

Scenario No.: 5

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

Facility: <u> Salem </u> Scenario No.: <u> 5 </u> Op-Test No.: <u> 19-01 NRC </u>			
Examiners: _____		Operators: _____	
_____		_____	
_____		_____	
<p><u>Initial Conditions:</u> IC-210: 85% power, EOL; 21 Charging Pump I/S. The following equipment is out of service: 23 Charging Pump C/T for maintenance.</p> <p><u>Turnover:</u> 23 Condensate Pump just placed in service following maintenance and commence power ascension to 100% power at 10% per hour IAW S2.OP-IO.ZZ-0004 using dilution, control rods and turbine load control.</p> <p><u>Critical Tasks:</u></p> <ol style="list-style-type: none"> 1. Manually trip the turbine (see WOG CT-13) 2. Establish condensate feed flow to SGs (see WOG CT-43) 			
Event No.	Malf. No.	Event Type*	Event Description
1	N/A	ALL (R)	Commence power ascension to 100% at 10% per hour IAW IOP-4
2	TU0055	ALL (C, TS)	2PT-505 turbine inlet pressure channel fails low.
3	ANCGA072	BOP (C) CRS (C,TS)	22 ABV Exhaust Fan discharge damper fails close (low air flow)
4	VL0448	ALL (M)	23BF19 fails closed
5	RP0073 RP0279A RP0279B	ATC (I) CRS (I)	<ul style="list-style-type: none"> • Main Turbine fails to Auto trip • Auto MSLI fails to actuate
6	EL0145	ATC (I) CRS (I)	2B 4KV Vital Bus de-energizes on bus differential protection (loss of 22 MDAFW Pump)
7	AF0181A	BOP (C) CRS (C)	21 AFW Pump trips following Rx Trip
8	AF0183	ALL (C)	23 AFW Pump trips on overspeed (loss of all AFW flow) during EOP-TRIP-1
		ABs	IOP-4 → AB.ROD-3 → AR.ZZ-11
		EOPs	TRIP-1 → FRHS-1 w/condensate recovery
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario No.: 5

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)	4	5,6,7,8
3. Abnormal events (2-4)	2	2,3
4. Major transients (1-2)	1	4
5. EOPs entered/requiring substantive actions (1-2)	1	TRIP-1
6. Entry into a contingency EOP with substantive actions (≥ 1 per scenario set)	1	FRHS-1
7. Preidentified critical tasks (≥2)	2	CT-13, CT-43
8. Tech Specs exercised (≥ 2)	2	2,3

I. OBJECTIVES

- A. Given the order, the crew will commence a power ascension IAW S2.OP-IO.ZZ-0004.
- B. Given an instrument failure of 2PT-505, the crew will take actions IAW S2.OP-AB.ROD-0003 and place rods to manual and place steam dumps to MS Pressure Mode. CRS will exercise Tech Specs.
- C. Given an indication of loss of air flow for 22 ABV Exhaust fan, the crew will take corrective actions IAW S2.OP-AR.ZZ-0011 and place the standby ABV Exhaust fan in service. CRS will exercise Tech Specs.
- D. 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.
- E. Given indication of a reactor trip, DIRECT the response to the reactor trip in accordance with the approved station procedures.
- F. 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.
- G. Given indication of a safety injection DIRECT the response to the safety injection in accordance with the approved station procedures.
- H. 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.
- I. Given indication of a loss of secondary heat sink, DIRECT the response to the heat sink loss in accordance with the approved station procedures.
- J. 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.
- K. During performance of emergency operating procedures, monitor the critical safety function status trees in accordance the EOP in effect.

II. MAJOR EVENTS

1. Power ascension to 100% at 10%/hour.
2. 2PT-505 Turbine Inlet Pressure Channel fails low
3. 22 ABV Exhaust Fan damper fails closed
4. 23BF19 Feedwater Reg Valve fails closed (MT)
5. Main Turbine fails to trip and Auto MSLI fails to actuate.
6. Loss of 2B 4KV Vital Bus (loss of 22 MDAFW Pump).
7. Loss of all AFW flow and recovery by initiating Condensate flow.

