Scenario No.: 3

Target Quantitative Attributes per Scenario (NRC Form ES-D-1)

Facility: _____Salem_____ Scenario No.: ____3_____ Op-Test No.: __19-01 NRC__

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: IC-203: 100% power, MOL; 21 SW Pump is C/T.

Turnover: Maintain current power level.

Critical Tasks:

1. Manually trip the reactor before transition to EOP-FRSM-1 is required (see WOG CT-1)
2. Isolate feed and steam flow to faulted SG (see WOG CT-17)

Event No.	Malf. No.	Event Type*	Event Description
1	CV0036	RO (I) CRS (I)	VCT Level Channel 2LT-114 fails high
2	ANN0025	BOP (C) CRS (TS)	21 SW Accumulator Tank low pressure
3	SW0215C SW0339F	RO (C) CRS (C,TS)	23 SW Pump trips and 26 SW Pump fails to start in Auto
4	CN0117C	ALL (C)	23 Condensate Pump trips
5	BF0111A	ALL (M)	21 SG Feed Line Break inside containment
6	RP0058 RP0059A RP0059B RP0060A RP0060B	RO (I) CRS (I)	ATWS
7	VL0446 VL0023	ALL (C)	21 BF19 and 21BF13 fails to close
		ABs	AB.CVC-1 → AR.ZZ-2 → AB.SW-1 → AB.CN-1 → AB.LOAD-1
		EOPs	TRIP-1 → LOSC-1 → TRIP-3

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

Scenario No.: 3

Target Quantitative Attributes per Scenario (See Section D.5.d)	Actual Attributes	Event No.
1. Total malfunctions (5-8)	7	1-7
2. Malfunctions after EOP entry (1-2)	2	6,7
3. Abnormal events (2-4)	4	1,2,3,4
4. Major transients (1-2)	1	5
5. EOPs entered/requiring substantive actions (1-2)	3	TRIP-1 LOSC-1 TRIP-3
6. Entry into a contingency EOP with substantive actions (≥ 1 per scenario set)	0	NA
7. Preidentified critical tasks (≥2)	2	5,6
8. Tech Specs exercised (≥ 2)	2	2,3

I. OBJECTIVES

A. Given the order or indications of a charging system malfunction, PERFORM actions as the nuclear control operator to RESPOND to the loss or malfunction of the charging system in accordance with the approved station procedures.

B. Given indication of a loss or malfunction of the Charging system DIRECT corrective action for a Charging System malfunction in accordance with the approved station procedures.

C. Given indication of a loss of a SW Pump, PERFORM actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures.

D. Given indication of a loss of a SW Pump, DIRECT corrective action for a SW System malfunction in accordance with the approved station procedures.

E. Given indication of a loss of a Condensate Pump, PERFORM actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures

F. Given indication of a loss or malfunction of the Condensate system DIRECT corrective action for a Condensate System malfunction in accordance with the approved station procedures

G. Given the order or indications of a reactor trip, PERFORM actions as the nuclear control operator to RESPOND to the reactor trip in accordance with the approved station procedures.

H. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures

I. Given the order or indications of a safety injection PERFORM actions as the nuclear control operator to RESPOND to the safety injection in accordance with the approved station procedures.

J. Given indication of a safety injection DIRECT the response to the safety injection in accordance with the approved station procedures.

K. Given the order or indications of a safety injection PERFORM actions as the shift technical advisor to RESPOND to the safety injection in accordance with the approved station procedures.

L. Given the order or indications of a loss of secondary heat sink, perform actions as the nuclear control operator to RESPOND to the loss of heat sink in accordance with the approved station procedures.

M. Given indication of a loss of secondary heat sink, DIRECT the response to the heat sink loss in accordance with the approved station procedures.

N. Given the order or indications of a loss of secondary heat sink, PERFORM actions as the shift technical advisor for a loss of heat sink IAW approved station procedures.

O. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

1. VCT Level channel fails high (2LT-114)
2. 21 SW Accumulator Tank Pressure Low
3. 23 SW Pump trips and 26 SW Pump fails to auto start
4. 23 Condensate Pump trips
5. 21 Feedwater Line break (inside containment)
6. ATWS
7. 21BF13 fails to close on SI signal
8. Terminate SI

III. SCENARIO SUMMARY

A. The crew will receive the unit at 100% power MOL. 21 SW Pump is C/T for pump repack.

B. Once the crew takes the watch, VCT level channel 2LT-114 will fail high. This will result in the VCT diverting to the CVCS HUT and lowering VCT level. The crew will either recognize lowering VCT level or 2CV35 diverting to the HUT or unexpected Auto make-up (4 minutes later). The CRS will enter **S2.OP-AB.CVC-0001**, Loss of Charging, and will take action to manually align 2CV35 back to VCT.

