT Level, Pressure and Temperature. This is not required if they are in AOP-2568 "RCS Leak".			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		NOTE 2: If the crew uses OP 2301A, they may use one or both of the following sections: 4.1 Recirc and Cooling the QT and PDT 4.5 Emptying QT			
		The US will direct the PPO to implement OP 2301A.	PPO	- Verify closed LRR-64.1/54.1, "PDT/QT Recirc-Cool" vlvs - Open LRR-57.1/62.1 "QT Recirc/Clg" vlvs - Verify open RB-240, "QT/PDT Hx RBCCW Out" vlvs. -	OP-2301A step 4.1

			PPO	- Open RC-401 "QT Drain"
				- If PDT pressure is higher than QT pressure:
				  - Verify closed, GR-11.1 and GR-11.2 "PDT Disch Isolations".
				  - Open LRR-47.1 "PDT Vent"
				  - OPEN RC-400 "QT Vent"
					OP-2301A step 4.5

				-	
		Enter AOP-2568 "RCS Leak"			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The US may hand off Section 3.0 of AOP-2568 to the PPO or SPO, requiring the SPO to report any parameters out to the normal range.	US	Directs entry into AOP 2568 and performs Plant Assessment.	AOP 2568, Sec. 3.0
		The US or PPO/SPO should find all the parameters necessary to complete Section 3.0 within the required range with the possible exception of: - Pzr Level - Pzr Pressure			
		The PPO/SPO may need to report low Pzr Level and ensure max charging and min. letdown.	US/PPO	If Pzr Lvl is not 35 to 70% - Manually operate Charging and Letdown.	AOP 2568 Step. 3.2
		The PPO/SPO may need to report low Pzr Pressure - BU Heaters should already be ON.	US/PPO	If Pzr Press not 2225 to 2300# - Place all BU Heaters to "ON". - Ensure Spray Vlvs closed.	AOP 2568 Step. 3.3
		If the US handed off Section 3.0 to the SPO, the US will implement Section 4.0.			AOP 2568, Sect. 4.0

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US/PPO	If RCS leakage exceeds available charging capability, TRIP the Rx. and Go To EOP 2525. - The leak rate is not > charging capacity. - No need to trip at this time.	AOP 2568, Step 4.1
		The US may have previously done an RCS Leak Rate. If leakage is >25 gpm. - SM must classify "Unusual Event / D1" per "BU2" Identified Leakage > 25 gpm.	US / Crew SM	Initiates Leak Rate Determination. US should determine leak rate > 10 gpm identified leakage. Classify per FAP06 - UE/D1 per BU2 if leakage >25 gpm. Log into LCO 3.4.6.2 Refer to AOP 2575 and start a Rapid Downpower	AOP 2568, Step 4.4 FAP06
		The US may personally implement, or handoff, Section 5.0.	US/SPO	Implement Section 5 to ensure no other leaks.	AOP 2568 Section 5
		If requested, report no activity in RBCCW and no leakage in Aux. Bldg. After a minimum of 20 minutes for a visual inspection. (Time may be adjusted if multiple personnel are assigned to the inspection)		Crew attempts to identify leak location by performing applicable steps of AOP 2568. May direct chemistry sample RBCCW System or have PEO observe CVCS piping in Aux. Bldg.	AOP 2568
		Enter AOP 2575 "Rapid Downpower"			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				Crew determines that identified RCS leak rate exceeds T/S 3.4.6.2 limit and begins to initiate a plant shutdown per AOP 2575.	AOP 2568, AOP 2575
			SM US SM SM	Make the following notifications - CONVEX and ISO - Health Physica - OMOC - Unit 3	AOP 2575 Step 3.4-7
			US	IF parameters associated with automatic reactor or turbine trips are challenged, manually TRIP reactor and Go To EOP 2525. "Standard Post Trip Actions." - Trip criteria should not be challenged.	AOP 2575 Step 3.8
		Due to the low pressure condition, the B/U Heaters should already be on and the spray vlvs shut.	US/PPO	Initiate forcing sprays. - This step have already been completed..	AOP 2575 Step 3.9

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Due to loss of inventory, step 3.11, "BORATING FROM RWST" is not the optimal method to reduce power. - Loss of inventory causes extra Chg. Pps. to turn on which accelerates the downpower rate. - This will exacerbate the loss of pressure.			
			US/PPO	Insert Group 7 five to ten steps.	AOP 2575 Step 3.12
			PPO	START additional charging pumps as required.	AOP 2575 Step 3.13
		- A controlled downpower of >20%/hr. is reasonable, unless RCS pressure is challenged. - If RCS pressure is challenged, <20%/hr. should be directed.	PPO	Based on plant conditions, SELECT the appropriate boron addition rate from the tables.	AOP 2575 Step 3.14

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Borates to charging pump suction: ADJUST setpoint of "BORIC ACID FLOW" controller, "FC-210Y," to flowrate determined in step 3.14. - OPEN "RWST TO CHG SUCT, CH-504." - PLACE "MAKEUP MODE SEL" switch in "MANUAL." - START a boric acid pump, and CHECK boric acid pump discharge pressure greater than 98 psig. - OPEN "VCT MAKEUP BYPASS, CH-196.	AOP 2575 Step 3.15
		The PPO must determine the neutral blend ratio and add the gpm. of Boric Acid that corresponds to the % power reduction, as specified on Table-2. - The neutral blend should be listed on the turnover sheet.	US/PPO	IF required, "VCT Lvl" dropping, Refer To Attachment 3 "Heavy Blend to Maintain VCT Level," to make-up to the VCT.	AOP 2575 Step 3.12
		When the crew has established a controlled downpower, to approximately 95%, or if they trip, increase the Safety leak forcing them to trip.	INST		
T5	RC05A @ 20% (300 sec)	RC 200 Leaking Pzr Safety	INST		**MA-1** **TM-4**
		Rx Trip EOP-2525			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			Crew	Identify rapidly rising RCS leakage. - May initiate a manual trip if quick enough. Respond to trip IAW EOP 2525.	
		Note: US will pose questions regarding these aspects of each safety function. PPO and SPO responses critical to proper diagnosis and key actions are **Bold** in the following sections.	US	Query PPO and SPO on the status of Safety Functions as delineated in EOP 2525: Reactivity Control (PPO) - Reactor Maintenance of Vital Auxiliaries (SPO) - Turbine - Electrical buses - SW & RBCCW RCS Inventory Control (PPO) - Pzr level & Subcooled margin (SCM), value & trend **If Pzr Lvl is not 20 to 80%, the PPO should** - **manually operate charging and letdown to compensate for Pzr Lvl.**	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		US/PPO should initiate SIAS, CIAS & EBFAS at approximately 1800 psia. **CT-1 Trip 2 RCPs (LOCA-13)** **CT-2 Secure all RCP within 5 min. of loss of NPSH. (2260 3.1.1)**		RCS Pressure Control (PPO) **If Pzr. Press < 1714 psia** **- ensure SIAS, CIAS, EBFAS & CRAC** **- secure one RCP per loop** **- secure all RCPs if < NPSH** **- ensure PORVs closed, if open, close the Block Vlv.** Core Heat Removal (PPO) - RCP status - Loop delta-T - Th SCM RCS Heat Removal (SPO) - SG pressures 880-920# - RCS Tc 530-535 °F - SG levels, value & trend - RCS SCM Containment (CTMT) Isolation (PPO) - Radmonitors inside CTMT **in alarm and rising. (R7891 Refuel Floor)** - outside CTMT, steam plant, not in alarm or rising. - CTMT pressure **>1# and rising.** **If CTMT Press ≥ 4.42 psig.**	OP-2260 **CT-1** **CT-2**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				- **Initiate SIAS, CIAS, EBFS, CRAC & MSI** CTMT Temperature & Pressure Control (PPO) - CTMT temperature **> 120° F** - CTMT pressure **>1# and rising.** - **Ensure at least 2 CARs with RBCCW** **If CTMT Press > 9.48 psig,** - **Ensure CSAS actuated.** - **All CS Pps. > 1300 gpm.** CTMT Combustible Gas Control (PPO) - CTMT temperature **> 120° F** - CTMT pressure >1# and rising. - **Place CTMT Aux Fans in Slow** - **Start all PIR Fans**	
			US	Query PPO & SPO regarding the status of EOP 2525 subsequent actions	EOP 2525
			SPO	Report subsequent actions complete and verified when accomplished.	EOP 2525
			PPO	Report subsequent actions complete and	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				verified when accomplished.	
		Verify that the STA has independently diagnosed the event	US	Query board operators re: safety function status, perform diagnostic flowchart, and diagnose small break LOCA, transition to EOP 2532.	EOP 2525 **EU-1**
			STA	Evaluate and concur.	
		Enter EOP 2532 "LOCA"			
			US	Directs SFSCs for EOP 2532 be initiated.	
		Classification will be done as an Admin JPM later.	SM	Classifies event as either an Alert, C-1 based on RCB2, 3 or 4.	MP-26-EPI-FAP06
			STA	Verify that the STA has independently classified the event	
		NOTE 1: The **BOOTH INSTRUCTOR** must remove the following IO when the - CAR Fan is stopped - and the reset button "CAR FAN VIB RESET " is pressed.			
		NOTE 2: 1 minute after the US returns the "Annunciator Silence Switch" to NORMAL, insert the following IO.			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T6	IO "C-01 A4" (ON)	IO "**ON**" Annunciator C-01 A4, "CTMT AIR RECIRC FAN 'A' VIBRATION HI"	PPO	Reports annunciator for "CTMT AIR RECIRC FAN 'A' VIBRATION HI" energized.	**EM-1** **TM-5**
	IO "C-01 A4" (Delete)		US/PPO	Implements the ARP for C-01,A4. - Stop "A" CAR fan per OP-2323A. - Monitor CTMT for increasing pressure, temp and moisture. - Submit TR to maintenance.	2590A-013
		When directed by Chemistry to sample SGs, after ~30 min delay report both SGs < MDA.	Inst. / SPO	Direct Chemistry to sample SG(s).	EOP 2532
		NOTE: Give the PPO time to identify the High CAR Vibration before inserting the following malfunction. We don't want to mask the HI VIBRATION annunciator.			
T7	SG02A @ 30% (60 sec.)	#1 S/G Tube Rupture ~ 750 gpm. If the MSIVs are open, the SJAE should show a rise indicating a SGTR in #1 S/G. If MSIVs are closed, the SJAE won't rise but the SGBD RM will rise and the #1 S/G Level will eventually show an unusual rise indicating a SGTR in #1 S/G.			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Verify SIAS, CIAS, EBFAS, and CRAC on C-01X - Check SI Flow adequate - Ensure all available Chg. Pp. operating. - Ensure vital switch gear cooling	EOP 2532 Step 5
		CT-2 Secure all RCP within 5 min. of loss of NPSH. (2260 3.1.1)	PPO	If RCS Press < NPSH - Trip all RCPs - close steam dumps to condenser - spray valves	EOP 2532 Step 6 **CT-2**
			PPO	Isolate the LOCA - Ensure valves are closed for isolating LOCA - Check not RBCCW Radmonitor. - Check RBCCW Surge Tk not rising	EOP 2532 Step 7
			PPO	Check LOCA NOT Outside CTMT - Check Radmonitors outside CTMT on PPC	EOP 2532 Step 8
			US/PPO/ SPO	Place Hydrogen Analyzers in Service - EOP 2541 Appendix 19.	EOP 2532 Step 9 **MA-2** **TM-6**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		When the crew determines they have a SGTR in #1 S/G, move forward in this guide to EOP 2540.	PPO	If CTMT pressure is >4.42 psig or CTMT Radmonitors are in alarm - Ensure SIAS, CIAS, EBFAS, MSI & CRAC. - Start all available CAR Fans with RBCCW Flow.	EOP 2532 Step 10
			PPO	If CTMT Press. > 9.48 psig. - Ensure CS Pps. running - Ensure CS Flow > 1300 gpm.	EOP 2532 Step 11
			SPO	If MSIVs are closed, open AR-17 "Vacuum Breaker"	EOP 2532 Step 12
			SPO	If MSIVs are open - Align Condenser Air Removal to Unit 2 stack	EOP 2532 Step 15
		CT-3 Perform a plant cooldown. (LOCA-11) - The operators will commence a rapid cooldown within the Tech Spec limits.	SPO	Initiate a controlled cooldown - If MSIVs Open, use SD/BP Vlvs - If MSIVs Closed, use ADVs.	EOP 2532 Step 17 **CT-3**
		CT-4 Establish RCS Pressure Control. (LOCA-1) - SIAS flow must be capable of recovering/maintaining RCS pressure. - The crew should establish and maintain the RCS press. vs temp. within the PT Curve.	PPO	Initiate a controlled depressurization of the RCS to SDC conditions. - If no RCPs use Aux Spray - If RCPs running use Main Spray	EOP 2532 Step 18 **CT-4**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Major change in plant conditions (tube rupture) requiring transition to Functional Recovery (2540)		When crew recognizes they have a LOCA with a S/G Tube Rupture. - Implement the Diagnostic Flow Chart (2541 Appendix 1) - Confirms 2 events requiring Functional Recovery (EOP 2540)	OP 2260 Step 1.19.2 **EC-1**
		EOP 2540 "Functional Recovery"	US	Crew transitions to EOP 2540 "Functional Recovery".	**EU-2**
		The SM should classify the event as - Alert/C1 per RCB4	SM	Classify the Event	FAP06 EOP 2540 Step 1
		Note: Classification will be accomplished in JPM-A4SRO.			
			US	- Enter time in Safety Function Tracking Page - Ensure Master Silence in Off	EOP 2540 Step 2
			US/SPO	Sample both S/Gs - Open the Sample Vlvs. MS-191A/B - Direct Chem to sample both S/Gs for activity and boron. - When samples are reported, close MS-191A/B	EOP 2540 Step 4

