Scenario No.: 1

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

Facility: _____Salem_____ Scenario No.: ____ESG-1_____ Op-Test No.: __20-01 NRC__

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: IC-240: Unit 2 is at 100% power, EOL; 21 Charging Pump I/S. The following equipment is out of service: 23 Charging Pump and 21 RHR Pump are C/T for maintenance.

Turnover: The crew is directed to reduce power to 89% power at 10% per hour IAW S2.OP-IO.ZZ-0004 using boration, control rods and turbine load control in preparation for Main Turbine Valve testing.

Critical Tasks:

1. Manually actuate at least one train of SI before transition out of TRIP-1
2. Manually start one low head ECCS pump before transition out of TRIP-1
3. Make up to the RWST, minimize RWST outflow, and if RWST Lo-Lo level alarm received stops ECCS pumps prior to cavitation

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ATC (R) BOP (N) CRS (N)	Load reduction to 89% at 10% per hour IAW IOP-4
2	VC0087C	BOP (C) CRS (C)	24 vacuum pump trips
3	RC0015D	ATC (I) CRS (I, TS)	24 Loop Cold Leg RTD fails high
4	RC0002	ATC (C) CRS (C,TS)	RCS leak inside containment (20 gpm)
5	RC0002 RC0001A	ALL (M)	-RCS leak worsens to 350 gpm/ Large Break LOCA
6	RP0108	ATC (I) CRS (I)	-Auto Safety Injection fails to actuate **(CT-1)**
7	RP318A2	ALL (I)	22 RHR Pump fails to start on SEC signal **(CT-2)**
8	RH0026B	ALL (C)	22 RHR Pump trips **(CT-3)**
		ABs	IOP-4 → AB.COND-1 → AB.ROD-3 → AB.RC-1
		EOPs	TRIP-1 → LOCA-1 → LOCA-5

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

Scenario No.: 1

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

I. OBJECTIVES

A. Given the order, perform a turbine load reduction in accordance with station procedures.

B. Given indications of a loss of vacuum, perform actions as the nuclear control operator to RESPOND to the malfunction, IAW approved station procedures.

C. Given indications of a loss of vacuum, DIRECT the response to the malfunction IAW approved station procedures.

D. Given indications of a RCS RTD instrument failure, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with approved station procedures.

E. Given indications of a RCS RTD instrument failure, DIRECT the response to the malfunction in accordance with approved station procedures.

F. Given an RCS leak at power, respond to the event IAW approved station procedures.

G. Given the indications of a reactor coolant system (RCS) malfunction or leak, perform actions as the nuclear control operator to RESPOND to the malfunction in accordance with the approved station procedures.

H. Given the indications of a reactor coolant system (RCS) malfunction or leak, DIRECT the response to the malfunction in accordance with the approved station procedures.

I. 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.

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

K. 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.

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

M. 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.

N. Given a safety injection has occurred and equipment has failed to start, START equipment that has failed to automatically start in accordance with station procedures.

O. Given the order or indications of a loss of coolant accident (LOCA), complete actions as the nuclear control operator to PERFORM the immediate response to the LOCA in accordance with the approved station procedures.

P. Given indication of a loss of coolant accident (LOCA), DIRECT the immediate response to the LOCA in accordance with the approved station procedures.

Q. Given the order or a loss of coolant accident (LOCA) with indication of a loss of emergency recirculation, perform actions as the nuclear control operator to RESPOND to the loss of emergency recirculation in accordance with the approved station procedures.

R. Given a loss of coolant accident (LOCA) and a loss of emergency recirculation, DIRECT actions to respond to the emergency recirculation loss in accordance with the approved station procedures.

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

II. MAJOR EVENTS

1. Planned Load Reduction to 89% at 10%/hour
2. 24 Vacuum Pump trips
3. RC Loop 24 Cold Leg RTD Fails High (TS)
4. RCS Leak (20 gpm) (TS)
5. LBLOCA
6. Auto SI fails to actuate
7. 22 RHR Pump Fails to Start on SEC Signal
8. Loss of Emergency Recirculation capability (22 RHR Pump Trips)

III. SCENARIO SUMMARY

1. The crew assumes the watch at 100% power, EOL. 23 Charging Pump is C/T for pulsation damper repairs with 21 Charging Pump in service, 21 RHR is C/T for motor bearing replacement.
2. After assuming the watch, the crew will brief a planned load reduction to 89% at 10%/hour IAW **S2.OP-IO.ZZ-0004**, Power Operation, in preparation for Main Turbine Valve testing next shift.
3. After the power reduction has commenced, 24 condenser vacuum pump will trip. The crew will recognize that condenser backpressure is slowly rising and enter **S2.OP-AB.COND-0001**, Loss of Condenser Vacuum. The crew will start all available vacuum pumps and stabilize condenser back pressure. The 25AR25 will fail to open and the operator will manually open from control room.
4. After the crew addresses vacuum pump trip, 24 Loop Cold Leg RTD will fail high causing control rods to continuously insert. The crew will verify no turbine runback in progress and place rods in manual. The crew will enter **S2.OP-AB.ROD-0003**, Continuous Rod Motion, and place rods to manual, defeat the failed channel, place Charging Flow in manual, then restore rods to AUTO. The CRS will enter TS 3.3.1.1, Action 6 and 3.3.2.1.b Action 19.
5. Once actions for 24 Loop RTD failure is addressed, a RCS leak (20 gpm) will occur resulting in lowering PZR level and rising counts on the 2R11A containment radiation monitor. The CRS will enter **S2.OP-AB.RC-0001, RCS Leak**, and adjust Charging flow to stabilize PZR level. The CRS will evaluate TS and enter TS 3.4.7.2.b, Action b. Once TS has been evaluated, the RCS leak will worsen to 350 gpm. The crew will take CAS actions in S2.OP-AB.RC-0001 and manually trip the reactor, at which time the RCS leak will escalate into a Large Break LOCA.
6. Immediately following the Rx Trip a malfunction will prevent Auto Safety Injection from actuating. The crew will respond by manually initiating SI [**Critical Task #1**]. The crew will enter **EOP-TRIP-1,** Reactor Trip or Safety Injection.
7. While in EOP-TRIP-1, the crew will recognize that 22 RHR Pump failed to start on SEC signal. The crew will block and reset 2B SEC, then manually start 22 RHR Pump [**Critical Task #2**].