III. SCENARIO SUMMARY

- A. The crew takes the watch at 84% power, MOL. 23 Condensate Pump has just been placed in service following maintenance. 21 Charging Pump is in service to support tagging of 23 Charging Pump for scheduled maintenance.
- B. After the crew takes the watch, the crew commence a power ascension to 100% at 10%/hour. The crew will control RCS temperature by using dilution, control rods and turbine load control.
- C. Once the power ascension has commenced, 2PT-505 turbine inlet pressure channel will fail low causing continuous rod insertion. The crew will respond as directed IAW **S2.OP-AB.ROD-0003**, Continuous Rod Motion, by placing control rods in manual. The crew will also place steam dumps in MS Pressure Mode and CRS will enter TS 3.3.2.1 Act 19.
- D. Following the 2PT-505 failure, 22 ABV Exhaust Fan damper will fail closed causing low air flow console alarm. The crew will recognize the low air flow and take corrective actions IAW **S2.OP-AR.ZZ-0011**, 2CC1 ARP to stop 22ABV Exhaust Fan and start the standby ABV Exhaust Fan. The CRS will enter TS 3.7.7 Action a.
- E. Once the crew addresses the low air flow for 22 ABV Exhaust Fan, 23BF19 will fail closed (ramped). The crew will receive console alarms for level deviation and recognize that the 23BF19 is closing. Attempts to take manual control will be unsuccessful and the crew will manually trip the reactor.
- F. Following the Rx Trip, the Main Turbine fails to Auto trip. The crew responds by manually tripping the main turbine using the bezel trip pushbutton as part of immediate actions of **2-EOP-TRIP-1 [Critical Task #1]**. Automatic Safety Injection will occur following Rx Trip based on the main turbine failing to trip and high steam flow.
- G. Following reactor trip, the crew will recognize that 21 AFW Pump tripped and the 2B 4KV Vital Bus is de-energized due to Bus Differential protection (results in loss of 22 MDAFW Pump). At the completion of ECCS flow verification, 23 AFW pump will trip on overspeed resulting in no AFW

flow. The crew will transition to **2-EOP-FRHS-1**, Response to Loss of Secondary Heat Sink, when directed in EOP-TRIP-1.

- H. While in FRHS-1, the crew will continue to attempts to restore an alternate source of feedwater using **Condensate Recovery path** (SGFPs are not available due to SI signal). The crew will depressurize one steam generator using steam dumps. The crew will establish feed flow to one SG and verify that SG Wide Range levels are rising prior to exiting FRHS-1 [**Critical Task #2**].
- I. The Lead Examiner may terminate the scenario after condensate flow has been established and/or WG level is rising.

A. INITIAL CONDITIONS

___ IC-210

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

<i>Initial</i>	Description
•	VC1and VC4 C/T
•	RCPs (SELF CHECK)
•	RTBs (SELF CHECK)
•	MS167s (SELF CHECK)
•	500 KV SWYD (SELF CHECK)
•	SGFP Trip (SELF CHECK)
•	21 CV PP (SELF CHECK)
•	23 Charging Pump C/T
•	Suggested Protected Equipment:
▪	None
•	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: MONP254 < 10. //CONT ROD BANK C < 10 (RX TRIP) COMMAND: PURPOSE: <update as needed>
	2	EVENT ACTION: KCB02TY6 //TRIP TURBINE COMMAND: DMF RP0073 PURPOSE: <update as needed>

MALFUNCTIONS:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Severity
___ 01	VL0448 23BF19 Fails to Position (0-100%)	N/A	40	00:01:00	RT-3	0
___ 02	RP0073 MN TURB. TRIP FAILURES (VARIOUS)	N/A	N/A	N/A	N/A	ALL ABOVE (20/AST,20-2/AST,20-ET) FAIL
___ 03	RP0279A AUTO MSLIS FAILS TO ACT, TRN A	N/A	N/A	N/A	N/A	
___ 04	RP0279B AUTO MSLIS FAILS TO ACT, TRN B	N/A	N/A	N/A	N/A	
___ 05	AF0181A 21 AUX FEEDWATER PUMP TRIP	N/A	N/A	N/A	ET-1	
___ 06	AF0183 23 AUX FW PMP OVERSPEED TRIP	N/A	N/A	N/A	RT-4	
___ 07	TU0055 TURBINE INLET PRESS XMTR 505 FAILS H/	N/A	N/A	N/A	RT-1	0
___ 08	EL0145 LOSS OF 2B 4160V VITAL BUS	N/A	N/A	N/A	ET-1	

REMOTES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition
___ 01	AF20D 21 AFW PUMP BKR CONTROL POWER	N/A	N/A	N/A	RT-10	OFF
___ 02	ANCGA072 CGA OVRD 22 AUX BLDG EXH FAN LOW AIR FLOW ALARM	N/A	N/A	N/A	RT-2	OVRD ON