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Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Hydrogen Analyzers may already be in service.	US/SPO	Place Hydrogen Analyzers in service.	EOP 2540 Step 5
			US	Identify the Success Paths using RATS.	EOP 2540 Step 6

Safety Function	Success Path		Equipment Operating	SFSC MET	Priority
Reactivity Control	RC-1	CEA Insertion	Y	Y	
Maintenance of Vital DC Power	MVA-DC-1	Battery Chargers/Station Batteries	Y	Y	
Maintenance of Vital AC Power	MVA-AC-1	RSST	Y	Y	
RCS Inventory Control	IC-2	Safety Injection	Y	Y	
RCS Pressure Control	PC-2	Saturated	Y	Y	
RCS and Core Heat Removal	HR-2	SI operating	Y	Y	
Containment Isolation	CI-1	Automatic/Manual	N	N	1
Containment Temperature and Pressure Control	CTPC-2	CARs (Emerg)	Y	Y	
Containment Combustible Gas Control	CCGC-1	Hydrogen Recombiners	Y	Y	

			US	Directs the STA to verify the Safety Function are satisfied for the chosen	EOP 2540 Step 8

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
				success paths.	
		The US should transition to EOP 2540E.	US	Perform operator actions for chosen success paths based on priority assigned.	EOP 2540 Step 9 **EU-3** **EC-2**
		Transition to EOP 2540E	US	Transitions to EOP 2540E "Containment Isolation"	EOP 2540 Step 9
			US/PPO	If CTMT Press. > 4.42 psig or CTMT Radmonitors rising or in alarm. - US directs the PPO to ensure SIAS, CIAS, EBFAS AND MSI on C-01 and C-01X.	EOP 2540E Step 1
		The crew will identify the #1 S/G as faulted by one or all of the following. - Feed Flow/Steam Flow mismatch - SGBD radmonitor - SJAE radmonitors	US/ CREW	If a SGTR is indicated, identify and isolate the most affected S/G. - US references EOP 2541 Appendix 12	EOP 2540E Step 2
		Maximum controllable rate is characterized by a rate that does not further degrade the conditions of the plant. Efforts should be made to preserve NPSH, Subcooling and Pzr/Head Levels, while trying to limit S/G level by isolating the S/G as soon as possible.	US/SPO	Commence an RCS cooldown at maximum controllable rate to <515 Th in both S/Gs. - If the condenser is available SD/BP Vlvs will be used. - IF the condenser is not available, both ADVs will be used.	EOP 2541 Append 12 Step 1

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The US should give the PPO a pressure range the does not violate any of the listed limits.	US/PPO	Depressurize the RCS using main or aux. spray while maintaining the following limits: - NPSH if RCPs are operating - Within 50 psig of the #1 S/G. - Within the P/T Curve	EOP 2541 Append 12 Step 2
		If HPSI throttle/stop criteria is met, the PPO should limit injection flow to stabilize Pzr. Level and promote depressurization.	US/PPO	If HPSI throttle/stop criteria are met: - Control charging and letdown - Throttle or stop HPSI flow.	EOP 2541 Append 12 Step 2
		Isolate the faulted S/G within 60 minutes of evidence of a tube rupture. (OP 2260 3.3.1) **The scenario can be terminated when the crew has successfully isolated the #1 S/G.**			**CT-5**

Section 4
SUMMARY

Title: Simulator Evaluation
ID Number: ES04LI1 Revision: 0

CRITICAL TASKS

CT-1: Trip 2 RCPs (LOCA-13)

CT-2: Secure all RCP within 5 min. of loss of NPSH.

CT-3: Perform a plant cooldown

CT-4: Establish RCS Pressure Control.

CT-5: Isolate the most effected S/G.

Section 5
SCENARIO INITIAL CONDITIONS

Title: Simulator Evaluation
ID Number: ES04LI1 Revision: 0

Initial Conditions

- 100% power, NOP/NOT, EOL, Equilibrium Xenon
- 35 ppm boron / Blend ratio – 165 PMW / 1 BA
- Z2 is protected
- SG Blowdown - ~25 gpm each
- 24E aligned to bus 24D

Out of Service Equipment

None

Crew Instructions

- Four hours prior to taking the shift, a minor earth quake < 0.09g ZPA was felt and verified by the USGS Earthquake Information Center.
- All actions for the AOP 2562, "Earth Quake" have been performed.
- A CTMT entry is being discussed by management, no decision has been made.
- Unit 3 declared an UE/D1. The event is now terminated.
- SP-2654B "Forcing Sprays" is scheduled for the beginning of shift.
- No equipment out of service.

ATTACHMENT
VALIDATION CHECKLIST

Title: Simulator Evaluation
ID Number: ES04LI1 Revision: 0

Verified By:

Remote functions:

All remote functions contained in the guide are certified.