8. The crew will perform diagnostics in EOP-TRIP-1 and eventually transition to **EOP-LOCA-1**, Loss of Reactor Coolant, based on containment pressure > 4 psig. While in EOP-LOCA-1, the 22 RHR Pump will trip and the crew will determine a loss of emergency recirculation capability and transition to **EOP-LOCA-5**, Loss of Emergency Recirculation. The crew will perform the following actions in LOCA-5; make-up to RWST, stop Containment Spray Pumps, and then reduce ECCS to a single train [**Critical Task #3**]. During LOCA-5, the crew may reach the RWST Lo-Lo Level Alarm (1.2 feet) and be required to stop all ECCS pumps taking suction from the RWST prior to cavitation [**Critical Task #3**].
9. The scenario can be terminated when the crew reduces ECCS to one train, stops all ECCS pumps taking suction from the RWST if the Lo-Lo level alarm is received, or by direction from Lead Examiner.

IV. INITIAL CONDITIONS

____ **IC-240**

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

Initial	Description
____ 1	2VC1and 2VC4 C/T
____ 2	RCPs (SELF CHECK)
____ 3	RTBs (SELF CHECK)
____ 4	21-24MS167s (SELF CHECK)
____ 5	500 KV SWYD (SELF CHECK)
____ 6	21 and 22 SGFP Trip (SELF CHECK)
____ 7	**21 CV Pump (SELF CHECK)**
____ 8	**21 RHR Pump C/T**
____ 9	**23 Charging pump C/T**
___ 10	**Suggested Protected Equipment:** ▪ **22 RHR Pump**
___ 11	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: COMMAND: PURPOSE:	MONP254 < 10. //CONT ROD BANK C < 10 (RX TRIP) <update as needed>
	2	EVENT ACTION: COMMAND: PURPOSE:	KCK02PBZ //22 VACUUM PUMP-START <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
_____ 01	VC0087C TRIP OF VACUUM PUMP 24	N/A	N/A	N/A	RT-1	
_____ 02	RC0015D LOOP 24 COLD LEG RTD FAILS HI/L	N/A	N/A	N/A	RT-2	630
_____ 03	RC0002 RCS LEAK INTO CONTAINMENT (equiv to 0-4 inches)	N/A	N/A	N/A	RT-3	20
_____ 04	RP0108 FAILURE OF AUTOMATIC SI	N/A	N/A	N/A	N/A	
_____ 05	RC0001A RCS RUPTURE OF RC LOOP 21	N/A	N/A	N/A	ET-1	
_____ 06	VC0087A TRIP OF VACUUM PUMP 22	00:00:02	N/A	N/A	ET-2	
_____ 07	RP318A2 RHR PUMP 22 Fails to Start on SEC	N/A	N/A	N/A	N/A	
_____ 08	RH0026B 22 RHR PUMP TRIP	N/A	N/A	N/A	RT-4	

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
_____ 01	MC32A CROSS FLOW CORRECTION FACTOR	N/A	N/A	N/A	N/A	.99867
_____ 02	CV20A 2CV182 BLENDER ISO VLV	N/A	N/A	N/A	RT-10	100
_____ 03	CV21A 2CV184 BLENDER DISC TO RWST	N/A	N/A	N/A	RT-10	100
_____ 04	RH26D 21 RHR PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
_____ 05	RH27D 21 RHR PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED
_____ 06	CV52D 23 CHG PUMP BKR CONTROL POWER	N/A	N/A	N/A	N/A	OFF
_____ 07	CV53D 23 CHG PUMP RACK OUT	N/A	N/A	N/A	N/A	TAGGED

OVERRIDES:

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

_____ 01	AH03 C1 LO QAH03HRK RWST HEATER PUMP START	00:00:02	N/A	N/A	RT-11	ON
_____ 02	AH03 C2 LO QAH03KGK RWST HEATER PUMP STOP	N/A	N/A	N/A	RT-11	OFF

OTHER CONDITIONS:

	Description
____ 1.	None

V. 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	Comments
1. **Power Reduction to 89%**			
	CRS briefs crew on power reduction to 89% at 10%/hour IAW S2.OP-IO.ZZ-0004, Section 4.3 Power Reduction.		
	RO briefs boration plan for load reduction.		
	PO briefs turbine load control plan.		
	RO initiates boration IAW S2.OP-SO.CVC-0006.		
	PO initiates turbine load reduction IAW S2.OP-SO.TRB-0002, Turbine Generator Shutdown Operation.		
	RO monitors Tavg and control rods for proper response.		
Proceed to next event by direction from Lead Examiner.			
Examiner's Note: The crew may at any time stop the load reduction to respond to the next events.			
2. 24 Vacuum Pump Trips:			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Simulator Operator: At direction from Lead Evaluator insert **RT-1**. This will trip 24 vacuum pump: **VC0087C, Trip of Vacuum Pump 24**			
	PO reports unexpected trip of 24 Vacuum Pump.		
	CRS enters S2.OP-AB.COND-0001, Loss of Condenser Vacuum.		
	PO initiates Attachment 1 CAS.		
	CRS dispatches operator to perform Attachment 2, Loss of Vacuum Local Checks.		
Role Play: When dispatched to perform Attachment 2, THEN after 2-5 minutes report the following: ***I've completed Attachment 2 and have found no abnormal conditions except for the vacuum pump breaker being tripped open***.			
	PO reports 24 Vacuum pump is stopped and the 24AR25 is closed.		
	PO reports condenser backpressure is rising rapidly.		
	PO reports rising backpressure is not attributed to CW System malfunctions.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO starts all available vacuum pumps.		
22 Vacuum Pump trips following start:			
Simulator Operator: Ensure **ET-2** is TRUE IF 22 Vacuum pump is started. This will cause the pump to trip following start.			
	IF 22 Vacuum Pump is started, the PO reports that the pump started then tripped seconds later.		
25AR25 fails to open following start of 25 Vacuum Pump:			
	PO reports that 25 Vacuum Pump started but the 25AR25 failed to open.		
Role Play: IF requested to check local indications at the Vacuum Pump, THEN report that ***the local gauge reading is within the normal band and all other parameters are within their normal bands.***			
	PO manually opens 25AR25.		
	PO reports that condenser back pressure is improving.		
Proceed to next event at direction from Lead Examiner.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
3. 24 Loop Cold Leg RTD Fails High			
Simulator Operator: Insert **RT-2** on direction from Lead Examiner. **RC0015D, 24 Cold Leg RTD Fails H/L Value = 630**			
	RO reports unexpected continuous rod insertion with no turbine runback in progress.		
Examiner's Note: RO may request to take manual control of Master Flow Controller prior to direction provided in S2.OP-AB.ROD-0003.			
	RO places rod control in Manual.		
	RO reports rod motion has stopped.		
	CRS enters S2.OP-AB.ROD-0003, Continuous Rod Motion.		
	RO reports that 24 RC Loop Tavg Channel has failed high. (may also report DT is reading zero indicating failed high Cold Leg input)		
Examiner's Note: RO could place MFC in Manual at anytime or wait until directed in AB.ROD-0003.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO places Master Flow Controller (MFC) to Manual		
	RO reports various 2CC2 console alarms in for: RC Loop Tavg Deviation, Tavg-Tref Deviation, RC Tavg Hi or Lo-Lo, RC Loops DT Dev.		
	CRS confirms control rods are in manual and rod motion has stopped.		
	CRS directs RO to adjust rods in manual to maintain Tavg within 1.5 deg of T program. Any rod manipulation is pre-announced, and the RO monitors control board indications for plant response to rod motion.		
	RO reports rod motion was in the inward direction and a NIS channel has NOT failed.		
	CRS directs RO to stop any dilution in progress.		
	RO reports 24 loop Tavg channel has failed High.		
	CRS directs RO to return PZR level to program.		
	RO places Charging System Master Flow Controller in manual (if not previously performed).		
	RO adjusts charging flow to restore PZR level to program IAW Attachment 2.		
	RO defeats 24 loop Reactor Coolant Differential Temperature and 24 loop Reactor Coolant Average Temperatures on 2CC2.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO selects channel other than 24 loop for Reactor Coolant Differential Temperature and Reactor Coolant Average Temperature.		
	When PZR level has been restored to program, RO places Charging System Master Flow Controller in auto.		
	RO reports control rods are above the rod insertion limit.		
Examiners Note: At this time, Tavg can be outside the +/- 1.5 °F band in order for rods to be restored to Manual. The crew may either withdraw rods and/or reduce turbine load to bring Tavg to within 1.5 °F of program to restore rods to Auto. If the crew decides to leave rods in manual, this will not effect the subsequent steps of the major event of the scenario and may proceed on to the next event.			