C. After the VCT level failure is addressed, the crew will receive OHA alarm B-47 for SW Accumulator Tank #21 Trouble. The crew will dispatch an operator to the field to determine the cause of the alarm. Field operator will report that 21 SW Accumulator Tank alarm is for low tank pressure. The crew will determine that 21 SW Accumulator is Inoperable due to low pressure and IAW the Alarm Response Procedure take action to stop and isolate 21 and 22 CFCUs from service. The CRS will enter TS 3.6.1.1 and 3.6.2.3.

D. Following the 21 SW Accumulator issue, 23 SW Pump will trip and the standby 26 SW Pump will fail to Auto start on lowering pressure. The crew will respond by manually starting 26 SW Pump. The CRS may enter **S2.OP-AB.SW-0001**, Loss of SW Header Pressure. The CRS will enter TS 3.7.4 (72 hours).

E. After 23 SW Pump trip is addressed, 23 Condensate Pump will trip. The crew will enter **S2.OP-AB.CN-0001**, Main Feedwater/Condensate System Abnormality, and bypass the condensate polisher system and determine a load reduction to 85% is required. The crew performs load reduction IAW **S2.OP-AB.LOAD-0001**, Rapid Load Reduction.

F. Once the crew has completed the load reduction, 21 SG feed line will break inside containment. A demand for Auto Reactor Trip will occur but the reactor will fail to trip (ATWS). The crew will trip the reactor by opening both rod drive M-G set breakers [**Critical Task #1**] and enter **2-EOP-TRIP-1**, Reactor Trip or Safety Injection.

G. Following entry into **2-EOP-TRIP-1,** the crew will observe that 21 SG feed flow is oscillating with the other SGs indicating approx. 11% steam flow**.** The crew will initiate MSLI for faulted SGs. Following the MSLI, the crew will recognize that 21 SG is the faulted SG and isolate

AFW flow by closing 21AF21 and 21AF11 [**Critical Task #2**]. During TRIP-1, the crew will also recognize that 21BF13 failed to close and take action to manually close. The crew will eventually transition to **2-EOP-LOSC-1, Loss of Secondary Coolant.**

H. While in EOP-LOSC-1, the crew will isolate feed and steam flow to 21 SG **[Critical Task #2].** The crew will transition to **EOP-TRIP-3,** SI Termination**,** to terminate SI by stopping ECCS pumps, isolating BIT flow and placing normal letdown in service.

I. The scenario may be terminated when the crew places normal letdown in service or at direction by Lead Examiner.

J. INITIAL CONDITIONS

____ **IC-203**

PREP FOR TRAINING (i.e. computer setpoints, procedures, bezel covers ,tagged equipment)

Initial	Description
	VC1and VC4 C/T
	RCPs (SELF CHECK)
	RTBs (SELF CHECK)
	MS167s (SELF CHECK)
	500 KV SWYD (SELF CHECK)
	SGFP Trip (SELF CHECK)
	23 CV PP (SELF CHECK)
	21 SW Pump C/T

Complete Attachment 2 “Simulator Ready-for-Training/Examination Checklist.”

Note: Tables with blue headings may be populated by external program, do not change column name without consulting Simulator Support group

EVENT TRIGGERS:

Initial	ET #	Description	
	1	EVENT ACTION:	KBD12TCY //21BF13 FW INLET STOP VALVE CLOSE
		COMMAND:	DMF VL0023
		PURPOSE:	<update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	SW0215C 23 SERVICE WATER PUMP TRIP	N/A	N/A	N/A	RT-3	
_____ 02	SW0339F 26 SW PUMP- Press SW Fails H/L	N/A	N/A	N/A	N/A	PRESS SW FAIL HI
_____ 03	CN0117C 23 CONDENSATE PUMP TRIP	N/A	N/A	N/A	RT-4	
_____ 04	CV0036 VCT LEVEL XMTR LT114 FAILS H/L	N/A	N/A	N/A	RT-1	100
_____ 05	BF0111A 21 FW LINE BREAK INSIDE CNTMT	N/A	N/A	N/A	RT-5	10000
_____ 06	RP0058 FAILURE OF AUTOMATIC RX TRIP	N/A	N/A	N/A	N/A	
_____ 07	RP0059A FAILURE OF MANUAL RX TRIP	N/A	N/A	N/A	N/A	
_____ 08	RP0059B FAILURE OF MANUAL SI/RX TRIP	N/A	N/A	N/A	N/A	
_____ 09	RP0060A FAILURE OF TRAIN "A" RX TRIP BREAKER TO TRIP	N/A	N/A	N/A	N/A	
_____ 10	RP0060B FAILURE OF TRAIN "B" RX TRIP BREAKER TO TRIP	N/A	N/A	N/A	N/A	
_____ 11	VL0446 21BF19 Fails to Position (0-100%)	N/A	N/A	N/A	RT-5	50
_____ 12	VL0023 21BF13 Fails to Position (0-100%)	N/A	N/A	N/A	N/A	100
_____ 13	AN0025 SER 025 FAILS - :B47 SW ACCUM TANK #21 TROUBLE	N/A	N/A	N/A	RT-2	SER POINT FAILS/OVRD TO ON
_____ 14	VL0569 21SW223 Fails to Position (0-100%)	N/A	N/A	N/A	RT-14	0
_____ 15	VL0570 22SW223 Fails to Position (0-100%)	N/A	N/A	N/A	RT-14	0