Malfunctions:

All malfunctions contained in the guide are certified

Initial Conditions:

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

Simulator Operating Limits:

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

Test Run:

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

Actions Completed

01/28/05
Date

SHIFT TURNOVER REPORT

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: 915 MWe	*RCS T-AVE:*	572 degrees F
RCS	Identified: 0.12gpm	*PROTECTED:*	Train/Facility
LEAKAGE:	Unidentified: 0.33gpm		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*

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
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	1	See AIL	See Active Impairment List.
Infinite action: Attachment 1 of OP 2301A	TSAS 3.3.3.8	a/3	RC-200	Failed SP 2410A

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

EVOLUTIONS IN PROGRESS & NOTES	*Reference /Date*

Unit 2 Chemistry

ON-LINE STATUS REPORT

REACTOR COOLANT			Time 06:25
Parameter	**Reading**	**Parameter**	**Reading**
Power	100 %	Flouride	0.81 ppb
Tave	572 deg F	Chloride	1.75 ppb
Boron	35 ppm	Oxygen	<5 ppb

Blend Ratio:	165 : 1

Attachment

Guide No.: ES04LI1

SCENARIO ATTRIBUTES CHECKLIST

Scenario Title:	LOIT Simulator Evaluation	Number:	ES04LI1
Technical Reviewer:	D. A. Pantalone	Date:	12/03/2004

QUALITATIVE ATTRIBUTES

__Y__ 1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

__Y__ 2. The scenario consists mostly of related events.

__Y__ 3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunction(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the expected Emergency Plan classification
- the event termination point (if applicable)

__Y__ 4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

__Y__ 5. The events are valid with regard to physics and thermodynamics.

__Y__ 6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

__N/A__ 7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

__Y__ 8. The simulator modeling is not altered.

__Y__ 9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the scenario.

Attachment

Guide No.: ES04LI1

SCENARIO ATTRIBUTES CHECKLIST

Note: Following criteria list scenario traits that are numerical (quantitative) in nature. Credited malfunctions tasks and procedures should be bolded in the evaluation guide.

1. Total Malfunctions (TM) - Include EMs – (5 – 8) ___6___
   1. Trip of 'C' SW Pump
   2. Fail FW Heater 6A level transmitter downscale.
   3. RC-200 "Pzr Safety" Leakage
   4. RC 200 "Pzr Safety" Leakage > Charging
   5. CTMT AIR RECIRC FAN 'A' VIBRATION HI
   6. #1 S/G Tube Rupture ~ 750 gpm.

2. Malfs after EOP entry (EMs) – (1 – 2) ___1___
   1. CTMT AIR RECIRC FAN 'A' VIBRATION HI

3. Abnormal Events (AE) – (2 – 4) ___3___
   1. Trip of 'C' SW Pump
   2. Fail FW Heater 6A level transmitter downscale.
   3. RC-200 "Pzr Safety" Leakage

4. Major Transients (MA) – (1 – 2) ___2___
   1. RC 200 "Pzr Safety" Leakage > Charging
   2. #1 S/G Tube Rupture ~ 750 gpm.

5. EOPs entered requiring substantive actions (EU) - (1 – 2) ___3___
   1. EOP 2532 "Loss of Coolant Accident"
   2. EOP 2540 "Functional Recovery"
   3. EOP 2540E "Functional Recovery of Containment Isolation.

6. EOP Contingencies requiring substantive actions (EC) – (0-2) ___2___
   1. Major change in plant conditions (tube rupture) requiring transition to Functional Recovery (EOP 2540)
   2. Evaluation of Success Path/Safety Functions requiring transition to Functional Recovery of Containment Integrity (EOP 2540E)

Attachment

Guide No.: ES04LI1

SCENARIO ATTRIBUTES CHECKLIST

7. Critical Tasks (CT)- (2 – 3) ___5___

   1. Trip 2 RCPs (LOCA-13)
   2. Secure all RCP within 5 min. of loss of NPSH.
   3. Perform a plant cooldown
   4. Establish RCS Pressure Control.
   5. Isolate the most affected S/G.

8. Approximate Scenario Run Time: 60 to 90 min. Total __120__

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

Facility: MP2 Scenario No.: ES04LI2 Op-Test No.: 2

Examiners: _____ Operators: _____

Initial Conditions: 1% Power, EOL, RCS Boron is 466 ppm, Equilibrium Xenon, Bus 24E is aligned to Bus 24C. SG blowdown is 40 gpm on each SG. Group 7 CEAs are at 120 steps, Facility 2 is protected. No equipment is out of service.

BOL

Turnover:
1% Power. Facility 2 is protected. RCS Boron is 466 ppm, Blend ratio is 11.8:1. SGBD @ 40 gpm per SG, 24E aligned to 24C. A snow storm is in progress with sustained winds of 20-25 mph. Need to raise power to 4%, using PMW, to commence warming the main turbine. Reactor Engineering would like to leave Group 7 CEAs at 120 steps up to 5% power to allow for better ASI control when raising power above 5%. OP 2203, Plant Startup is complete up through step 4.5.10.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N (BOP) R (ATC)	Raise power to 4%.
2	CV28A	I (ATC)	PMW Addition Valve, CH-210X, fails open.
3	CW02D	C (BOP)	"D" Circulating Water Screen D/P increases causing loss of "D" Circulating Water Pump.
~~4~~	~~RM01O~~	~~I (ATC)~~	~~Control Room Ventilation Radiation Monitor, RM-9799A, fails high.~~
5	Alarm C-8 on C-05	C (BOP)	#2 MSIV Low Air Pressure alarm on C-05. ATWAS - AUTO / MANUAL
6	MS06B MS02B	C (BOP) M (ALL)	#2 MSIV closes resulting in a plant trip and a steam line break upstream of #2 MSIV.
7	ED16B	C (ALL)	Loss of Vital Instrument Bus, VA 20.

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

PZR PRESS CONTROLLER FAILS HI

Millstone Station
Unit 2 Operator Training

SIMULATOR EXERCISE GUIDE

I. Title: LOIT Simulator Evaluation #2

ID Number: ES04LI2 Revision: 0

II. Initiated: R. J. Ashey — Developer — 1/12/05 — Date

III. Reviewed: Daniel A. Pantalone — Reviewer — 01/19/05 — Date

IV. Approved: Operator Training Supervisor — 1/31/05 — Date

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER:

EXERCISE OVERVIEW

1. Purpose:
   a. Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
   b. Evaluate licensees in the following areas, as applicable:
      1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
      2) Ability of individuals to perform critical tasks.
      3) Ability of the crew to:
         a) Understand/interpret alarms/annunciators
         b) Diagnose events/conditions based on signals/readings
         c) Understand plant/systems response
         d) Comply with/use procedures and Technical Specifications
         e) Properly communicate information/proper crew interactions
         f) Perform control board operations
      4) Ability of each individual 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) Properly perform control board operations
         g) Demonstrate a responsible attitude
         h) Properly communicate information and interact with the rest of the crew

2. Exercise Brief:

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

The simulator will be initialized to IC-91 or equivalent, critical at 1% power, EOL, Equilibrium Xe, 466 ppm boron. There are no surveillances in progress and no equipment out of service. A snow storm has been predicted for the area with accumulation of 3-5 inches. Winds are presently from the West-Southwest at 20-25 mph. Snow has already started to fall. The crew will be instructed to raise power to 4% and stabilize in preparation for Turbine warm up in accordance with OP 2203, Plant Startup.

During the power ascension, the dilution valve will fail to close resulting in adding more PMW than desired. The crew will stop the power ascension and take action to stop the dilution. After the crew stabilizes power, the "D" Circulating Water Screen D/P will rise to the point that the "D" Circulating Water Pump trips. The crew will enter AOP 2517, Circulating Water Malfunctions, and perform steps associated with the loss of a Circulating Water Pump. While the crew is performing steps of AOP 2517, the Control Room Air Conditioning System will automatically transfer to the Recirc mode due a failure of Control Room Radiation Monitor, RM-9799A. The crew will perform the actions of ARP 2590A-159. The US will enter TRM Action Statement 3.3.3.1.1b. When the crew contacts the I&C Department concerning the Rad Monitor failure, annunciator C-8 on C-05, Main Steam Isol Valve Air Press Lo, will alarm. The crew will respond to the annunciator by referencing the appropriate Annunciator Response Procedure. Shortly after the annunciator alarms, the #2 MSIV will close. This will result in an Excess Steam Demand in the Enclosure Building. The crew should manually trip the reactor. During the performance of EOP 2536, Excess Steam Demand, VA-20 will suddenly deenergize. The loss of VA-20 will result in the opening of the #2 Aux Feed Regulating Valve. The crew must take action to stop feed to #2 S/G.

The scenario may be terminated when the S/G has been isolated and actions have been taken to prevent exceeding PTS limits.

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

None

4. Duration: 1.5 hours

All Control Room Conduct, Operations and Communications shall be in accordance with Master Manual 14 (MP-14). Review the Simulator Operating Limits (design limits of plant) and Simulator Modeling Limitations and Anomalous Response List prior to performing this training scenario. The instructor should be aware if any of these limitations may be exceeded.