OVERRIDES:

SELF-CHECK	Description	Delay Time	Initial Value	Ramp Time	Trigger	Condition/Severity
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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	
<p>TS evaluation #1:</p>	CRS directs RO to place rods in manual.			
	<p>RO places rod control in manual and reports rod motion has stopped.</p>			
	<p>CRS enters S2.OP-AB.ROD-0003, Continuous Rod Motion.</p>			
	<p>CRS directs RO to maintain Tav_g within 1.5°F of Tref, and RO uses manual rod control to control Tav_g within that band.</p>			
	<p>RO reports Tav_g and NIS channels NOT failed.</p>			
	<p>RO reports rods above the RIL.</p>			
	<p>PO reports PT-505 failed low.</p>			
	<p>PO places Main Steam dumps in MS Pressure Control-Auto.</p>			
	<p>CRS enters TSAS 3.3.2.1.b, Action 19 (72 hours).</p>			
	<p>CRS initiates S2.OP-SO.RPS-0006, Main Turbine Channel Trip / Restoration.</p>			
	<p>RO withdraws control rods to ARO position.</p>			
	<p>Examiner's Note: Rods will be left in Manual. This should not have any impact to the outcome of the scenario.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Proceed to next event at Lead Examiner's direction.			
3. 22 ABV Exhaust Fan damper fails closed:			
Simulator Operator: Insert RT-2 on direction from Lead Evaluator. ANCGA072, 22 ABV Exhaust Fan Low Air Flow Console Alarm Value = OVRD ON			
	RO reports unexpected console alarm for 22 ABV Exhaust Fan "AIR FLOW LOW"		
	PO refers to 2CC1 ARP		
	RO reports 22 ABV Exhaust Fan is running.		
Role Play: When directed to check the status of the breaker, THEN state the following after 1 minute: <i>the breaker for 22 ABV Exhaust Fan is closed.</i>	PO dispatches operator to locally check the status of the breaker.		
	RO reports that the Exhaust Filter lineup 21 HEPA (EMERG) and 23 HEPA (NORMAL) is in the proper lineup IAW S2.OP-SO.ABV-0001.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO dispatches operator to locally check the Exhaust Fan Inlet Vanes.		
Role Play: When directed to locally inspect 22 ABV Exhaust Fan Inlet Vanes, THEN report the following after 1-2 minutes: 2ABV14 inlet vane damper for 22 ABV Exhaust Fan is closed.			
	CRS determines that Exhaust flow can NOT be restored and directs starting standby fan IAW S2.OP-SO.ABV-0001.		
	PO starts standby 23 ABV Exhaust Fan IAW S2.OP-SO.ABV-0001.		
TS evaluation #2:			
	CRS enters TSAS 3.7.7 Action a (14 day LCO).		
Proceed to next event after Tech Specs has been evaluated or by direction from Lead Examiner.			
4. 23BF19 Fails Closed (Major Transient):			
Simulator Operator: Insert RT-3 at direction from Lead Examiner. VL0448, 23BF19 fails to position. Value = 0 Ramp = 1 min			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports unexpected OHA alarms for: <ul style="list-style-type: none"> • G-15 ADFCS TRBL • G-23 21/22 SGFP SPEED DEVIATION • Console Alarm for 23 SG Program Setpoint Deviation 		
	PO reports 23BF19 is closing.		
	PO attempts to regain control by placing 23BF19 in Manual.		
	PO reports manual control of 23BF19 unsuccessful.		
	PO reports 23 SG NR levels are lowering and recommends Reactor Trip.		
Examiner's Note: It's acceptable that an Auto Rx Trip occurs before the crew recognizes that the BF19 fails closed.			
5. Main Turbine Fails to Auto Trip AND MSLI fails to Auto actuate:	RO manually trips the Reactor and performs immediate actions of EOP-TRIP-1.		
	RO reports that Main Turbine failed to Auto trip.		
	RO reports Main Turbine failed to manually trip using Pistol Grip switch.		
Simulator Operator: Ensure ET-2 is TRUE when operator depress the Turbine			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
Trip Bezel. This will delete malfunction RP0073 and allow the turbine to trip.			
	RO manually trips the main turbine by depressing turbine trip bezel pushbutton. [Critical Task #1]		
Examiner's Note: IF the crew isolates the main turbine by actuating MSLI, this action meets CT #1.			
<div style="border: 2px solid black; padding: 5px;"> <p>Critical Task #1 (CT-13): Manually trip the turbine before severe challenge develops to either subcriticality or integrity CFST, or transition to EOP-LOSC-1.</p> <p>SAT _____ UNSAT _____</p> </div>			
	RO reports SI Auto actuated and manually backs up SI signal.		
	CRS enters 2-EOP-TRIP-1, Reactor Trip or Safety Injection.		
6 & 7. 21 AFW Pump Trips and Loss of 2B 4KV Vital Bus:			
Simulator Operator: Ensure ET-1 is TRUE following Rx Trip. This will insert malfunction to trip 21 AFW Pump and Loss			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
of 2B 4KV Vital Bus. AF0181A, 21 AFW Pump trip EL0145, Loss of 2B 4KV Vital Bus			
Simulator Operator: MONITOR SG NR levels. IF any SG NR levels recovers to 6-7 %, THEN insert RT-4 to trip 23 AFW Pump. This will ensure that a valid Heat Sink Red path exists prior to Step 20 in EOP-TRIP-1.	CRS directs PO to throttle AFW flow to no less than 22E4 lbm/hr.		
Simulator Operator: If directed to remove control power for 21 AFW Pump breaker then insert RT-10 . AF20D, 21 AFW breaker control power. Location: 64 ft. Switchgear A Bus	PO reports 21 AFW Pump tripped and only 23 AFW Pump is running.		
Role Play: IF directed to determine why 21 AFW Pump tripped, then after 2-3 minutes report the following: the overcurrent relay flag is up for 21 AFW Pump.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Loss of 2B 4KV Vital Bus (loss of 22 AFW Pump):</p>	CRS and RO review immediate actions.		