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	SW23D 21 SW PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
_____ 02	SW24D 21 SW PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED
_____ 03	CV41A VCT PRESSURE CONTROLLER SETPOINT	N/A	N/A	N/A	N/A	25
_____ 04	RP18D Open MAIN RX TRIP BKR A	N/A	N/A	N/A	RT-10	TRIP OPEN
_____ 05	RP19D Open MAIN RX TRIP BKR B	N/A	N/A	N/A	RT-10	TRIP OPEN

_____ 06	MS05A 21MS45 21 STM GEN STM SUP-23 AFP	N/A	10000	00:01:00	RT-11	0
_____ 07	AF01D 23 AUX FP TRIP RESET	N/A	N/A	N/A	RT-12	RESET
_____ 08	CT191-1D 21 CFCU BKR #1 High Speed 125VDC	N/A	N/A	N/A	RT-13	OFF
_____ 09	CT191-2D 21 CFCU BKR #2 High Speed 125VDC	00:00:05	N/A	N/A	RT-13	OFF
_____ 10	CT191-3D 21 CFCU BKR #3 Low Speed 125VDC	00:00:10	N/A	N/A	RT-13	OFF
_____ 11	CT192-1D 22 CFCU BKR #1 High Speed 125VDC	00:00:15	N/A	N/A	RT-13	OFF
_____ 12	CT192-2D 22 CFCU BKR #2 High Speed 125VDC	00:00:20	N/A	N/A	RT-13	OFF
_____ 13	CT192-3D 22 CFCU BKR #3 Low Speed 125VDC	00:00:25	N/A	N/A	RT-13	OFF

OVERRIDES:

SELF-CHECK	**Description**	**Delay Time**	**Initial Value**	**Ramp Time**	**Trigger**	**Condition/ Severity**

OTHER CONDITIONS:

	Description

SEQUENCE OF EVENTS

a. State shift job assignments.

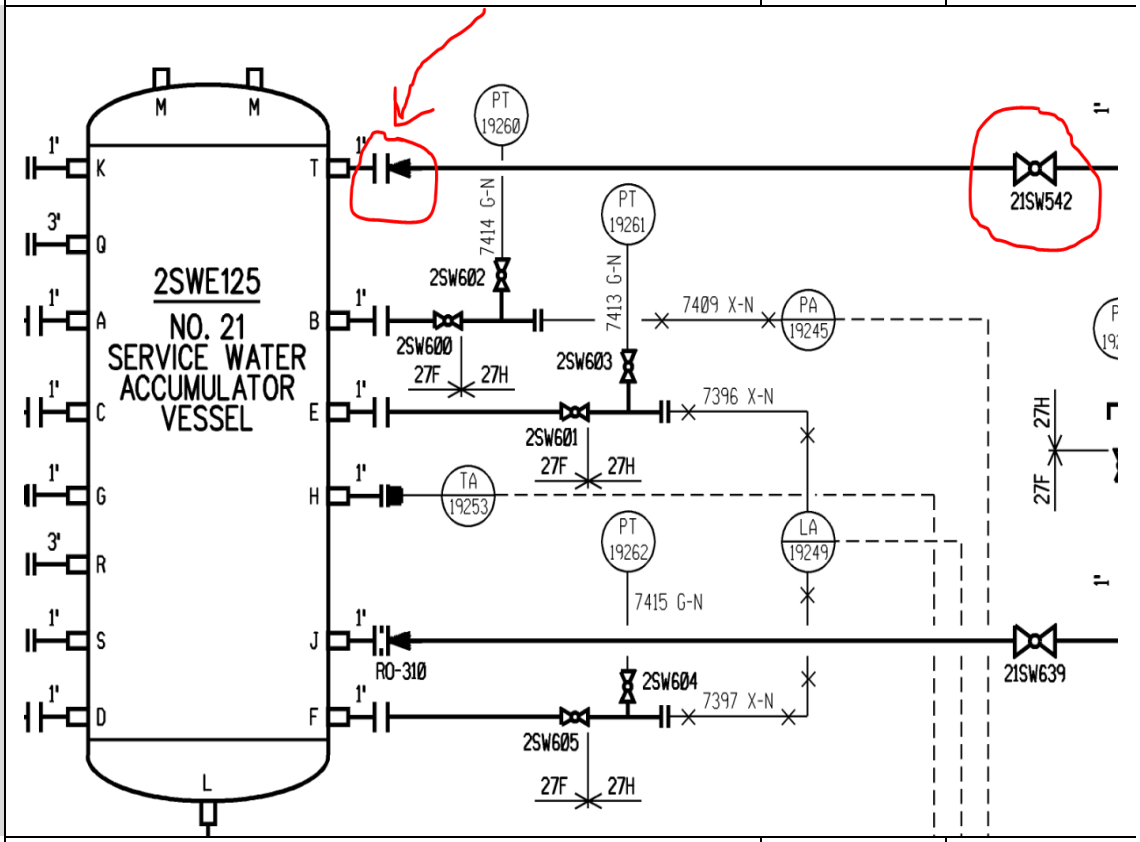
b. Hold a shift briefing, detailing instruction to the shift: (provide crew members a copy of the shift turnover sheet).