	RO restores control rods to previous position at time of load reduction and/or reduces turbine load.		
	RO places rod control in Auto after ensuring Tavg is within 1.5 degrees of Tref.		
TS evaluation #1:			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	CRS enters: • **TS 3.3.1.1 Action 6 (place channel in the tripped condition within 72 hours), <u>and</u>** • **TS 3.3.2.1.b Action 19* (place channel in the tripped condition within 72 hours).**		
Examiner's Note: Operator actions already performed in AB.ROD-0003, no additional actions in control room, I&C Maintenance is required to complete S2.OP-SO.RPS-0002.			
	CRS initiates S2.OP-SO.RPS-0002 to place 24 loop Tavg in tripped condition.		
Proceed to next event after Tech Specs has been evaluated or by direction from Lead Examiner.			
4. RCS Leak (20 gpm)			
Simulator Operator: Insert **<u>RT-3</u>** by direction from Lead Examiner. **RC0002, RCS Leakage** **Value = 20** **Ramp = None**			
	RO reports counts on the 2R11A containment radiation monitor is rising.		
	RO reports PZR level is lowering and/or RCS pressure is lowering.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports RCS leak inside containment.		
	RO determines RCS leak rate.		
Examiners Note: The CRS can also enter S2.OP-AB.RAD-0001, Abnormal Radiation, in response to OHA A-6. If so, the CRS can direct the PO to perform actions of AB.RAD-1 while the CRS directs actions in AB.RC-1.			
	CRS enters S2.OP-AB.RC-0001, RCS Leakage.		
	PO initiates Attachment 1 CAS		
	RO reports RCS temperature is above 350 ˚F.		
	RO reports Unit is not in Mode 3.		
	RO reports PZR level is lowering.		
	RO reports a centrifugal charging pump is in service.		
	CRS directs RO to adjust charging flow to stabilze PZR level.		
	RO adjusts charging flow to stabilize PZR level and then determines RCS leak rate.		
TS evaluation #2:			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	CRS enters: • **TS 3.4.7.2.b (1 gpm unidentified leakage), action b (reduce leakage rate to within limits within 4 hours or be in Hot Standby)**		
Proceed on to next event after TS has been evaluated or by direction from the Lead Examiner			
5. RCS leak worsens to 350 gpm and Large Break LOCA (Major Transient):			
Simulator Operator: Modify **RT-3** to 350 at the direction of the Lead Examiner. **RC0002, RCS Leakage** **Value = 350** **Ramp = None**			
	RO reports PZR level is lowering rapidly.		
	RO attempts to maintain PZR level by adjusting charging flow.		
	RO reports RCS leak rate exceeds make up capability.		
	CRS implements the Attachment 1 CAS action and briefs the RO to Trip the Reactor and actuate Safety Injection.		
	RO trips the reactor and actuates SI.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Simulator Operator: Ensure **ET-1** is TRUE following Rx Trip. This will insert LBLOCA malfunction. **RC0001A, RCS rupture on RC loop 21**			
6. Auto SI fails to actuate on both trains:			
	RO may report SI failed to Auto actuate (depending on where RCS pressure is at during time SI is manually actuated)		
Critical Task-1 (CT-2): Manually actuate at least one train of SI before transition out of TRIP-1, Reactor Trip or Safety Injection. **SAT_____ UNSAT_____**			
	Critical Task #1 - RO manually actuates SI on one Train and verifies the other train actuated.		
	RO continues Immediate Actions of TRIP-1: ▪ Reports the Main Turbine is tripped and backs up Main Turbine trip. ▪ Reports all 4KV vital busses energized. ▪ Reports SI has been initiated.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	CRS and RO verify Immediate Actions complete.		
	CRS directs initiation of the following EOP-TRIP-1 CAS actions when RCS pressure meets the criteria: • **Stops RCPs (1350 psig)** • **Close Charging Mini-flows (1500 psig)**		
	RO announces Rx Trip and Safety Injection on the station PA.		
	PO reports ALL Vital Buses are energized.		
	PO reports SEC loading for 2B vital bus is NOT complete.		
7. 22 RHR Pump fails to start on SEC signal (No low head ECCS pumps running):			
	PO reports 22 RHR pump failed to start.		
Critical Task-2 (CT-5): Manually start one low head ECCS pump before transition out of EOP-TRIP-1, Reactor Trip or Safety Injection. **SAT_____ UNSAT_____**			
	Critical Task #2 - PO blocks and resets 2B SEC.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	Critical Task #2 - RO starts 22 RHR pump.		
	PO throttles AFW flow to no less than 22E4lbm/hr while SG NR levels remain <9%. (15% adverse)		
	RO reports containment pressure has NOT remained <15 psig.		
	RO reports Phase B and Spray actuation Auto initiated.		
	RO reports 21 and 22 CS pumps are running.		
	RO reports MSLI Auto initiated.		
	RO reports all valves groups in Table B are in the safeguards positions.		
	PO reports 2RP4 indicates High-High Containment Pressure.		
	RO reports both trains of MSLI has actuated.		
	PO reports all valves in Table D are closed.		
	PO reports no indication of High Steam flow on 2RP4.		
	RO reports 2 CCW pumps are running.		