	PO reports 2A and 2C Vital Buses are energized.		
	PO reports SEC loading not complete for 2A and 2B bus.		
	PO reports that 21 AFW Pump tripped following Rx Trip.		
	PO reports all available equipment started.		
	PO reports only 23 AFW Pumps is running.		
	<p>Examiner's Note: Several SI and Feedwater Isolation valves will not be in the safeguards position due to the loss of 2B 460/230 VAC buses. All back-up valves will be in the safeguards position.</p>	PO reports that NOT all valves groups in Table B are in the safeguards position.	
	PO reports several Safety Injection and Feedwater Isolation valves not in position; but their redundant valves are in the safeguards position.		
	PO reports all Phase A valves are in the safeguards position.		
	CRS directs WCC to locally position valves to their safeguards position.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO reports all Phase A valves are in the safeguards positions with the exception of 2CV284, but its backup valve 2CV116 is closed.		
	RO reports 21 and 22 CA330's are closed.		
	RO reports that containment pressure has remained less than 15 psig.		
	PO reports 2RP4 does not indicate high steam flow with low steam pressure or low-low Tavg.		
	PO reports MSLI may be initiated.		
	PO reports 2B 4KV Vital bus is NOT energized.		
	CRS directs assistance in restoring 2B 4KV Vital Bus IAW S2.OP-AB.4KV-0002 while continuing with EOP.		
Role Play: IF directed to restore 2B 4KV Vital Bus then state the following: <i>the event response team will commence troubleshooting to restore 2B bus.</i>			
	RO reports control room in Accident Pressurize mode.		
	PO reports one switchgear supply fans and one exhaust fan are running.		
	PO starts 23 switchgear supply fan after 2C SEC is blocked and reset.		
	RO reports one CCW pump is running and both CCW HX are in Auto.		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Possible Role Play: If directed by crew, state that you will direct NEO to control CCHX temp IAW S2.OP-SO.CC-0002</p>			
<p>Proceed to next event when <u>ECCS Flow Evaluation</u> is in progress:</p>			
<p>8. 23 AFW Pump trips (loss of all AFW flow):</p>			
	<p>RO reports expected ECCS flow for plant conditions.</p>		
<p>Simulator Operator: Insert <u>RT-4</u> during ECCS flow evaluation steps in TRIP-1.</p> <p>AF0183, 23 AFW Pump trips</p>			
	<p>PO reports that 23 AFW Pump tripped.</p>		
<p>Role Play: If requested to why 23 AFW Pump trip, then report that <i>investigation is underway and no obvious signs why it tripped, but the trip linkage looks bent.</i></p>			
<p>Note: RCS pressure will be low due to the MT failure to trip.</p>			
	<p>PO reports NO AFW flow</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Examiner's Note: During scenario construction lowest SG WR levels was at ~54% which was sufficient to allow the crew to establish feed using main condensate.</p>	PO reports no SG NR levels are > 9% (15% adverse)		
	PO reports total AFW flow is less than 22E4 lbm/hr.		
	CRS transitions to 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink.		
	PO reports operator action was not cause of AFW flow <22E4 lbm/hr.		
	RO reports RCS pressure is > SG pressure.		
	RO reports RCS Thots > 350°.		
	CRS reads Bleed and Feed criteria. (3 WR levels < 20% (25% Adverse))		
PO closes all GB4s.			
RO closes all SS94's.			
RO stops all RCPs.			
CRS directs starting MSPI AFW pump.			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Role Play: When directed to start MSPI AFW pump then after 1-2 minutes report the following: <i>the MSPI AFW pump started but tripped on overspeed.</i></p>			
<p>Examiner's Note: Both SGFPs tripped due to Auto SI actuation following MT failure to trip.</p>	<p>PO reports Condensate System is in service.</p>		
<p>Examiner's Note: Due to the loss of 2B 460/230 VAC bus, several SI valves will not be in the safeguards position, but the back-up valves will.</p>	<p>PO reports NO SGFPs are available (SI actuation) <u>and</u> MSPI pump failed to start.</p> <p>RO reports SI has actuated (Auto initiated following Rx Trip)</p>		
<p>Examiner's Note: FRHS-1 Step 18, Caution Note states: 21 and 23 SG should be steamed <u>last</u> to maximize availability of</p>	<p>PO verifies SI valve alignment IAW 2-EOP-APPX-3, SI Verification.</p> <p>RO resets SI, Phase A, and Phase B isolation</p> <p>RO opens both CA330s</p> <p>RO resets all SECs and 230V control centers.</p>		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
a steam supply for 23 AFW pump. During simulator runs, 23 SG WRs levels was reading low due to 23BF19 failing closed prior to Rx trip, therefore the crew should select 22 or 24 SG to steam first.			
EOP-FRHS-1 Condensate Recovery steps start here:			
	Crew selects only ONE SG for depressurization to < 575 psig.		
Depressurize SGs using Steam Dumps:			
	PO reports steam dumps are available.		
	PO initiates MSLI on all loops except the selected SG.		
	PO places steam dumps in Manual.		
	PO adjusts steam pressure valve demand to zero.		
	PO places steam dumps in MS PRESS CONTROL		
	PO adjusts steam pressure valve demand to 25%.		
	When RCS Tavg Low-Low is reached, then the PO depresses "Bypass Tavg" Pushbuttons.		
Depressurize SGs using MS10's:			
	PO reports steam dumps are NOT available (Note: IF		