c. Inform the crew “The simulator is running. You may commence panel walkdowns at this time. SM please inform me when your crew is ready to assume the shift”.

d. Allow sufficient time for panel walk-downs. When informed by the SM that the crew is ready to assume the shift, ensure the simulator is cleared of unauthorized personnel.

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
1. 2LT-114 VCT Level fails high:			
Simulator Operator: Insert **RT-1** at direction from Lead Examiner. **CV0036, 2LT-114 fails H/L Value = 100**			
Examiner's Note: This malfunction will not result in any alarms except if Auto make-up is initiated. The Lead Examiner may continue to next event at any time.			
	Crew recognizes either VCT level is lowering or 2CV35 is diverted to CVCS HUT.		
	CRS enters S2.OP-AB.CVC-0001, Loss of Charging		
	PO initiates Attachment 1 CAS		
	RO reports 23 Charging pump is running.		
	RO reports no cavitation of Charging Pumps.		
	RO reports no PZR level failure		
	RO reports 2LT-114 has failed high as indicated on the P-250 plant computer.		
Examiner's Note: If operator does not recognize lowering VCT level it will take **approx. 4 minutes** until			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
you get Auto Make-up (11%). Auto make-up will NOT maintain VCT level and eventually the crew will receive console alarm for VCT Level Hi-Lo.			
	RO takes manual control of 2CV35 and positions to VCT.		
	RO reports letdown has not isolated.		
	CRS directs RO to maintain VCT level by either: • Cycling 2CV35, or • Initiating manual make-up IAW S2.OP-SO.CVC-0006		
	RO reports Charging Pump is supplying adequate charging flow.		
	CRS directs RO to place 2CV35 in Auto when cause has been corrected.		
Proceed to next event at Lead Examiner's direction			
2. 21 SW Accumulator Tank Low Pressure			
Simulator Operator: Insert **RT-2** on direction from Lead Examiner. This will insert the following malfunction: **AN0025, OHA B-47, 21 SW Accum Tank Trouble**			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	Crew reports unexpected OHA Alarm B-47, 21 SW Accumulator Tank Trouble.		
	Crew dispatches field operator to investigate cause of alarm.		
Field report on alarm:			
Role Play: After 1-2 minutes, report as the field operator the following: ***the alarm is for low tank pressure and its' reading 137 psig and slowly lowering. I can hear a hissing sound coming from a flanged connection located between the tank and the 21SW542 Nitrogen fill line valve. I don't think it can be isolated***. Reference drawing 205342 Sheet 7 **Notes**: SW Tank is Inoperable when pressure is outside of the band of 138-157 psig (55.2 – 62.8% local) S2.OP-SO.SW-0006 Section 5.5 can be used to make-up Nitrogen pressure to 21 SW Accumulator Tank.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	The crew declares 21 SW Accumulator Inoperable and IAW the Alarm Response Procedure and/or S2.OP-SO.SW-0005, take actions to stop 21 and 22 CFCUs and then isolate them from the field by closing valves in the field.		
	PO stops 21 and 22 CFCUs.		
	The CRS directs WCC supervisor to CLOSE the following field valves: • **21 & 22 SW76, CFCU Outlet Valves** • **21 & 22 SW54, CFCU Inlet Valves**		
Simulator Operator: When notified, Insert **RT-14** to simulate closing of the SW76 and SW54 valves in the field for affected CFCUs: **VL0569, 21SW223 fails to position** **VL0570, 22SW223 fails to position** **Value = 0** Wait 3-5 minutes, THEN Notify the CRS the SW valves are closed.			
Simulator Operator: IF requested to open control power for 21 and 22 CFCU High and Low Speed breakers, THEN INSERT **RT-13**. Location: 84' SWGR Room.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	The crew evaluates Tech Specs due to the low tank pressure.		
TS evaluation #1:			
	The CRS enters TS 3.6.1.1 (1 hour) for Containment Integrity and 3.6.2.3 (14 days) for two CFCUs Inoperable.		
Proceed to next event after Tech Specs has been evaluated or by direction from Lead Examiner.			
	The crew may direct field operator to perform make-up to restore SW Accumulator pressure to within specification for Operability IAW S2.OP-SO.SW-0006, SW Accumulator Operation.		
Role Play: IF required, acknowledge the direction to make-up to SW Accumulator Tank using the SO-OP.SW-0006 procedure to restore pressure to within the specified pressure band.			
3. 23 SW Pump trips and 26 SW fails to Auto start:			
Simulator Operator: Enter **RT-3** on direction from Lead Examiner. **SW0215C, 23 SW pump trips** **SW0339F, 26 SW pressure switch fails high**			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports unexpected OHA alarms for: • B-13, 21 SW HDR PRESS LO • B-14, 22 SW HDR PRESS LO • B-15, TURB AREA SW HDR PRESS LO		
	RO reports 23 SW Pump tripped and 26 SW Pump in Auto failed to start.		
	RO starts 26 SW pump.		
	RO reports low SW pressure alarms are cleared.		