ID Number ES04LI2 Revision: 0

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
$T_{Initial}$	IC-91 or equivalent	Simulator Setup and Initial Conditions: 1% Power, EOL, Equilibrium Xenon, RCS Boron 466 ppm.			
	CHR06 (22.8) CHR07 (223.4) CHR08 (23.6) CHR09 (224.1) CHR10 (23.1) CHR11 (222.9)	Insert a remote function for wind direction from the West-Southwest at 23 mph.			
		Set blowdown to 40 gpm on both S/Gs.			
		Provide the crew with the following turnover info: ◊ 1% power, EOL, Equilibrium Xenon ◊ Gp 7 CEAs @ 120 steps ◊ 466 ppm boron ◊ Blend ratio – 11.8:1 ◊ SG Blowdown - 40 gpm each ◊ Condensate on short recycle ◊ "A" Main Feed Pump in operation ◊ Vacuum being maintained with the Hoggers ◊ 24E aligned to bus 24C ◊ Forcing Pressurizer Sprays ◊ 2 Charging Pumps running ◊ Snow storm in progress (20-25 mph winds) ◊ No surveillances due.			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Provide the following documents: • OP 2203, Plant Startup, signed off up through step 4.5.10. • Attachments 1 and 2 of OP 2203 on the SPO and PPO desks. • Reactivity Plan Direct the crew to raise power to approximately 4% using dilution to begin Main Turbine warm up. Reactor Engineering would prefer to use dilution to raise power. Dilution should be done in 100 gallon increments. Rods will be used above 5% power for ASI control.			
T_0	CV28A (20)	Shortly after the crew has assumed the shift and they have started to dilute to raise power to 4%, insert a malfunction to prevent the Dilution Valve, CH-210X, from closing.	PPO	When the PMW counter reaches '0', observe continuous flow of PMW to the RCS. Inform the US of the condition.	MP-14 **TM 1** **AE 1**
		When requested as I&C, inform the crew that you will obtain the appropriate paperwork and trouble shoot the problem.	US	Direct the PPO to place the Makeup Selector Switch in a position to prevent dilution or close VCT Makeup Bypass, CH-196. Inform the I&C Dept.	ARP 2590C
			PPO	Place the Makeup Mode Selector Switch to the Manual or Borate position or close VCT Makeup Bypass, CH-196 and observe '0' PMW flow to the RCS. Inform the US that PMW flow is secured.	ARP 2590C **CT 1**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		NOTE: The US may provide a specific value, as long the plant does NOT enter MODE 1 (≥5% power). **CT 1 Establish reactivity control. Stop the dilution to prevent exceeding 5% power (unplanned entry into MODE 1). (If required, boration or CEDM insertion may be used.)**	US	Direct the PPO to monitor plant parameters and ensure reactor power does NOT exceed 5%. If power approaches 5%, direct the PPO to either insert group 7 CEAs or borate to maintain power <5%.	MP-14
T_1	CW02D (100%) Ramp=360 sec.	When the plant has stabilized, insert a malfunction to cause the "D" Circ Water Screen D/P to increase.	SPO	Observe rise in "D" Circ Water Screen D/P or acknowledge Annunciator D-10 on C-05, Traveling Screen ΔP.	MP-14 **TM 2** **AE 2**
		After a 5-10 minute delay, report as the PEO that all requested actions are complete. Also report that the "D" traveling screen is NOT rotating. It appears that a pin has sheared.	US/SM	Enter AOP 2517, Circulating Water Malfunctions, and perform Initial Actions. Direct a PEO to: • Start both screen wash pumps. • Place all traveling screens in fast. • Check screen wash pump strainer D/Ps less than 4 psid. • Check all screens rotating • Monitor traveling screen D/P • Place screen wash trash basket in service • Notify Environmental Services-Nuclear	ARP 2590E-056 OP 2327
			US	When D/P approaches 30", direct SPO to perform actions of AOP 2517, Section 5.	AOP 2517

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The US may or may NOT direct cross tying "D" Water Box with "C" Water Box. Steps in *italics* are optional.	SPO	Trip the "D" Circ Water Pump. Close CW-11E, "D" Water Box Inlet *Cross tie water boxes:* • *Place "D" Circ Water pump in Pull-To-Lock* • *Ensure CW-11D, "D" Circ Water Box Outlet, is open* • *Open CW-12C, Condenser 1B Inlet Cross-Tie*	AOP 2517
			SPO	Check condenser backpressure is ≤4.5 in. Hg.	AOP 2517
			US	Inform Unit 3 that water boxes are cross tied.	AOP 2517
			SPO	If required, update PPC Condenser Performance Report to indicate actual Circ Water valve positions.	AOP 2517
			US/SM	Notify Environmental Services-Nuclear of Circ Pump trip.	AOP 2517
			US	Inform maintenance of the "D" Screen failure and direct them to troubleshoot and repair.	MP-14

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_2	RM01O (100%) Ramp=250 sec.	When the crew has cross tied water boxes, insert a failure of Control Room Radiation Monitor, RM-9799A. (The annunciator will alarm at 22% severity.)	PPO	Observe the C.R.A.C.S. in Auto Recirc Mode annunciator on C-01, C-40	MP-14 **TM 3** **AE 3**
			US	Direct the PPO to observe RM-9799A and to perform ARP actions for the annunciator.	MP-14
			PPO	• Observe RM-9799A is pegged high. • Place both Recirc Hand Switches in RECIRC. • Verify proper damper alignment • Ensure Control Room Filter Fan, F-32A is operating • Ensure Fac. 1 Control Room Supply and Exhaust Fans are running. • Determine that the swap to recirc was caused by a failure of RM-9799A • Obtain run hours for Filter Fan, F-32A and F-32B and log in SM log.	ARP 2590A-159
		When informed of the failure of RM 9799A, report that I&C will obtain the appropriate paperwork and commence troubleshooting.	US/SM	Inform the I&C Dept. of the failure of RM-9799A.	ARP 2590A-159
		TS 3.3.3.1 is NOT applicable with RM-9799B OPERABLE.	US	Refer to TS 3.3.3.1, Action 16. Enter TRM 3.3.3.1.1b	Tech Specs TRM

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_3	I/O 'ON' annunciator C-8 on C-05	When the crew has completed the actions of ARP 2590A-159, insert a malfunction to cause an alarm on C-05, Main Steam Isol Valve 2 Air Pres Lo, C-8.	SPO	Observe annunciator C-8, Main Steam Isol Valve 2 Air Pres Lo on C-05.	MP-14 **TM 4**
		When dispatched as a PEO, repeat back any direction, but do NOT provide any further report.	US/SM	Direct a PEO to: • Observe local Instrument Air header pressure. • Check both channel solenoid vents are NOT venting. • Insect for Instrument Air line leaks. ○ If possible, reconnect any broken air lines.	ARP 2590D-031
			US	Direct crew to perform EOP 2525 if the MSIV closes.	ARP 2590D-031
		When directed as Maintenance, report that you will send someone out to investigate.	US/SM	Direct Maintenance to trouble shoot and/or repair.	ARP 2590D-031
T_4	MS06B MS02B (7%) Ramp=400 sec.	Approximately 5 minutes after the low pressure alarm is annunciated, insert a malfunction to fail close the #2 MSIV and cause a steam line break upstream of the valve in the Enclosure Building.	Crew	Observe closure of #2 MSIV. After the MSIV has closed, observe lowering S/G pressures, lowering RCS temperatures, and lowering RCS pressure.	MP-14 **TM 5** **TM 6** **MA2**
			US	Direct a manual Reactor trip and performance of EOP 2525.	MP 16
			US/SM	Place Master Alarm Silence in SILENCE. Announce "Unit 2 trip" on the plant paging system. Direct performance of EOP 2525.	OP 2260

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Query board operators regarding the status of safety functions.	OP 2260
		The PPO may also manually initiate MSI on low SG pressure.	PPO	Complete and report SPTA: - Ensures Reactivity safety function is being met: o Reactor is tripped o All CEAs are inserted. o Power is going down. o SUR is negative. - Verifies RCS Inventory safety function is being met: o Reports Letdown is isolated and all available Charging Pumps are running. - Verifies RCS Pressure safety function is being met: o Reports heaters are off due to low level o Reports spray valves are closed o Reports PORVs and Safeties are closed. o When Pressurizer pressure falls to less than 1800 psia, manually initiates SIAS, or verifies automatic SIAS when pressure falls below 1714 psia. o Reports SIAS, CIAS, EBFAS, (and MSI) initiated with Facility 1 C.R.A.C.S. in recirc.	EOP 2525 **EC 1**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard

		If RCS pressure lowers to NPSH setpoint, secure all RCPs.		- Verifies Core Heat Removal established.
				  ○ Two RCPs are operating (one in each loop).
				- Reports value and trend of RCS subcooling.
				- Verifies Containment Integrity safety function is being met by verifying CTMT pressure, temperature, and rad monitor readings.
				  ○ Observes all rad monitors are normal.	

		CT 2 Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of the initiation of the ESD.	SPO	Complete and report SPTA:
				• Trip turbine, stop valves closed, MWe indicate 0, and 8T&9T open
				• All electrical buses are energized
				• Both SW and RBCCW facilities running
				• Verifies status of Core Heat Removal
				  ○ MSIVs closed due to low SG pressure. #2 lower than #1.
				  ○ ADVs and safety valves are closed
				  ○ Feed flow is NOT excessive
				  ○ Place both Auxiliary Feed Override/Man/Start/Reset hand switches in Pull-To-Lock
				  ○ Feeding #1 SG <u>only</u> with Auxiliary Feed to restore level to 40-70%.
					EOP 2525
					
					EC 2
					
					CT 2

		This action will be performed when #2 S/G is empty as indicated by a rise in RCS temperature	SPO	Adjust #1 ADV to stabilize RCS temperature.	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			SPO	Performs subsequent actions: • Ensures Vacuum Breaker, AR-17, is open • Opens subcooling valve, HD-106 • Stops both Heater Drains Pumps • Isolated both Main Feed Pumps • Ensures only one Condensate Pump is running • Verifies Instrument Air pressure is >90 psig	EOP 2525
			PPO / SPO	When queried, report completion and verification of subsequent actions.	OP 2260
			US	Refers to Diagnostic Flow Chart and determines that EOP 2536, Excess Steam Demand is the appropriate procedure.	EOP 2525 **EU 1**
			US/STA	Direct the performance of Safety Function Status Checks for EOP 2536	EOP 2536
			US	Direct Chemistry to obtain samples of #1 SG and analyze for Boron and activity. Direct SPO to close S/G sample valves when samples have been taken.	EOP 2536
		Event is classified as an **Alert, Charlie-One** (BA2), based on an unisolable steam line break outside Containment.	US/SM	Ensure event is classified.	EOP 2536