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	MSLI performed earlier, then steam dumps will not be available.		
	RO initiates MSLI on all Loops.		
	PO fully opens <u>SELECTED</u> SG MS10 relief valve.		
	CRS dispatches operator to <u>open the selected</u> SG BF40 <u>or</u> BF19 valve (120 ft. elev. TGA).		
<p>Simulator Operator: Use the following REMOTES to operate the 22 or 24 SG BF40 or BF19s.</p> <p>22 BF19: BF02A 24 BF19: BF04A 22 BF40: BF06A 24 BF40: BF08A</p> <p>Set Ramp Time = 03:00 mins Set Desired Value = 100 for Fully Open or see below:</p> <p>Notify control room when selected valve is OPEN.</p>			
<p>Examiner's Note: During scenario validation using MS10s to lower SG pressures to inject with main condensate took considerable time (approx. 10 mins). Condensate flow was established when SG pressure is around 600 psi.</p>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
	PO opens the <u>selected</u> SG BF13.		
Examiners' Note: 21BF13 valve position indication will be lost due to loss of 2B 460/230 VAC bus. This valve is open. The crew may choose 24BF13 since it has power to indication.			
	PO reports that Release selected for <u>selected</u> BF22		
	PO opens 21 and 22 CN48 (SGFP Bypass valves).		
	PO closes 21 and 22 CN32 (SGFP suction valves).		
Examiner's Note: At this point the crew may wait at Step 18.5 of EOP-FRHS-1 until feedflow is achieved or continue on until the EOP directs you back to beginning of EOP until feed flow is achieved.			
<div style="border: 2px solid black; padding: 5px;"> <p>Critical Task #2 (CT-43): Establish feedwater flow into at least one SG before Bleed and Feed is required.</p> <p>SAT: _____ UNSAT: _____</p> <p>Steps that are bolded <u>and</u> shaded are necessary to complete the critical task.</p> </div>			