Examiner's Note: Crew does not have to enter S2.OP-AB.SW-0001 since the only action that the AB requires is to start standby SW Pump.			
	CRS enters S2.OP-AB.SW-0001, Loss of SW Header Pressure		
	PO initiates Attachment 1 CAS		
	PO reports no indication of SW Bay leak.		
	PO starts SW Pumps to maintain header pressure between 95-150 psi.		
	PO reports all SW OHA alarms are cleared.		
	PO reports no indication of leak or valve malfunction on the turbine header.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
TS evaluation #2:			
	CRS enters TS 3.7.4 (72 hours). This is due to having 21 and 23 SW Pumps inoperable in one bay resulting in only one operable SW loop (refer to S2.OP-SO.SW-0005 Attachment 2)		
Proceed to next event at Lead Examiner direction.			
4. 23 Condensate Pump trips:			
Simulator Operator: Insert **RT-4** by direction from Lead Examiner. **CN0117C, 23 condensate pump trips**			
	PO reports 23 Condensate Pump tripped.		
	CRS enters S2.OP-AB.CN-0001, Main Feedwater/Condensate Abnormality.		
	PO initiates Attachment 1 CAS		
	PO reports SGFP did not trip		
	PO reports 23 Condensate Pump tripped.		
Role Play: After 1-2 minutes report the following; ***23 Condensate Pump breaker is open and the overcurrent relay***			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
flag is up.			
	PO reports SGFP suction pressure is less than 320 psig.		
	PO opens 21-23 CN108's (Polisher Bypass valves)		
	PO reports 2CN47 is not open.		
	CRS evaluates plant conditions IAW Attachment 2 section 4.0		
	CRS determines that a load reduction to 85% Rx power at ≤ 5%/min is required.		
	CRS brief load reduction and Reactivity plan.		
	RO initiates boration IAW S2.OP-SO.CVC-0006, Boration Concentration Control.		
	PO initiates load reduction using turbine load control IAW S2.OP-SO.TRB-0001, Turbine-Generator Startup Operations		
	CRS enters S2.OP-AB.LOAD-0001, Rapid Load Reduction.		
	PO initiates Attachment 1 CAS		
	RO maintains Tavg on program IAW Attachment 3		
	RO energizes all PZR heaters.		
	CRS directs WCC to transfer heating steam to Unit 1 IAW SC.OP-SO.HS-0001.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Proceed to next event after the load reduction is complete or at Lead Examiner's direction.			
5. 21 SG Feed Line Break (inside containment):			
Simulator Operator: Insert **RT-5** by direction from Lead Examiner. **BF0111A, 21 SG feedline break inside containment** **Value = 10000**			
ATWS:			
	RO reports demand for First-Out OHA for F-3, 21 SG LVL LO-LO but the Rx failed to Auto trip		
	RO Trips the Rx by opening both M-G set breakers: 2E6D and 2G6D		
Critical Task #1 (CT-1): Manually trip the reactor before transition to EOP-FRSM-1 is required. **SAT _____ UNSAT _____**			
	RO performs immediate actions of EOP-TRIP-1		
	RO reports large oscillating feed flow on 21 SG with		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	no steam flow. All other SGs are indicating approx. 11% steam flow with no feed flow.		
	RO manually initiates MSLI.		
	RO reports Auto SI actuated on CNTMT PRESS HI		
	RO backs up SI signal.		
	RO reports steam (feed) leak is on 21 SG.		
	PO receives permission to throttle AFW flow to no less than 22E4 lbm/hr.		
	PO closes 21AF21 and 21AF11 to isolate faulted 21 SG. [Critical Task #2, Part 1]		
Critical Task # 2 (CT-17): Isolate the faulted SG before transition out of EOP-LOSC-1. **SAT_____ UNSAT_____** This CT is comprised of 2 parts; isolate feed flow and then steam flow later in EOP-LOSC-1.			
	RO reports SEC loading is not complete for B vital bus, but that all available equipment started.		
	PO reports 21 and 22 AFW pumps are operating.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
21BF13 fails to close:			
	RO reports safeguards valve alignment status: • 21BF13 is open • 21BF19 is open		
Simulator Operator: Ensure **ET-1** is TRUE when the 21BF13 closed pushbutton is depressed. This will delete malfunction VL0023.			
	PO manually closes 21BF13.		
Examiner's Note: Closing the 21BF13 will isolate main feed flow from 21 SG into Containment.			
	PO reports may attempt to manually close 21BF19 from the control room using SLIMMs controller, but will be unsuccessful.		
	CRS dispatches operator to attempt to close 21BF19 from the field.		
	RO reports 21 and 22 CA330s are closed.		
	RO reports containment pressure has remained less than 15 psig.		
	PO reports main steam line isolation requirements were met and MSLI previously initiated.		
	PO reports all 4KV vital busses are energized.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports CAV is in Accident Pressurized mode.		
	RO reports correct switchgear room ventilation operation.		
	RO reports 2 CCW pumps are running.		
	RO reports both CCW HXs are in Auto.		
	RO reports correct ECCS pump alignment and expected flows for RCS conditions.		
Examiner's Note: PO should have lowered AFW flow to as close to 22E4 lbm/hr as possible.			