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Open place keeper and enter EOP entry time Return Master Silence switch to Normal	EOP 2536
			US	Direct PPO to: • Check SIAS Actuation • Optimize Safety Injection	EOP 2536
			PPO	Ensure: • At least one train of SIAS, CIAS, and EBFAS have actuated by checking blue lights on C-01X • Safety Injection flow is adequate using Appendix 2, Figures. • All available Charging Pumps are running. • Vital Switchgear Cooling is in operation on C-80	EOP 2536
			US	Direct SPO to ensure MSI has properly actuated and to verify open the vacuum breaker, AR-17.	EOP 2536
			SPO	Observe conditions on C-01X to ensure proper actuation of MSI or observe indications on C-05 and C-06/7.	EOP 2536

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Verify 2 RCPs in each loop are stopped with the respective spray valve closed. *If Pressurizer pressure lowers to less than minimum NPSH, then stop remaining RCPs.*	EOP 2536
			US	Determine that #2 S/G is the 'most affected'.	EOP 2536
			SPO	Commence actions to isolate the #2 S/G.	EOP 2536
T_4	ED16B	While the SPO is isolating #2 S/G, insert a malfunction to trip the supply breaker to Vital Instrument Bus, VA-20.	Crew	Observe loss of power to components powered by VA-20.	**TM 7** **EM 1** **MA 2**
			US	Recognize a significant change in plant conditions and refer to the Diagnostic Flow Chart.	OP 2260 **EC 3**
		The US may direct the SPO to stop Auxiliary Feed to the #2 S/G prior to referencing the Diagnostic Flow Chart. It is acceptable (desired) per OP 2260, EOP User Guide, to take actions to stabilize the plant prior to referencing an approved procedure provided the appropriate procedure is used after taking those actions.	US	Using the Diagnostic Flow Chart, determine that EOP 2536, Excess Steam Demand, is still the appropriate procedure and direct the SPO to stop Auxiliary Feed to #2 S/G.	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
	FWR60 (Man) FWR64 (0)	**CT 3: Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of the initiation of when #2 Auxiliary Feed Regulating Valve opened.** If requested, as the PEO, close #2 Aux Feed Reg Valve, FW-43B.	SPO	Close 2-FW-44, Aux Feed X-Tie Valve or Stop the running Aux. Feed Pump(s) or Dispatch a PEO to manually close #2 Aux Feed Regulating Valve, FW-43B.	MP 16 **CT 3**
	MSR13 (RI)	When directed, as the PEO, close the disconnect for MS-202.	SPO	Complete actions to isolate #2 S/G by ensuring: • #2 MSIV is closed • #2 MSIV Bypass is closed. • ADV Quick Open Permissive in Off. • #2 Main Feed Block Valve, FW-42B, is closed • #2 Main Feed Air Assist Check Valve, FW-5B, is closed • #2 S/G steam Supply to Terry Turbine, MS-202, is closed • #2 S/G Blowdown Isolation, MS-220B, is closed • Both Auxiliary Feed Override/Man/Start/Reset hand switches are in Pull-To-Lock • #2 Aux Feed Regulating Valve, FW-43B, is closed • #2 Main Steam Low Point Drain, MS-266B, is closed • #2 Main Steam Safety Valves are closed	EOP 2536

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Verify most affected S/G has been isolated: • Lowest steam pressure • Lowest level • Lowest cold leg temperature	EOP 2536
		The SPO will stabilize RCS temperature with #1 ADV when the #2 S/G indicates empty. The PPO will lower or maintain RCS pressure to prevent exceeding 200°F subcooling. This step may need to be pulled forward to prevent exceeding the PTS limit. **CT-4 Limit Tc subcooling (CET subcooling if all RCPs are secured) to ≤200°F.** • **Lower RCS pressure using Main (or Auxiliary) Spray Valve.** • **Establish RCS temperature control using the #1 ADV when #2 S/G indicates empty.**	SPO / PPO	Stabilize RCS temperature. • Open unaffected ADV to stabilize RCS temperature. Maintain RCS within the RCS P/T limit: • Manually control Pressurizer heaters and spray. • If HPSI throttle stop criteria are met: o Control Charging and Letdown o Throttle or stop HPSI Pumps.	EOP 2536 **CT 4**
			PPO	Throttle/Stop HPSI Pumps when the following conditions are met: • RCS subcooling is above minimum operating limits of the P/T Curve • Pressurizer level >20% • At least one S/G available to remove heat at 40-70% or being restored • Reactor Vessel level ≥ 43%	EOP 2541

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Restore Letdown to limit rise in Pressurizer level and pressure.	EOP 2541
		The session may be terminated when the crew has taken action to prevent exceeding a Tc subcooling value of 200°F.			

SECTION 4
SUMMARY

Title: Simulator Evaluation
ID Number: ES04LI1 Revision: 0

CRITICAL TASKS

CT 1: **Establish reactivity control. Stop the dilution to prevent exceeding 5% power unplanned entry into MODE 1). (If required, boration or CEDM insertion may be used.)**

CT 2: **Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of the initiation of the ESD.**

CT 3: **Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of the initiation of when #2 Auxiliary Feed Regulating Valve opened.**

CT-4 **Limit Tc subcooling (CET subcooling if all RCPs are secured) to ≤200°F.**

- **Establish RCS temperature control using the #1 ADV when #2 S/G indicates empty.**
- **Lower RCS pressure using Main (or Auxiliary) Spray Valve.**

SECTION 5
SCENARIO INITIAL CONDITIONS

Title: Simulator Evaluation
ID Number: ES04LI1 Revision: 0

Initial Conditions

- ◊ 1% power, EOL, Equilibrium Xenon
- ◊ Gp 7 CEAs @ 120 steps
- ◊ 466 ppm boron
- ◊ Blend ratio – 11.8:1
- ◊ SG Blowdown - 40 gpm each
- ◊ Condensate on short recycle
- ◊ "A" Main Feed Pump in operation
- ◊ Vacuum being maintained with the Hoggers
- ◊ 24E aligned to bus 24C
- ◊ Forcing Pressurizer Sprays
- ◊ 2 Charging Pumps running
- ◊ Snow storm in progress Expect 3-5" (20-25 mph winds)
- ◊ No surveillances due.

Out of Service Equipment

None

Crew Instructions

Raise power to approximately 4% using dilution to begin Main Turbine warm up. Reactor Engineering would prefer to use dilution to raise power. Dilution should be done in 100 gallon increments. Rods will be used above 5% power for ASI control.

ATTACHMENT
VALIDATION CHECKLIST

Title: Simulator Evaluation
ID Number: ES04LI2 Revision: 0

	Verified By:
Remote functions: All remote functions contained in the guide are certified.	DGF
Malfunctions: All malfunctions contained in the guide are certified	DGF
Initial Conditions: The initial condition(s) contained in the guide are certified or have been developed from certified ICs.	DGF
Simulator Operating Limits: The simulator guide has been evaluated for operating limits and/or anomalous response.	DGF
Test Run: The scenario contained in the guide has been test run on the simulator. Simulator response is reasonable and as expected.	DGF

Actions Completed

01/19/05
Date

SHIFT TURNOVER REPORT

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

PLANT STATUS:			
MODE:	2	*RX POWER:*	1 %
MEGAWATTS:	Thermal: 20 MWTH	*PZR PRESS:*	2250 psia
	Electric: 0 MWe	*RCS T-AVE:*	533 degrees F
RCS LEAKAGE:	Identified: 0.12gpm	*PROTECTED:*	Train/Facility
	Unidentified: 0.073gpm		
	Date/Time:Today 0015		Z2 (YELLOW)

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

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
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	1	See AIL	See Active Impairment List.

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

	Today

EVOLUTIONS IN PROGRESS & NOTES	*Reference /Date*
Plant startup. Raise power to 4% using dilution for warming the Main Turbine. Commence drawing a vacuum for starting a Min Feed Pump.	OP 2203 Today
Forcing Pressurizer sprays. Two Charging Pumps operating.	OP 2203 Today
"A" Main Feed Pump in opereation	OP 2203 Today
Condensate on short recycle.	OP 2203 Today
Snow storm in progress. Expect 3-5". Winds at 20-25 mph.	CONVEX Today

Unit 2 Chemistry

ON-LINE STATUS REPORT

REACTOR COOLANT			Time 06:25		
Parameter	**Reading**		**Parameter**	**Reading**	
Power	1	%	Fluoride	0.81	ppb
Tave	532	deg F	Chloride	1.75	ppb
Boron	466	ppm	Oxygen	< 5	ppb

Blend Ratio:	11.8 : 1

Attachment

SCENARIO ATTRIBUTES CHECKLIST

Scenario Title:	LOIT Simulator Evaluation	Number:	ES04LI2
Technical Reviewer:	R. J. Ashey	Date:	1/12/05

QUALITATIVE ATTRIBUTES

__Y__ 1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

__Y__ 2. The scenario consists mostly of related events.

__Y__ 3. Each event description consists of:

- the point in the scenario when it is to be initiated
- the malfunction(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the expected Emergency Plan classification
- the event termination point (if applicable)

__Y__ 4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

__Y__ 5. The events are valid with regard to physics and thermodynamics.

__Y__ 6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

__N/A__ 7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

__Y__ 8. The simulator modeling is not altered.

__Y__ 9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the scenario.

Attachment

Guide No.: ES04LI2

SCENARIO ATTRIBUTES CHECKLIST

Note: Following criteria list scenario traits that are numerical (quantitative) in nature. Credited malfunctions tasks and procedures should be bolded in the evaluation guide.