Evaluator/Instructor Activity	Expected Plant/Student Response	SBT LOG	Comment
<p>Examiner's Note: The crew should verify indication of condensate flow <u>AND</u> SG WR level is rising when determining if Condensate Flow is established.</p> <p>During validation it took approx. 6 mins to see WR rising when condensate flow was established at 5-6 %.</p>			
<p>Examiner's Note: As the crew is waiting for feed flow to be established, you can expect the PZR PORVs to be cycling as the RCS heats up.</p>			
	<p>PO reports that Condensate flow is established to selected SG <u>or</u> CETs are lowering. [Critical Task #2]</p>		
	<p>CRS directs PO to maintain selected SG pressure to < 575 psig.</p>		
	<p>Crew reports that Bleed and Feed has NOT been initiated <u>and</u> transitions to procedure in effect (2-EOP-TRIP-1)</p>		
<p>The scenario may be terminated after the crew has established condensate flow or by direction from Lead Examiner.</p>			

B. SCENARIO REFERENCES

- A. Alarm Response Procedures (Various)
- B. Technical Specifications
- C. Emergency Plan (ECG)
- D. OP-AA-101-111-1003, Use of Procedures
- E. S2.OP-IO.ZZ-0004, Power Operation
- F. S2.OP-AB.ROD-0003, Continuous Rod Motion
- G. S2.OP-AR.ZZ-0011, 2CC1 Alarm Response Procedure
- H. 2-EOP-TRIP-1, Reactor Trip or Safety Injection
- I. 2-EOP-FRHS-1, Response to Loss of Secondary Heat Sink

**ATTACHMENT 1
UNIT TWO PLANT STATUS
TODAY**

MODE: 1 POWER: 84% RCS BORON: 843 MWe 1020

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

NA

REACTIVITY PARAMETERS

- Rx Plan: To raise Rx power to 100% at 10%/hour add 2200 gallons of water along with withdrawing control rods to maintain Tav_g on program. Reactor Engineering directs the crew to perform a dilution first.

MOST LIMITING LCO AND DATE/TIME OF EXPIRATION:

EVOLUTIONS/PROCEDURES/SURVEILLANCES IN PROGRESS:

- Commence power ascension to 100% at 10%/hour IAW S2.OP-IO.ZZ-0004, Power Operation following return to service of 23 Condensate Pump.

ABNORMAL PLANT CONFIGURATIONS:

CONTROL ROOM:

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

PRIMARY:

- 23 Charging Pump is in progress of being C/T for pulsation damper repairs.

SECONDARY:

- 23 Condensate Pump returned from maintenance
- Blowdown 35K per loop to 23 condenser / flashtank
- Polisher in service

RADWASTE:

No discharges in progress

CIRCULATING WATER/SERVICE WATER:

None

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: 19-01 NRC Scenario #5 **REVIEWER:** R. Chan

Initials	Qualitative Attributes
RC	1. The scenario has clearly stated objectives in the scenario.
RC	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.
RC	3. The scenario consists mostly of related events.
RC	4. Each event description consists of: <ul style="list-style-type: none"> • 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
RC	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.
RC	6. The events are valid with regard to physics and thermodynamics.
RC	7. Sequencing/timing of events is reasonable, and allows for the examination team to obtain complete evaluation results commensurate with the scenario objectives.
RC	8. The simulator modeling is not altered.
RC	9. All crew competencies can be evaluated.
RC	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.
RC	12. ESG-PSA Evaluation Form is completed for the scenario at the applicable facility.

ATTACHMENT 5
ESG CRITICAL TASKS

19-01 NRC Scenario 5

CT-1 (CT-13):

Critical Task: Manually trip the turbine before a severe challenge develops to either subcriticality or integrity CSF or transition to LOSC-1.

Basis: See WOG Rev. 2

CT-2 (CT-43):

Critical Task: Establish feedwater flow into at least one SG before Bleed and Feed is required.

Basis: See WOG Rev. 2

ATTACHMENT 6

ESG-PSA RELATIONSHIP EVALUATION

EVENTS LEADING TO CORE DAMAGE

<u>Y/N</u>	<u>Event</u>	<u>Y/N</u>	<u>Event</u>
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

<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>	<u>Y/N</u>	<u>COMPONENT, SYSTEM, OR TRAIN</u>
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	Y	Auxiliary Feed Pump
N	CVCS Letdown line Control and Isolation Valves	N	SBO Air Compressor

OPERATOR ACTIONS IMPORTANT IN PREVENTING CORE DAMAGE

<u>Y/N</u>	<u>OPERATOR ACTION</u>
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