	PO reports AFW flow is >22E4 lbm/hr.		
	RO reports all RCPs are running.		
	RO reports Tavg is not stable and is rising.		
	RO reports Tavg is greater than 547 F.		
	PO controls Tavg by dumping steam using MS10's.		
	RO reports both reactor trip breakers are NOT open.		
Examiner's Note: If the crew does not dispatch an operator to locally open the RTBs, then they will not be able to reset SI and SEC to take control of the ECCS pumps in EOP-LOSC-1, unless they chose to			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
block each SEC signal.			
	CRS directs WCC to locally open both Reactor Trip Breakers.		
Simulator Operator: Insert **RT-10** to locally open both RTBs. **RP18D, Open RTB A** **RP19D, Open RTB B**			
	RO reports both PZR PORVs are closed and block valves are open.		
	PO reports 21 SG pressure is lowering in an uncontrolled manner or completely depressurized.		
	RO reports that MSLI was previously initiated.		
	CRS transitions to 2-EOP-LOSC-1, Loss of Secondary Coolant.		
	RO reports MSLI has been initiated.		
	PO reports all valves in Table A are closed.		
	PO reports 21 SG pressure is dropping in an uncontrolled manner.		
	PO reports that all SGs pressures are NOT dropping in an uncontrolled manner OR completely depressurized.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Examiner's Note: 21BF19 is still open. Closing 21BF13 isolates 21 SG main feed flow into Containment, this satisfies CT #2.			
	PO closes or verifies closed the following valves: 21BF13, 21BF40, 21MS7, 21MS10, 21MS18, 21MS167, and 21GB4 [Critical Task #2, Part 2]		
Critical Task # 2, Part 2 (CT-17): Isolate the faulted SG before transition out of EOP-LOSC-1. **SAT_____ UNSAT_____**			
	PO reports that 21 SG is faulted.		
	PO reports that 23 AFW pump is not needed to maintain SG levels.		
	PO lowers 23 AFW pump speed to minimum.		
	PO Trips and then Stops 23 AFW pump.		
Simulator Operator: IF requested, Insert **RT-12** to reset 23 AFW pump 2MS52 trip valve. **AF01D 23 AUX FP TRIP RESET**			
	CRS dispatches operator to close 21MS45.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Simulator Operator: Insert **RT-11** to close 21MS45. **MS05A 21 STM GEN SUP-23 AFP** **Final = 0** **Ramp = 1 min**			
	RO resets Phase A.		
	RO resets SG sample isolation bypass.		
	RO opens 21 thru 24 SS94's.		
	CRS directs Chemistry to sample all SGs for boron and activity.		
	RO reports that RCS temperature is rising.		
	PO adjusts MS10's to current intact SG pressure to stabilize RCS temperature.		
	RO reports no NR or WR SG levels are rising in an uncontrolled manner.		
	PO reports that 2R15, 2R19's and 2R46s are not in warning or alarm.		
	RO reports RCS subcooling is > 0 F.		
	PO reports that total AFW flow is NOT > 22E4 lbm/hr (about 3E4 lbm/hr during validations due to NR levels at 9% (15% adverse)).		
	RO reports that RCS pressure is stable or rising.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports that PZR level is > 11% (19% adverse).		
	CRS transitions to EOP-TRIP-3, SI Termination.		
Examiner's Note: At the discretion of the Lead Examiner, the scenario may be terminated when the crew transitions to EOP-TRIP-3.			
Examiner's Note: Need RTBs locally opened to reset SI, if not previously opened in TRIP-1.			
	RO resets SI, Phase A, and Phase B.		
	RO reports both CA330's are open.		
	RO reports that no spray valves are failed open.		
	RO reports all SECs and control centers are reset.		
	RO stops all but 21 or 22 Charging Pump. (this should also include 23 Charging Pump if running)		
	RO reports RCS pressure is stable or rising.		
Normal Charging Alignment:			
	RO reports that charging pump suction is aligned to the RWST.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO opens 2CV139 and 2CV140.		
	RO closes 2SJ4, 2SJ5, 2SJ12, and 2SJ13.		
	RO closes 2CV55.		
	RO opens 2CV68 and 2CV69.		
	RO adjusts 2CV55 to maintain PZR level > 25% (33% adverse)		
	RO reports PZR level is stable or rising.		
	RO reports RCS pressure is stable or rising.		
	RO reports that RCS pressure is > 1540 psig (1660 psig adverse).		
	RO stops 21 and 22 SI pumps.		
	RO reports that both RHR pumps are running and suction aligned to RWST.		
	RO stops 21 and 22 RHR pumps.		
	RO reports RCS subcooling is > 0 F.		
	RO reports PZR level is > 11% (19% adverse).		
	RO reports no CS spray pumps are running.		
Establish Normal Letdown:			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	RO reports PZR level is > 25% (33% adverse)		
	RO opens 2CV2 and 2CV277.		
	RO opens 2CV7.		
	RO adjusts 2CV55 to maintain > 87 gpm.		
	RO simultaneously places one letdown orifice valve in service while adjusting the 2CV18 to maintain letdown pressure at 300 psig.		
	RO places 2CV18 in Auto.		
	RO reports normal letdown in service.		
Scenario may be terminated when letdown is restored or by direction from Lead Examiner.			