	RO reports both CCW HXs are in Auto.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports 2CC131 (Thermal Barrier Return) is closed.		
	RO reports Phase B has occurred and 2CC131 should not be opened.		
	CRS notifies WCC to monitor Spent Fuel Pool temperature and level.		
	RO reports RWST Lo Level Alarm has not actuated (this is a CAS step)		
	PO reports all valves in Table E are in the safeguards positions.		
	RO reports 21 and 22 CA330s are closed.		
	RO reports CAV is in Accident Pressurize Mode.		
	RO reports CAV is not in Maintenance Mode Alignment		
	RO reports two switchgear fans and one switchgear exhaust fan are running		
	RO reports Charging, SI pump and RHR pump flows are consistent with RCS pressure.		
	PO maintains total AFW flow >22E4 lbm/hr until at least one SG NR level is > 9% (15% adverse), then maintains SG NR levels between 19% and 33%.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Examiner's Note: Based on the pace of the crew, they may perform the following CAS steps sooner or later in EOP-TRIP-1.			
	RO closes charging pump mini flows IAW TRIP-1 CAS when RCS pressure is < 1500 psig with BIT flow established. [TRIP-1 CAS]		
	RO stops RCPs IAW TRIP-1 CAS when RCS pressure is <1350 psig with ECCS flow established. [TRIP-1 CAS]		
	RO reports RCP status, and CRS determines whether a MSLI for temperature control is required.		
	RO reports PZR spray valves response are normal.		
	RO reports RCS pressure < 1350 psig and ECCS flow established.		
Examiner's Note: SG pressure could be lowering slowly based on the break flow from the LBLOCA.			
	PO reports NO indications of a Faulted SG exist.		
	PO reports NO indications of a SGTR exist.		
	RO reports two or more channels in Table J are NOT indicating normal on the P250 computer **OR** reports Containment Pressure > 4 psig.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
EOP-LOCA-1 steps here:			
	CRS transitions to 2-EOP-LOCA-1, Loss of Reactor Coolant.		
Examiner's Note: During LOCA-1, the crew may reach the low RWST alarm (15.2 feet) and then transition to EOP-LOCA-3. IF so, the CAS in LOCA-3 will direct transition to LOCA-5 following the trip of the last remaining RHR Pump.			
Simulator Operator: IF the crew transitions to LOCA-3, THEN insert **RT-4** to trip the 22 RHR Pump immediately upon transition to LOCA-3.			
Examiners Note: A CFST PURPLE Path on Thermal Shock may exist during LOCA-1, if so, the crew will enter and exit FRTS-1 with no actions performed.			
	RO reports all RCPs are stopped.		
	PO reports no indications of faulted SGs.		
	PO maintains total AFW flow >22E4 lbm/hr until at least one SG NR level is > 9% (15% adverse), then maintains SG NR levels between 19% and 33%.		
	RO resets Phase A.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO opens 21 and 22 CA330s.		
	RO resets SG B/D Sample Isolation Bypass		
	RO opens 21 thru 24 SS94s (SG B/D Sample Valves)		
	PO reports ALL secondary radiation monitors in Table B are indicating Normal.		
	RO reports both PZR PORVs are Closed and Block valves are Open.		
	RO reports subcooling is NOT greater than 0 F.		
	RO reports both CS Pumps are running.		
	RO resets both trains of SI.		
	PO resets each SECs.		
	RO reports RCS pressure is not greater than 300 psig.		
Proceed to next event following Stopping Unloaded DGs			
	PO stops all unloaded EDGs.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Role Play: IF requested to verify EDG is reset to Auto, THEN state the following: ***EDG is reset for Auto start IAW EOP-APPX-9***. Verify OHA J-4, J-12 and J-20 for associated EDG is cleared. **Simulator Operator**: No Actions.			
8. Trip of 22 RHR Pump (Loss of Emergency Recirculation Capability):			
Simulator Operator: Insert **RT-4** at direction from Lead Examiner to trip the last running RHR Pump. This malfunction will result in the crew entering EOP-LOCA-5. **RH0026B, 22 RHR Pump Trip Value = TRUE**			
	RO reports that 22 RHR Pump tripped.		
	RO reports NO RHR pumps are available.		
Role Play: IF an operator is dispatched to investigate why 22 RHR pump trip, THEN report the following: ***the breaker tripped on overcurrent (relay flag is dropped).***			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	CRS determines that no RHR Pumps are available and transitions from Step 11 to EOP-LOCA-5, Loss of Emergency Recirculation		
EOP-LOCA-5 steps here:			
Examiner's Note: **IF** crew transitions to EOP-LOCA-3 at this point, **THEN** LOCA-3 CAS will direct them to EOP-LOCA-5.			
	CRS transitions to 2-EOP-LOCA-5, Loss of Emergency Coolant Recirculation.		
	RO reports both trains of ECCS pumps are indicating normal (no oscillations in amps, flow, or discharge pressure)		
	RO resets SI (if not performed in LOCA-1).		
	PO resets each SECs (if not performed in LOCA-1).		
	RO reports containment sump level >62% light are illuminated.		
	RO reports NO train of Emergency Recirculation is available due to no RHR Pumps available.		
	CRS directs investigation into both RHR pump trips.		