1. Total Malfunctions (TM) - Include EMs – (5 – 8) ___7___

   1. Failure of dilution controller (PMW flow continues)
   2. "D" Circ Water Screen D/P increases causing "D" Circ Water Pump trip
   3. Control Room Radiation Monitor, RM-9799A, fails high
   4. Main Steam Isol Valve 2 Air Pres Lo, Annunciator C-8 on C-05 alarms
   5. #2 MSIV fails closed
   6. Steam line break upstream of #2 MSIV in the Enclosure Building
   7. The supply breaker to Vital Instrument Bus, VA-20, trips

2. Malfs after EOP entry (EMs) – (1 – 2) ___1___

   1. The supply breaker to Vital Instrument Bus, VA-20, trips

3. Abnormal Events (AE) – (2 – 4) ___3___

   1. Failure of dilution controller (PMW flow continues)
   2. "D" Circ Water Screen D/P increases causing "D" Circ Water Pump trip
   3. Control Room Radiation Monitor, RM-9799A, fails high

4. Major Transients (MA) – (1 – 2) ___2___

   1. Steam line break upstream of #2 MSIV in the Enclosure Building
   2. The supply breaker to Vital Instrument Bus, VA-20, trips

5. EOPs entered requiring substantive actions (EU) - (1 – 2) ___1___

   1. EOP 2536, Excess Steam Demand

6. EOP Contingencies requiring substantive actions (EC) – (0-2) ___3___

   1. Verify RCS Pressure safety function is being met
   2. Place both Auxiliary Feed Override/Man/Start/Reset hand switches in Pull-To-Lock
   3. Recognize a significant change in plant conditions and refer to the Diagnostic Flow Chart.

7. Critical Tasks (CT)- (2 – 3) ___4___

   1. Establish reactivity control. Stop the dilution to prevent exceeding 5% power unplanned entry into MODE 1). (If required, boration or CEDM insertion may be used.)
   2. Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of initiation of the ESD.
   3. Isolate Auxiliary Feedwater to the #2 S/G from the Control Room within 10 minutes of #2 Auxiliary Feed Regulating Valve opening.
   4. Limit Tc subcooling (CET subcooling if all RCPs are secured) to <200°F.
      - Establish RCS temperature control using the #1 ADV when #2 S/G indicates empty.
      - Throttle/stop HPSI Pumps when the appropriate conditions are met (if required).
      - Restore Letdown (if required).

8. Approximate Scenario Run Time: 60 to 90 min. Total ___75___

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

IC-91 **ES04LI2**

	A	B	C	D
ASI Upper	4.75	4.65	4.78	4.71
ASI Lower	4.81	4.67	4.79	4.76
Nuclear Power	4.92	5.00	4.94	4.87
ΔT Power	1.70	2.50	1.50	3.90
Tcold Cal.	4.80	4.79	4.80	4.72

Millstone Station
Unit 2 Operator Training

SIMULATOR EXERCISE GUIDE

I. Title: LOIT Simulator Evaluation #3

ID Number: ES04LI3 Revision: 0

II. Initiated: R. J. Ashey — Developer — 1/13/05 — Date

III. Reviewed: Reviewer — 01/19/05 — Date

IV. Approved: Operator Training Supervisor — 1/31/05 — Date

TABLE OF CONTENTS

SECTIONS LISTED IN ORDER:

EXERCISE OVERVIEW

1. Purpose:
   a. Evaluate the licensees' ability, as a team and individually, to safely and responsibly operate the plant during normal plant operations, abnormal operating conditions and emergency operating conditions.
   b. Evaluate licensees in the following areas, as applicable:
      1) Ability of the crew to perform crew-dependent (and time-critical) tasks.
      2) Ability of individuals to perform critical tasks.
      3) Ability of the crew to:
         a) Understand/interpret alarms/annunciators
         b) Diagnose events/conditions based on signals/readings
         c) Understand plant/systems response
         d) Comply with/use procedures and Technical Specifications
         e) Properly communicate information/proper crew interactions
         f) Perform control board operations
      4) Ability of each individual 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) Properly perform control board operations
         g) Demonstrate a responsible attitude
         h) Properly communicate information and interact with the rest of the crew

2. Exercise Brief:

The simulator will be prepared for the evaluation and the licensees will be briefed on the conduct of the evaluation and the areas in which they will be evaluated.

The simulator will be initialized to IC 90 or equivalent; 100% power, BOL, Equilibrium Xe, 1201 ppm boron. There are no surveillances in progress. The Turbine Driven Auxiliary Feed Pump is tagged out for a pump bearing replacement and is scheduled for return on the next shift. Radwaste Ventilation Fan, F-16, is out of service for filter replacement. Containment pressure is now reading 21 inches of water. Containment must be depressurized after the crew assumes the shift.

After the crew has initiated depressurizing Containment, the PPC will be lost requiring entry into Tech Specs and a down power. The crew will enter AOP 2518, Loss of the PPC, and perform the applicable steps. While the crew is discussing the down power, Channel "C" Pressurizer Pressure will fail low resulting in several annunciators. The crew will review the annunciators and select the appropriate Annunciator Response Procedure. The PPO will bypass the appropriate channels of RPS, ESAS, and Automatic Auxiliary Feed. After the crew has bypassed the appropriate channels and has logged into the appropriate Tech Spec Action Statements, condenser vacuum will begin to degrade. The crew will enter AOP 2574, Loss of Condenser Vacuum, and take the appropriate actions to include continuing the down power (started earlier) to slow the loss of vacuum. When the crew has taken the appropriate actions and has determined that a continuation of the down power is warranted, condenser vacuum will degrade more rapidly resulting in a (manual or automatic) plant trip. On the trip, the RSST will fail to automatically transfer and both Emergency Diesels will energize their respective buses. This will result in a loss of all Condensate Pumps. Additionally, the "B" Auxiliary Feed Pump is severely degraded, resulting in minimal flow from that pump. The crew will perform the actions of EOP 2525, Standard Post Trip Actions and transfer to EOP 2528, Loss of Off Site Power/Loss of Forced Circulation. While performing EOP 2528, the "A" Diesel Generator will trip, ultimately resulting in a loss of all feedwater ("B" Auxiliary Feed Pump will NOT be sufficient to restore S/G levels). The crew will rediagnose the event and will transfer to EOP 2537, Loss of All Feedwater, which will require initiation of Once-Thru-Cooling. During the initiation of OTC, the "C" HPSI Pump will NOT automatically start, requiring it to be manually started.

The scenario may be terminated when the crew has determined that they must transfer to EOP 2540, Functional Procedure.

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

None

4. Duration: 1.5 hours

All Control Room Conduct, Operations and Communications shall be in accordance with Master Manual 14 (MP-14). Review the Simulator Operating Limits (design limits of plant) and Simulator Modeling Limitations and Anomalous Response List prior to performing this training scenario. The instructor should be aware if any of these limitations may be exceeded.

SECTION 4

ID Number ES04LI3 Revision: 0

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
$T_{Initial}$	IC 90 or equivalent	Simulator Setup and Initial Conditions: 100% power, BOL, Equilibrium Xe, 1201 ppm boron.			
	Using IDT, set CHMDRY to 1.284e05 E5	Raise Containment pressure to read 22 inches of water.			
	Under CH, I/O OFF G for HS8137 (2)	I/O off both green lights for F-16			
	ED02 BT9	Loss of the RSST on the plant trip			**TM 5**
	ES03J	Failure of "C" HPSI Pump to automatically start on SIAS (failure of AM-614).			**TM 8** **EM 2**
	FWR22 (Local) FW20C (Trip)	Disable the Terry Turbine and place a yellow tag on the Terry Turbine Steam Admission Valve, SV-4188.			
	FW30B (100%) Ramp=300 sec. BT37	Gradual degradation of the "B" Aux Feed Pump.			**TM 6** **MA 2**
	MSR13 (RI) MSR12 (RO) MSR13 (RO)	Rack in breaker for MS-202. Close Steam Supplies To Terry Turbine, MS-201 and MS-202, and insert remotes to rack out the associated breakers. Place yellow tags on valve hand switches			

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Provide the crew with the following turnover info, allow the crew to walk-down the boards, and perform briefing. The crew should indicate that they have 'taken the watch.' ◊ 100 % power, BOL, Equilibrium Xenon ◊ 1201 ppm boron ◊ Blend ratio - 3.4:1 ◊ SG Blowdown - 40 gpm each ◊ 24E aligned to bus 24C ◊ Terry Turbine out for bearing replacement ◊ F-16 out for filter replacement ◊ Enclosure Building Purge using Main Exhaust has been in continuous operation for several months. ◊ Provide crew with OP 2314B, section 4.13. Steps 4.13.1 through 4.13.8 are signed off as complete.			
T_0		Ensure the surrogate directs the **PPO** to depressurize Containment. If the crew does NOT initiate actions to depressurize Containment, as Chemistry, call the SM and ask when they started the Containment depressurization.	US/PPO	Brief the crew on the depressurization of Containment.	MP-14
			PPO	Place EBFAS in operation as follows: • Align Condenser Air Removal to Unit 2 Stack. • Start either "A" or "B" EBFAS Fan • Monitor for proper operation.	OP 2314G

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		After a short delay, as the PEO, report that the Hydrogen Purge Flow Limiting Butterfly Valve in the 38'6" East Penetration Room is open.	PPO	Open either Facility 1 or Facility 2 Hydrogen Purge Valves on C-01 and direct a PEO to open the associated Hydrogen Purge Flow Limiting Butterfly Valve in the 38'6" East Penetration Room.	OP 2314B
			US	Record start time in SM log.	OP 2314B
		As Chemistry, acknowledge the time Containment venting was started.	US	Notify Chemistry that Containment venting is in progress.	OP 2314B
T_1	PC01	Once the crew has initiated Containment depressurization, insert a malfunction to cause a loss of the PPC.	Crew	While observing the PPC, note a failure of the PPC to update any parameter. Observe 'Computer Inop' alarm on C-08	MP-14 **TM 1** **AE 1**
		After a 5-10 minute delay, report as Computer Services that the PPC has a significant malfunction and that troubleshooting has begun. An update will be provided when more information is available.	US/SM	Enter AOP 2518, Loss of the PPC. Direct a PEO to complete Attachment 1 of AOP 2518.	MP-14
			US	Log into TSAS 3.1.3.3d. All pulse counter channels are inoperable.	AOP 2518
	RPR35 (NORM)	Examinee will need to contact the Booth Instructor to place the PWR RATIO HI/LO switch in the "OPER" position	PPO	Place PWR RATIO HI/LO, B12B switch to "OPER" (Inside RC-22, Front, Rack #9) and observe Annunciator BB12 on C-04.	AOP 2518
			US	Log into TSAS 3.2.1a. ASI is outside the power dependent limits on the Power Ratio Recorder. ASI must be restored to within the limits within one hour.	AOP 2518