K. SCENARIO REFERENCES

A. Alarm Response Procedures (Various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. OP-AA-101-111-1003, Use of Procedures
E. 2-EOP-TRIP-1, Rx Trip or Safety Injection
F. 2-EOP-LOSC-1, Loss of Secondary Coolant
G. 2-EOP-TRIP-3, SI Termination
H. S2.OP-AB.SW-0001, Loss of SW Header Pressure
I. S2.OP-AB.CVC-0001, Loss of Charging
J. S2.OP-SO.CN-0001, Main Feedwater/Condensate System Abnormality
K. S2.OP-AB.LOAD-0001, Rapid Load Reduction
L. S2.OP-IO.ZZ-0004, Power Operation

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 100% RCS BORON: 802 MWe 1220

SHUTDOWN SAFETY SYSTEM STATUS (5, 6 & DEFUELED):

NA

REACTIVITY PARAMETERS

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Unit 1 and Hope Creek at 100% power.
No penalty minutes in the last 24 hrs.

PRIMARY:

SECONDARY:

- Polisher in service
- Blowdown 35K per loop to 23 Condenser

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

- 21 SW Pump C/T for pump repack.

ATTACHMENT 2

SIMULATOR READY FOR TRAINING CHECKLIST

____ 1. Verify simulator is in “TRAIN” Load
____ 2. Simulator is in RUN
____ 3. Overhead Annunciator Horns ON
____ 4. All required computer terminals in operation
____ 5. Simulator clocks synchronized
____ 6. All tagged equipment properly secured and documented
____ 7. TSAS Status Board up-to-date
____ 8. Shift manning sheet available
____ 9. Procedures in progress open and signed-off to proper step
____ 10. All OHA lamps operating (OHA Test) and burned out lamps replaced
____ 11. All printers have adequate paper AND functional ribbon
12. Required procedures clean
____ 13. Multiple color procedure pens available
____ 14. Required keys available
____ 15. Simulator cleared of unauthorized material/personnel
____ 16. All charts advanced to clean traces and chart recorders are on.
____ 17. Rod step counters correct (channel check) and reset as necessary
____ 18. Exam security set for simulator
____ 19. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter
____ with Baseline Data filled out
____ 20. Recording Media available (if applicable)
____ 21. Ensure ECG classification is correct
____ 22. Reference verification performed with required documents available
____ 23. Verify phones disconnected from plant after drill.
____ 24. Ensure ECG related paperwork is marked “For Training Use Only”.

ATTACHMENT 3

CRITICAL TASK METHODOLOGY

In reviewing each proposed CT, the examination team assesses the task to ensure, that it is essential to safety. A task is essential to safety if, in the judgment of the examination team, the improper performance or omission of this task by a licensee will result in direct adverse consequences or in significant degradation in the mitigative capability of the plant.
The examination team determines if an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance. If incorrect performance of a task by an individual necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

I. Examples of CTs involving essential safety actions include those for which operation or correct performance prevents...