	RO reports all available CFCUs are running in low speed.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports RWST Lo-Lo level alarm is clear.		
Examiner's Note: Critical Task-3 is broken down into a series of three (3) actions to conserve RWST inventory. Make up to the RWST, minimize RWST outflow, and if RWST Lo-Lo level alarm received stops ECCS pumps prior to cavitation **Part 1 is stopping CS Pumps** **Part 2 is RWST makeup.** **Part 3 is reducing SI to one train** **Part 4 if RWST Lo-Lo alarm is received then stop ECCS pumps taking suction from the RWST prior to cavitation**.			
Examiner's Note: During validations, RWST level was 14.2 ft., Cntmt Pressure was 17 psig, and 4 CFCUs were running.			
	CRS determines NO CS pumps are required to be running at Step 8 IAW Table C.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Critical Task-3 Parts 1 and 2 (CT-29): Stopping CS pumps and making up to the RWST. **SAT_____ UNSAT_____** **Steps shaded are required to complete the CT.**			
CT-3 Part 1 - Stopping CS pumps:			
	Critical Task #3 - RO resets Spray actuation.		
	Critical Task #3 - RO stops 21 AND 22 CS pump. [Critical Task #3, Part 1 complete]		
	RO closes 21 and 22 CS2s.		
CT-3 Part 2 – Make-up to RWST:			
	RO initiates makeup to the RWST IAW S2.OP-SO.CVC-0006.		
S2.OP-SO.CVC-0006 Section 5.8 steps start here:			
GO TO Page 34 to continue on with LOCA-5 steps.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO directs field operator to start RWST Heater Pump		
Simulator Operator: Insert **RT-11** to simulate RWST Heater Recirc Pump in service bezel illuminated: **AH03 C2: RWST Heater Pump Stop** **Final = Override OFF** **AH03 C1: RWST Heater Pump Start** **Final = Override ON** **Delay = 2 seconds** **NOTIFY** control room when RWST heater recirc pump is in service.			
	PO ensures VCT level is adequate.		
	Critical Task #3 - PO obtains Boric Acid flow setpoint from REM Figure 100B or 100D. (at least ≥ 20 gpm)		
	PO resets COUNT A on makeup flow register to zero IAW Exhibit 1.		
	Critical Task #3 - PO places makeup control mode select in stop		
	Critical Task #3 - PO places 2CV179 in Manual (goes full open)		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	Critical Task #3 - PO places 2CV172 in Manual.		
	PO dispatches field operator to locally check 2BR170 is closed.		
Role Play: After 1-2 minutes report 2BR170 is CLOSED. No action needed by Simulator Operator.			
	PO notifies CRS to evaluate TS for applicability.		
	Critical Task #3 - PO starts 22 Primary Water pump.		
	Critical Task #3 - PO dispatches field operator to locally open 2CV182 and 2CV184.		
Simulator Operator: Insert **RT-10** when crew requests 2CV182 and 2CV184 to be locally opened in support of RWST makeup. CV20A, 2CV182 Blender Isol Valve (ramp 30 secs) CV21A, 2CV184 Blender Isol Valve (time delay 30 secs, ramp 30 secs) Value = 100 **NOTIFY** control room when valves are open.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
Examiner's Note: When the 2CV182 and 2CV184 are opened the Primary Water flow counter will start.			
	Critical Task #3 - PO places 22 Boric Acid Pump in Manual/Fast start		
	Critical Task #3 - PO adjusts 2CV172 flow to the value recorded previously. (at least ≥ 20 gpm)		
	PO closes 21 and 22 CV160, if flow not achieved.		
	Critical Task #3 - PO adjusts 2CV179 to 50 gpm using open/close pushbuttons. [Critical Task-3, Part 2 complete]		
	PO reports makeup to RWST has been initiated.		
LOCA-5 continued here:			
	PO maintains total AFW flow >22E4 lbm/hr until at least one SG NR level is > 9% (15% adverse), then maintains SG NR levels between 19% and 33%.		
	CRS directs performance of Shutdown Margin.		
RCS cooldown at 100 F/hr:			
	PO plots RCS cooldown.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	PO reports intact SGs available for cooldown		
	PO reports steam dumps NOT available due to MSLI.		
	PO dumps steam using intact available MS10's		
CT-3 Part 3 - SI flow reduction to one train:			
	RO reports BIT flow is established.		
	Critical Task #3 - RO stops all but <u>one</u> charging pump.		
	Critical Task #3 - RO runs only <u>one</u> SI pump. [Critical Task-3, Part 3 complete]		
Critical Task-3 Part 3 (CT-29): Reducing SI flow to one Train. **SAT_____ UNSAT_____** **Steps shaded are required to complete the CT.**			
	RO reports no RHR pumps are running.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comments
	RO reports RWST Lo-Lo Level alarm actuated.		
	CRS takes the CAS action from Step 7 and goes to Step 29.		
	Critical Task #3 - RO stops ALL Pumps taking suction from the RWST (RHR, SI, Charging, CS)		
Critical Task-3 Part 4: Stop all ECCS pumps taking suction from the RWST prior to cavitation **IF** the RWST Lo-Lo Level Alarm actuates. **SAT_____ UNSAT_____**			
<u>Terminate</u> the scenario when the crew stops all but one SI Pump, or stops ECCS pumps taking suction from RWST if the Lo-Lo level alarm is received, or at Lead Examiners direction.			