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	Brief the crew on entry into AOP 2575, Rapid Downpower, and the use of Attachments 1, 5, and 6.	MP-14
			US/SM	• Inform HP, CONVEX, ISO New England, Unit 3 and other personnel required by MP-01-SM-GDL1.01 • Brief crew on plant trip criteria.	AOP 2518 AOP 2575
			PPO	Initiate forcing sprays.	AOP 2575
			SPO	Maintain S/G levels 55 to 70% during the down power.	AOP 2575
		The crew should Borate from the RWST as the preferred method.	US	Determine that a 5 to 10% down power is required to restore the power dependent limits on the Power Ratio Recorder. Select the desired method of Boration for the down power. • From the RWST (preferred) • From the on service BAST	AOP 2575
		If the crew initiates the down power using CEA insertion, then ensure they use Step 4.11 of OP 2302A. If asked, report as the PEO that baseline data has been recorded.	PPO	Commence Boration from the RWST to one charging pump to commence lowering power.	AOP 2575
			SPO/PPO	Using Load Limit Pot, adjust Turbine load to follow Reactor power and maintain Tavg on program. (Attachment 5)	AOP 2575

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_2	RP10C (0)	When the crew has reduced power by approximately 3-5%, insert a malfunction to fail Channel "C" Pressurizer Pressure transmitter low.	PPO	Observe the TM-LP TRIP CH C annunciator (DA-3 on C-04).	MP-14 **TM 2**
			US	Direct the PPO to perform ARP actions for the annunciator.	MP-14
			PPO	Compare Channel "C" Pressurizer Pressure and TM-LP set point to the other safety channels.	ARP 2590C-023
			US	Enter TS 3.3.1.1, Action 2. Enter TS 3.3.2.1, Action 2	Tech Specs
			PPO	Obtain the necessary keys and bypass the following: • Channel "C" TM-LP Trip (RPS) • Channel "C" High Pressurizer Pressure Trip (RPS) • Sensor Cabinet "C" Pressurizer Pressure Bistable (ESAS) • Channel "C" ATWS (C-100)	ARP 2590C-023

ID Number ES04LI3 Revision: 0

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
T_3	FW33 (4%) Ramp=900 sec.	When the crew has completed the actions of ARP 2590C-023, insert a malfunction to cause condenser vacuum to degrade. Do NOT allow vacuum to degrade to the manual trip setpoint.	Crew	Observe and report lowering vacuum, lowering electrical output, or Low Vacuum alarm.	MP-14 **TM 3** **AE 2**
		US should inform the crew that a plant trip will be initiated when/if condenser vacuum lowers to between 6 and 7 inches Hg abs.	US	Brief crew on entry into AOP 2574, Loss of Condenser Vacuum, plant trip criteria, and the need to reduce power if vacuum continues to degrade.	AOP 2574
	FW33 (Delete)	Adjust the loss of vacuum malfunction to allow vacuum to continue to degrade, but maintain it **below** the manual trip setpoint.	SPO	• Start "A" and "B" Mechanical Vacuum Pumps. • Ensure Condenser Air Removal is aligned to the Millstone Stack through "A" Condenser Air Removal Fan. • Ensure proper operation of the Circulating Water System. • Check steam seal pressure between 2 and 6 psig. • Check Condensate Surge Tank level is >15% and NOT lowering • Check Exhaust Hood Temperature is less than 175°F. • Ensure 2-AR-17, Vacuum Breaker, is closed.	AOP 2574

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		When dispatched as a PEO, repeat back the direction, wait a few minutes and report that the directed actions are complete. <u>With the exception of adjusting the loss of vacuum malfunction, do NOT insert any other remote functions or malfunctions at this time.</u>	US/SM	Direct a PEO to: • Open Mechanical Vacuum Pump individual and combined suction valves. • Place a second set of SJAE in service. • Check for proper operation of the Atmospheric Drain Collecting Tank level control system. • Check for water seal in Vacuum Breaker. • Check condenser expansion joint loop seal is filled. • Inspect for leakage.	AOP 2574
			US	Determines vacuum is NOT stabilizing and directs the crew to continue the down power per AOP 2575.	AOP 2574 AOP 2575
T_4	FW33 (100%)	When the US has determined that vacuum is NOT stabilizing, insert a malfunction to cause a rapid degradation of condenser vacuum.	Crew	Observe rapidly lowering condenser vacuum and loss of main generator output.	MP-14 **TM 4** **MA 1**
			US	Direct a manual plant.	MP-14
			US/SM	Place Master Alarm Silence in SILENCE. Announce "Unit 2 trip" on the plant paging system. Direct performance of EOP 2525.	OP 2260
			US	Query board operators regarding the status of safety functions.	OP 2260

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			PPO	Complete and report SPTA: • Ensures Reactivity safety function is being met: ★ Reactor is tripped ★ All CEAs are inserted. ★ Power is going down. ★ SUR is negative. • Verifies RCS Inventory safety function is being met ★ Pressurizer level is between 35 and 70% • Verifies RCS Pressure safety function is being met: ★ Pressurizer pressure is between 2225 and 2300 psia. • Verifies Core Heat Removal established. ★ Two RCPs are operating. ★ Reports loop delta T less than 10°F. ★ Reports value and trend of RCS subcooling. • Verifies Containment Integrity safety function is being met by verifying CTMT pressure, temperature, and radiation monitor readings are normal.	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		May report that "B" Auxiliary Feed Pump discharge pressure is lowering; pump is degraded.	SPO	Complete and report SPTA: • Trip turbine, stop valves closed, MWe indicate 0, and 8T&9T open • Electrical alignment is as follows: ★ 25A and 25B are deenergized ★ 24A and 24B are deenergized ★ 24C and 24D are energized by their respective Diesel Generators ★ 201A and 201B are energized ★ VA10 and VA20 are energized • Both SW and RBCCW facilities running • Verifies status of Core Heat Removal ★ Reports value and trend of both S/G pressures (880 to 902 psig). ★ Reports RCS Tc value and trend. (530 to 535°F). ★ Reports value and trend of both S/G levels between 40 and 70 or being restored to this band. ★ Reports both motor driven Auxiliary Feed Pumps operating. ★ Concurs with US report of subcooling value.	EOP 2525

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
	IAR10 (Open)	When dispatched as the PEO, after 5-10 minutes, report that Station Air has been cross tied with Unit 3.	SPO	Performs subsequent actions: • Announces and opens Vacuum Breaker, AR-17 • Opens subcooling valve, HD-106 • Stops both Heater Drains Pumps • Isolated both Main Feed Pumps • Ensures only one Condensate Pump is running • Verifies Instrument Air pressure is >90 psig ★ Dispatches a PEO to align Station with Unit 3 and cross ties Station Air with Instrument Air.	EOP 2525
			PPO / SPO	When queried, report completion and verification of subsequent actions.	OP 2260
			US	Refers to Diagnostic Flow Chart and determines that EOP 2528, Loss of Off Site Power/Loss of Forced Circulation is the appropriate procedure.	EOP 2525
			US/STA	Directs the performance of Safety Function Status Checks for EOP 2528	EOP 2528 **EU 1**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		Event is classified as an **Unusual Event, Delta-One**, based on PU1, Loss of Off Site Power for greater than 15 minutes.	US/SM	Ensure event is classified.	EOP 2528
			US	Open place keeper and enter EOP entry time Return Master Silence switch to Normal	EOP 2528
			US	Direct SPO to: • Close both MSIVs • Ensure both MSIV bypass valves are closed. • Open AR-17, Condenser Vacuum Breaker	EOP 2528
T_4	ED05C	While the SPO is verifying MSIV closure, insert a malfunction to cause an overload trip of Bus 24C.	SPO	Verifies: • Both MSIVs are closed. • Both MSIV Bypass Valves are closed. • AR-17, Vacuum Breaker is open.	EOP 2528 **TM 7, EM 1, MA 2**
			Crew	Observe indications for the loss of Bus 24C.	MP-16
			SPO	Observes "A" DG running with NO cooling water and emergency trips "A" DG.	OP 2260 EOP 2525
			US	Inform the crew that a significant change in plant conditions requires the Diagnostic Flow Chart to be performed again.	OP 2260

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			SPO	Observes lowering discharge pressure on "B" Aux Feed Pump.	MP 14
			Crew	Determines that a loss of all feedwater has occurred and that EOP 2537, Loss of All Feedwater, must be entered.	OP 2260 **EU 2**
			US	Briefs crew on entry into EOP 2537.	OP 2260
			US/STA	Directs the performance of Safety Function Status Checks for EOP 2537.	EOP 2537
			US	Directs: • All RCPs to be stopped. • HIC-4165, Tavg Controller placed in Manual and closed. • Both Pressurizer Spray Valves, RC-100E and RC-100F in Manual and closed.	EOP 2537
			PPO	• Secures all RCPs. • Places HIC-4165, Tavg Controller, in Manual and closed. • Places both Pressurizer Spray Valves, RC-100E and RC-100F in Manual and closed.	EOP 2537