- degradation of any barrier to fission product release
- degraded emergency core cooling system (ECCS) or emergency power capacity
- a violation of a safety limit
- a violation of the facility license condition
- incorrect reactivity control (such as failure to initiate Emergency Boration or Standby Liquid Control, or manually insert control rods)
- a significant reduction of safety margin beyond that irreparably introduced by the scenario

II. Examples of CTs involving essential safety actions include those for which a crew demonstrates the ability to...

- effectively direct or manipulate engineered safety feature (ESF) controls that would prevent any condition described in the previous paragraph.
- recognize a failure or an incorrect automatic actuation of an ESF system or component.
- take one or more actions that would prevent a challenge to plant safety.
- prevent inappropriate actions that create a challenge to plant safety (such as an unintentional Reactor Protection System (RPS) or ESF actuation.

ATTACHMENT 4

SIMULATOR SCENARIO REVIEW CHECKLIST

SCENARIO IDENTIFIER: 19-01 NRC Scenario 3 REVIEWER: R. Chan

Initials		Qualitative Attributes
R	1.	The scenario has clearly stated objectives in the scenario.
R	2.	The initial conditions are realistic, in that some equipment and/or instrumentation may be out of service, but it does not cue crew into expected events.
R	3.	The scenario consists mostly of related events.
R	4.	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 event termination point
R	5.	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.
R	6.	The events are valid with regard to physics and thermodynamics.
R	7.	Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
R	8.	The simulator modeling is not altered.
R	9.	All crew competencies can be evaluated.
R	10.	The scenario has been validated.
N/A	11.	If the sampling plan indicates that the scenario was used for training during the requalification cycle, evaluate the need to modify or replace the scenario.
R	12.	ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 5

ESG CRITICAL TASKS

19-01 NRC Scenario 3

Critical Task #1 (CT-1): Manually initiate Rx Trip before transition to EOP-FRSM-1 is required.

Bases: See WOG Rev. 2

Critical Task #2 (CT-17): Isolate feed and steam flow to faulted SG before transition out of EOP-LOSC-1.

Bases: See WOG Rev. 2

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

Y/N	Event	Y/N	Event
N	TRANSIENTS with PCS Unavailable	N	Loss of Service Water
N	Steam Generator Tube Rupture	N	Loss of CCW
N	Loss of Offsite Power	N	Loss of Control Air
N	Loss of Switchgear and Pen Area Ventilation	N	Station Black Out
N	LOCA		

COMPONENT/TRAIN/SYSTEM UNAVAILABILITY THAT INCREASES CORE DAMAGE FREQUENCY

Y/N	COMPONENT, SYSTEM, OR TRAIN	Y/N	COMPONENT, SYSTEM, OR TRAIN
N	Containment Sump Strainers	N	Gas Turbine
N	SSWS Valves to Turbine Generator Area	N	Any Diesel Generator
N	RHR Suction Line valves from Hot Leg	N	Auxiliary Feed Pump
N	CVCS Letdown line Control and Isolation Valves	N	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

Y/N	OPERATOR ACTION
N	Restore AC power during SBO
N	Connect to gas turbine
N	Trip Reactor and RCPs after loss of component cooling system
N	Re-align RHR system for re-circulation
N	Un-isolate the available CCW Heat Exchanger
N	Isolate the CVCS letdown path and transfer charging suction to RWST
N	Cooldown the RCS and depressurize the system
N	Isolate the affected Steam Generator that has the tube rupture(s)
N	Early depressurize the RCS
N	Initiate feed and bleed

Complete this evaluation form for each

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: NRC-4 [AB.RAD-1, AB.CN-1, AB.RCP-1, TRIP-1, TRIP-2, SGTR-1]

SCENARIO NUMBER: 19-01 NRC ESG-4

EFFECTIVE DATE: See Approval Dates

EXPECTED DURATION: 70 minutes

REVISION NUMBER: 03

PROGRAM:

[ ] **L.O. REQUAL**

[X] **INITIAL LICENSE**

[ ] **STA**

[ ] **OTHER** _____

Revision Summary:

New issue for 16-01 ILOT NRC exam.
Rev. 01**:** Incorporated NRC comments from Prep week. Added Tech Spec LCO times. Added clarification that CT#2 is broken down into two parts.
Rev. 02: Modified for 19-01 ILOT NRC exam.
Rev. 03 Incorporated NRC comments from working mtg on 2-14-20. Deleted Loss of Off-site Power to reduce cooldown time in SGTR-1 using steam dumps. Added comments from NRC Prep Week 6-17-20.

PREPARED BY:	R. Chan	6-18-20
	Lead Regulatory Exam Author	**Date**
APPROVED BY:	N/A	
	Operations Training Manager	**Date**
APPROVED BY:	**N/A**	
	Facility Representative	**Date**

SCAN OF SIGNED SCENARIO COVER SHEET