VI. SCENARIO REFERENCES

A. Alarm Response Procedures (various)
B. Technical Specifications
C. Emergency Plan (ECG)
D. S2.OP-AB.COND-0001, Loss of Condenser Vacuum
E. S2.OP-AB.ROD-0003, Continuous Rod Motion
F. S2.OP-AB.RC-0001, RCS Leak
G. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
H. 2-EOP-LOCA-1, Loss of Reactor Coolant
I. 2-EOP-LOCA-5, Loss of Emergency Recirculation

ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY

MODE: 1 POWER: 100% RCS BORON: 27 ppm MWe 1220

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

NA

REACTIVITY PARAMETERS:

- Rx Plan: To lower Rx power to 89% at 10%/hour add 120 gallons of boric acid along with inserting control rods to maintain Tavg on program. Reactor Engineering directs the crew to perform a boration first. Expect D bank at 193 steps when load reduction is complete.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

- 3.5.2.c Action a, 21 RHR Pump, 68 hours remain

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- Load reduction to 89% at 10%/hour in preparation for Main Turbine valve testing.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

Hope Creek and Salem 1 are at 100% power.

PRIMARY:

- 23 Charging Pump C/T for pulsation damper replacement.
- 21 RHR Pump C/T for motor bearing inspection.

SECONDARY:

- Heating Steam is aligned to Unit 1
- Polisher is in service
- Blowdown is 35K per loop to 23 Condenser / Flashtank

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

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. Required chart recorders advanced and ON (proper paper installed)

____ 12. All printers have adequate paper AND functional ribbon

13. Required procedures clean

____ 14. Multiple color procedure pens available

____ 15. Required keys available

____ 16. Simulator cleared of unauthorized material/personnel

____ 17. All charts advanced to clean traces and chart recorders are on.

____ 18. Rod step counters correct (channel check) and reset as necessary

____ 19. Exam security set for simulator

____ 20. Ensure a current RCS Leak Rate Worksheet is placed by Aux Alarm Typewriter

____ With Baseline Data filled out

____ 21. Shift logs available if required

____ 22. Recording Media available (if applicable)

____ 23. Ensure ECG classification is correct

____ 24. Reference verification performed with required documents available

____ 25. Verify phones disconnected from plant after drill.

____ 26. Verify EGC paperwork is marked “Training Use Only” and is current revision.

____ 27. Ensure sufficient copies of ECG paperwork are available.

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: 20-01 NRC Scenario #1 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.
NA	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

20-01 NRC Scenario #1

Critical Tasks

CT-1 (CT-2) – Manually actuate at last one train of Safety Injection before transition out of TRIP-1, Reactor Trip or Safety Injection

SAFETY SIGNIFICANCE -- Failure to manually actuate SI under the postulated conditions constitutes misoperation or incorrect crew performance in which the crew does not prevent "degraded emergency core cooling system (ECCS)…capacity."

In this case, SI can be manually actuated from the control room. Therefore, failure to manually actuate SI also represents a failure by the crew to "demonstrate the following abilities:

- Effectively direct or manipulate engineered safety feature (ESF) controls that would prevent (degraded emergency core cooling system (ECCS)…capacity)
- 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"

Additionally, under the postulated plant conditions, failure to manually actuate SI (when it is possible to do so) results in a "significant reduction of safety margin beyond that irreparably introduced by the scenario." Finally, failure to manually actuate SI under the postulated conditions is a "violation of the facility license condition."

In the scenario postulated by the plant conditions, failure to manually actuate SI results in the needless continuation of a situation in which there has been no systematic and thorough actuation of even one train of SIS-actuated safeguards. (Some safeguards components such as AFW and feedwater isolation components may be running because of other actuation signals. However, safeguards systems such as ECCS, phase A containment isolation, CCW/SW, and containment fan coolers will not be operating in their safeguards mode.)

Although the completely degraded status is not due to the crew's action (was not initiated by operator error), continuation in the completely degraded status is a result of the crew's failure to
manually actuate SI.

The acceptable results obtained in the FSAR analyses are predicated on the assumption that, at
the very least, one train of safeguards actuates. If SI is not actuated, the FSAR assumptions and results are invalid. Because compliance with the assumptions of the FSAR is part of the

facility license condition, failure to manually actuate at least one train of SI (under the postulated
conditions and when it is possible to do so) constitutes a violation of the license condition.

The following information is quoted from the ERG Executive Volume, Generic Issues section, document on Foldout Page Items:

The SI actuation criteria are only found on the FOLDOUT PAGE for the ES-0.1, ES-0.2, ES-0.3,
and ES-0.4 guidelines for both the HP and LP plants. Although the criteria are identical to the ones found in the SI Reinitiation criteria, the actions are different. The operator is instructed to actuate safety injection rather than operate SI pumps as necessary. The criteria selected for SI actuation are either loss of RCS subcooling or the inability to maintain pressurizer level with charging. Each of these limits indicate that control of the plant is lost and that SI actuation is necessary.

Note the last line of the preceding quote. Clearly, if control of the plant is lost, the preferred action is to manually actuate SI, rather than to manually operate individual safeguards components.

Cues:

- Indication and/or annunciation that SI is required
  - PRZR pressure or SG pressure less than SI actuation setpoint
  - Containment pressure greater than SI actuation setpoint
  - Subcooled margin less than the foldout page criterion for SI actuation in ES-0.1
  - PRZR water level less than the foldout page criterion for SI actuation in ES-0.1
- No indication or annunciation that SI is actuated

Measurable Performance Standard:

Manually actuate at last one train of Safety Injection before entry into any of the following: transition to any LOCA, SGTR, or LOSC series procedures or transition to any FRG

- Indication and/or annunciation that at least one train of SI is actuated

Feedback:
Indication and/or annunciation that at least one train of SI is actuated

CT-2 (CT-5) – Manually start at least one low head ECCS pump before transition out of TRIP-1, Reactor Trip or Safety Injection.

SAFETY SIGNIFICANCE -- Failure to manually start at least one low-head ECCS pump under the postulated conditions constitutes misoperation or incorrect crew performance in which the crew does not prevent “degraded emergency core cooling system (ECCS) …capacity.”
In this case, at least one low-head ECCS pump can be manually started from the control room. Therefore, failure to manually start a low-head ECCS pump also represents a failure by the crew to “demonstrate the following abilities:

- Effectively direct or manipulate engineered safety feature (ESF) controls that would

prevent a significant reduction of safety margin (beyond that irreparably introduced by the scenario)

- Recognize a failure or an incorrect automatic actuation of an ESF system or component"

Additionally, under the postulated plant conditions, failure to manually start a low-head ECCS pump (when it is possible to do so) is a "violation of the facility license condition."

The acceptable results obtained in the FSAR analysis of a large-break LOCA are predicated on the assumption of minimum ECCS pumped injection. The analysis assumes that a minimum pumped ECCS flow rate, which varies with RCS pressure, is injected into the core. The flow rate values assumed for minimum pumped injection are based on operation of one each of the following ECCS pumps: high-head pump, intermediate-head pump, and low-head pump. Operation of this minimum required complement of ECCS injection pumps is consistent with the
FSAR assumption that only minimum safeguards are actuated.