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
		The Note prior to this step states that OTC should be initiated prior to SG level reaching 70" if two trains of HPSI, PORVs and ADVs are NOT available.	US	Directs the PPO to initiate Once-Thru-Cooling	EOP2537 **EC 1**
		CT-1 Once-Thru-Cooling must be initiated prior to reaching 70 inches in the lowest Steam Generator or for a >5°F rise in Tc. **CT-2 "C" HPSI Pump must be started prior to opening the PORVs.** PORV Block Valve, RC-403, is deenergized (has NO open indication), but will remain open when deenergized.	SPO	Initiates Once-Thru-Cooling by the following: • Turns off both Proportional Heaters. • Places all Backup Heaters in Pull-To-Lock. • Opens both Atmospheric Dump Valves • Manually actuates SIAS. • Ensures HPSI Pumps have started. ○ Recognizes "C" HPSI Pump did NOT start and manually starts it. • Ensures all HPSI Injection Valves are open. • Ensures all available Charging Pumps are running. • Ensures both PORV Block Valves are open. • When "C" HPSI Pump has started, opens both PORVs. • Informs US when complete.	EOP 2537 **CT-1** **CT-2**

Time	IDA/Malf	Instructor Information / Activity	Task Assign	Expected Actions	Standard
			US	When OTC has been established, briefs crew on entry into EOP 2540, Functional Recovery Procedure.	OP 2537
		The session may be terminated when the crew completes the brief for EOP 2540 entry.			

SECTION 4
SUMMARY

Title: Simulator Evaluation
ID Number: ES04LI3 Revision: 0

CRITICAL TASKS

CT-1 Once-Thru-Cooling must be initiated prior to reaching 70 inches in the lowest Steam Generator or when a >5°F uncontrolled rise in Tc is observed.

CT-2 "C" HPSI Pump must be started prior to opening the PORVs.

SECTION 5
SCENARIO INITIAL CONDITIONS

Title: Simulator Evaluation
ID Number: ES04LI3 Revision: 0

Initial Conditions

◊ 100 % power, BOL, Equilibrium Xenon
◊ 1201 ppm boron
◊ Blend ratio - 3.4:1
◊ SG Blowdown - 40 gpm each
◊ 24E aligned to bus 24C
◊ Terry Turbine out for bearing replacement
◊ F-16 out for filter replacement
◊ Enclosure Building Purge using Main Exhaust has been in continuous operation for several months.
◊ Containment pressure is 21". Conditions have been verified as acceptable to depressurize Containment.
◊ A work control staff is available to perform tasks outside of the Control Room.

Out of Service Equipment

◊ The Turbine Driven Auxiliary Feed Pump is out of service for a bearing replacement.
◊ Radwaste Fan, F-16 is out of service for filter replacement.

Crew Instructions

Depressurize Containment per OP 2314B, Containment and Enclosure Building Purge. Steps 4.13.1 through 4.13.7 are complete. The 10 minute averages for the Containment Rad Monitors have been compared to the latest Chemistry grab sample and are acceptable for depressurization. Containment Rad Monitor readings have been logged into the SM log. Enclosure Building Purge has been in continuous operation for the past 3 months. Chemical use has been prohibited in the Enclosure Building for the past week.

ATTACHMENT
VALIDATION CHECKLIST

Title: Simulator Evaluation
ID Number: ES02LI3 Revision: 0

Verified By:

Remote functions:
All remote functions contained in the guide are certified.

Malfunctions:
All malfunctions contained in the guide are certified

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

Simulator Operating Limits:
The simulator guide has been evaluated for operating limits and/or anomalous response.

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

1/19
Actions Completed

1/19/05
Date

SHIFT TURNOVER REPORT

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

PLANT STATUS:			
MODE:	1	*RX POWER:*	1%
MEGAWATTS:	Thermal: 2698 MWTH	*PZR PRESS:*	2250 psia
	Electric: 913 MWe	*RCS T-AVE:*	572 degrees F
RCS LEAKAGE:	Identified: 0.12gpm	*PROTECTED:*	Train/Facility
	Unidentified: 0.33gpm		Z1 (RED)
	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	0430	3.7.1.2	a.	With one Auxiliary Feed Pump inoperable, restore the required Auxiliary Feed Pumps to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.	Terry Turbine	Terry Turbine tagged for bearing replacement
Today	0430	7.1.15, item A	b.1 and b.2	With valve inoperable from C-10, perform Actions b.1, b.2 for fire areas R-1 and R-13.	SV-4188, AFW Steam Supply Valve	Terry Turbine tagged for bearing replacement
Today	0430	7.1.15, item B	b.1 and b.2	With Pump/Turbine inoperable, from either location, perform actions b.1 and b.1 for fire areas R-3, R-11, R-16, and R-17.	P-4 and H-21 AFW Pump and Turbine Governor Control	Terry Turbine tagged for bearing replacement
Today	0430	7.1.15, item C	b.1 and b.2	With the valve closed or disconnect closed, perform actions b.1 and b.1 for fire areas R-1, R-2, and R-13.	2-MS-202, AFW Steam Supply Valve from SG 2, MOV	Terry Turbine tagged for bearing replacement

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
Infinite action: Establish hourly fire watch.	TRMAS 3.7.10	1	See AIL	See Active Impairment List.
Infinite action: Attachment 1 of OP 2301A	TSAS 3.3.3.8	a/3	RC-200	Failed SP 2410A

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

EVOLUTIONS IN PROGRESS & NOTES	*Reference /Date*
The 10 minute averages for the Containment Rad Monitors have been compared to the latest Chemistry grab sample and are acceptable for depressurization. Containment Rad Monitor readings have been logged into the SM log. Enclosure Building Purge has been in continuous operation for the past 3 months. Chemical use has been prohibited in the Enclosure Building for the past week.	OP 2314B Today

Unit 2 Chemistry

ON-LINE STATUS REPORT

REACTOR COOLANT		Time 06:25	
Parameter	Reading	Parameter	Reading
Power	100 %	Flouride	0.81 ppb
Tave	572 deg F	Chloride	1.75 ppb
Boron	1201 ppm	Oxygen	<5 ppb

Blend Ratio:	3.4 : 1

Attachment

SCENARIO ATTRIBUTES CHECKLIST

Scenario Title:	LOIT Simulator Evaluation	Number:	ES04LI3
Technical Reviewer:	R. J. Ashey	Date:	12/6/04

QUALITATIVE ATTRIBUTES

__Y__ 1. The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue the crew into expected events.

__Y__ 2. The scenario consists mostly of related events.

__Y__ 3. Each event description consists of:
- the point in the scenario when it is to be initiated
- the malfunction(s) that are entered to initiate the event
- the symptoms/cues that will be visible to the crew
- the expected operator actions (by shift position)
- the expected Emergency Plan classification
- the event termination point (if applicable)

__Y__ 4. No more than one non-mechanistic failure (e.g., pipe break) is incorporated into the scenario without a credible preceding incident such as a seismic event.

__Y__ 5. The events are valid with regard to physics and thermodynamics.

__Y__ 6. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.

_N/A_ 7. If time compression techniques are used, scenario summary clearly so indicates. Operators have sufficient time to carry out expected activities without undue time constraints. Cues are given.

__Y__ 8. The simulator modeling is not altered.

__Y__ 9. The scenario has been validated. Any open simulator performance deficiencies have been evaluated to ensure that functional fidelity is maintained while running the scenario.

Attachment

Guide No.: ES04LI3

SCENARIO ATTRIBUTES CHECKLIST

Note: Following criteria list scenario traits that are numerical (quantitative) in nature. Credited malfunctions tasks and procedures should be bolded in the evaluation guide.

1. Total Malfunctions (TM) - Include EMs – (5 – 8) ___8___
   1. Loss of the PPC
   2. Fail Channel "C" Pressurizer pressure transmitter low
   3. Degrading Condenser vacuum
   4. Loss of Condenser vacuum
   5. Loss of RSST
   6. Degradation of "B" Aux Feed Pump
   7. Loss of Bus 24C
   8. Failure of "C" HPSI Pump to automatically start
2. Malfs after EOP entry (EMs) – (1 – 2) ___2___
   1. Loss of Bus 24C after entry into EOP 2528
   2. Failure of "C" HPSI Pump to start after SIAS initiation
3. Abnormal Events (AE) – (2 – 4) ___2___
   1. Loss of the PPC
   2. Degrading Condenser vacuum
4. Major Transients (MA) – (1 – 2) ___2___
   1. Loss of Condenser vacuum resulting in plant trip
   2. Loss of Bus 24C resulting in Loss of All Feedwater
5. EOPs entered requiring substantive actions (EU) - (1 – 2) ___2___
   1. Transition from EOP 2525 to EOP 2528
   2. Transition from EOP 2528 to EOP 2537
6. EOP Contingencies requiring substantive actions (EC) – (0-2) ___1___
   1. Initiate Once-Thru-Cooling
7. Critical Tasks (CT)- (2 – 3) ___2___
   1. Initiate Once-Thru-Cooling prior to reaching 70 inches in the lowest Steam Generator or when a >5°F uncontrolled rise in Tc is observed.
   2. Start "C" HPSI Pump prior to RCS pressure rising above 1200 psia after the PORVs are opened.
8. Approximate Scenario Run Time: 60 to 90 min. Total ___75___

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

IC-90 **ES04LI3 Load Limit Pot Setting = 5.85**

	A	B	C	D
ASI Upper	4.68	4.65	4.66	4.63
ASI Lower	4.85	4.72	4.76	4.74
Nuclear Power	4.66	4.988	4.80	4.85
ΔT Power	3.90	4.10	3.92	4.07
Tcold Cal.	4.80	4.80	4.80	4.90