For both the minimum and maximum cases specified in Comment 1 of this critical task worksheet and for all cases in between, failure to perform the critical task means that the plant is needlessly left in an unanalyzed condition. Performance of the critical task would return the plant to a condition for which analysis shows acceptable results.

Because compliance with the assumptions of the FSAR is part of the facility license condition, failure to perform the critical task (under the postulated plant conditions) constitutes a violation of the license condition.

Cues:

- Indication and/or annunciation that low-head ECCS pumped injection is required

– SI actuation
– RCS pressure below the shutoff head of the low-head ECCS pumps
AND

- Indication and/or annunciation that no low-head ECCS pump is injecting into the core

– Control switch indication that the circuit breakers or contactors for both low-head ECCS pumps are open
– All low-head ECCS pump discharge pressure indicators read zero
– All flow rate indicators for low-head pumped injection read zero

Measurable Performance Standard:
Manually start at least one low head ECCS pump before transition out of TRIP-1, Reactor Trip or Safety Injection.

- Control switch indication that the circuit breaker or contactor for at least one low-head ECCS pump is closed

Feedback:
Indication and/or annunciation that at least one low-head ECCS pump is injecting

- Flow rate indication of injection from at least one low-head ECCS pump

CT-3 (CT-29) – Make up to the RWST, minimize RWST outflow, and if RWST Lo-Lo level alarm is received stops ECCS pumps prior to cavitation.

SAFETY SIGNIFICANCE -- Under the postulated plant conditions, failure to establish makeup flow to the RWST and/or to minimize RWST outflow leads to (or accelerates) depletion of RWST inventory to the point at which ECCS pumps taking suction on the RWST must be stopped. Loss of pumped injection (coincident with loss of emergency cooling recirculation) will lead to a severe or an extreme challenge to the core cooling CSF. Failure to perform the critical task causes these challenges to occur needlessly or, at best, prematurely (that is, before they would occur if the critical task is performed).

Thus, failure to perform the critical task under the postulated plant conditions leads to “a significant reduction of safety margin beyond that irreparably introduced by the scenario.” It also represents a demonstrated inability by the crew to “take one or more actions that would prevent a challenge to plant safety.”

Cues:

- Indication and/or annunciation that SI is required

– RCS pressure
– Containment pressure
AND

- Indication and/or annunciation that emergency cooling recirculation is not established

despite continuing attempts to establish it
– Indication that both containment sump to RHR suction isolation MOVs remain closed despite attempts to open them remotely and locally
– [Indication of insufficient water level in the containment recirculation sump to allow recirculation][11]
AND

- Indication and/or annunciation that RWST inventory is being depleted

– RWST level indication decreasing (See Comment 1.)
AND

- Procedural cue to make up to the RWST and/or to minimize outflow from the RWST

Measurable Performance Standard:

Make up to the RWST, minimize RWST outflow, and if the RWST Lo-Lo alarm is received stop running ECCS pumps prior to cavitation:

- Stopping containment Spray Pumps
- Initiating RWST makeup
- Reducing SI to one train
- If RWST Lo-Lo alarm is received then stops running ECCS pumps prior to cavitation

Feedback:

- Flow rate indication of makeup to the RWST
- Reduced depletion rate of RWST inventory

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
Y	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

SIMULATOR
EXAMINATION SCENARIO GUIDE

SCENARIO TITLE: NRC-3 [AR.ZZ-11, AB.CVC-1, AB.CN-1, AR.ZZ-13, TRIP-1, FRHS-1 w/Condensate Recovery using MS10]

SCENARIO NUMBER: 20-01 NRC ESG-3

EFFECTIVE DATE: See Approval Below

EXPECTED DURATION: 60 minutes

REVISION NUMBER: 13

PROGRAM:

- [ ] **L.O. REQUAL**
- [X] **INITIAL LICENSE**
- [ ] **STA**
- [ ] **OTHER** _____

Revision Summary:

- For previous revision summaries see ESG-1512
- Rev. 11 (last used on 2019 Annual ESG-1908). Modified for 19-01 NRC exam.
- Rev. 12 Incorporated NRC comments from 2-14-20 working mtg to reduce the scenario duration. Removed starting 23 CN Pump, 24MS29 failing closed (note: 5%/min ramp rate no longer applicable), 2PT-506 failure, failure of Phase A to actuate, and moved Loss of 2B 4KV bus following Rx Trip. Added 22 ABV Exhaust fan damper failure and 2PT-505 failure. Changed CT-12 to CT-13 MT failure to Auto Trip no MSLI required. Added comments from NRC Prep Week 6-17-20.
- Rev. 13 (last used 19-01 NRC Exam). Modified for 20-01 NRC exam. Modified scenario to add malfunctions not used during the previous two NRC exams that include; 21 CRDM Vent Fan damper failure, PZR level failing high, 21CN22 failing close, and main turbine failing to trip by all means in the control room. The flow path in FRHS-1 was also changed to perform cooldown using MS10 vice steam dumps. Incorporated comments from NRC free look.

PREPARED BY:	R. Chan **Lead Regulatory Exam Author**	2-4-22 **Date**
APPROVED BY:	M. Wadusky (signature on file) **Operations Training Manager or designee**	2-10-22 **Date**
APPROVED BY:	W. Hargrave **Facility Representative**	1-28-22 **Date**

SCAN OF SIGNED SCENARIO COVER SHEET