Facility: **Point Beach** Scenario No.: **2** OP-Test No.: **2003301**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: Unit 1 is at 75% power. Power was reduced approximately 6 hours ago at the request of the Power System Supervisor. Xenon is building in slightly. Unit 2 is at 100% Power.

Turnover: G-02 EDG is out of service for annual maintenance. It was taken OOS 2 days ago, and is expected to be returned to service in 3 days. G-01 EDG is aligned to 4.16 kV buses 1A-05 and 2A-05 IAW OI-35A.

1P-2C Charging Pump is out of service due to a failed motor bearing. The failure occurred 16 hours ago and has been tagged out for repair.

1P-15A Safety Injection Pump has just been tagged out (4 hours ago) due to high vibration that was identified during scheduled In-service Testing. The pump is not available.

Today is Sunday, present clock time is real time. A normal shift complement is available with exception of the 3rd SRO. An RP Tech is on-site along with two mechanics who are working on the diesel. A maintenance crew has just been called in for 1P-15A.

The objective of the shift is to maintain stable plant conditions until the Power System Supervisor requests power be returned to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1		I – BOP SRO	Steam Generator Steam Flow Transmitter 1FT-474 fails high.
2		C – BOP SRO	Running CCW pump trips, with failure of standby to start.
3		I – RO SRO	Letdown line pressure controller 1HC-135 fails (oscillating in Auto/Man).
4		C – RO SRO	Steam Generator 'B' Tube Leak develops.
5		R – RO N - BOP N – SRO	Power reduction initiated due to tube leak.
6		M– ALL	Tube leak increases to rupture requiring reactor trip.
7		C - RO SRO	Main turbine fails to auto-trip.
8		M– ALL	Steam Leak develops on Steam Generator 'B'.
9		C – BOP SRO	Steam Generator 'B' Blowdown Valve fails to isolate.

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

DYNAMIC EXAM SCENARIO ID#: SES-2003301: #2

SIMULATOR SHIFT TURNOVER:

Per Scenario Outline.

SIMULATOR SCENARIO SET UP

STEP COUNTERS ON _____

INIT into IC _____

PBF-6802, Communicator Telephone Log, available _____

PBF-6801, Simulator Setup Checklist, completed _____

PBF-6806, Simulator Book Preparation Checklist, completed _____

PBF-6807, Simulator Scenario Briefing Sheet, completed _____

TI 9.0 Attachment 1 (Part 1), PBNP Simulator Security Checklist, completed _____

SCENARIO GUIDE:

1. Initialize to a Unit 1 75% Power IC or saved specific SES IC.
2. Ensure SI Pump 1P-15A control switch is in pullout, suction valve 1SI-896A is shut , and 1SI-866A is shut. Place a danger tag on all components.
3. Ensure Charging Pump 1P-2C control switch is in pullout (1P-2A and 1P-2B should be running with 1P-2A in Automatic). Balance charging/letdown flows as necessary. Place a danger tag on control switch for 1P-2C.
4. Ensure G-01 EDG is aligned to 1A05 and 2A05.
5. Ensure G-02 Mode Selector switch is in Local. Place Danger Tags on the G-02 Mode Selector switch, breaker 1A52-66 control switch, and breaker 2A52-67 control switch. C02 alarms will have to be acknowledged after going to RUN.
6. Ensure Rod Control is in Automatic.
7. Ensure that RTO is using the LEFM inputs.
8. Preload (or verify preloaded) the following simulator codes:

Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time	Trigger		Verification Performed	
						Event Criteria	Oper. Init. #	Ready	Inserted
PRELOAD	1-SI-896A, SI PUMP SUCTION ISOL (FAIL CONTRL FUSE)	VLV1SIS046	1	-	-	-	-		
PRELOAD	1-SI-866A, 1P15A DISCH STOP CHECK (FAIL CNTRL FUSE)	VLV1SIS035	1	-	-	-	-		
PRELOAD	1B-5220A P-2C CHARGING PUMP CKTBKR (FAIL CNTRL FUSE)	BKR1CVC007	6	-	-	-	-		
PRELOAD	1-EP-1A5259R 1-A05 BKR 59 RACKOUT, 1P15A (RACKOUT)	LOA1EPS102	RACKOUT	-	-	-	-		
PRELOAD	1-MS-5959 SGB BD ISOL (FAIL OPEN)	VLV1SGB006	1	-	-	-	-		
PRELOAD	1-B5223B P-11B CC WATER PUMP CKTBKR (FAIL AUTO CLOSE)	BKR1CCW002	4	-	-	-	-		
PRELOAD	SG B MAIN STEAMLINE BREAK INSIDE CONTAINMENT	MAL1SGN003B	0.5E6	00:01:00 60 Sec.	-	JCRFTR (7)	-		

The following events will be entered when requested by the lead examiner.

Initiation Cue	Action or Component Description	Action Tagname	Malf. Value	Ramp Time	Delay Time	Trigger		Verification Performed	
PRELOAD	Turbine Trip Auto Failure	MAL1EHC007B	True						
EVENT 1:	STEAM GENERATOR STEAM FLOW TRANSMITTER, 1FT-474 FAILS HIGH								
PLE	1-FT474 LOOP B STEAM FLOW FIXED OUTPUT (HIGH)	XMT1SGN003A	4.0	00:00:00 30 Sec.	-	-	1		
EVENT 2:	RUNNING CCW PUMP TRIPS, WITH FAILURE OF STANDBY TO START.								
PLE	1-B5210A P-11A CC WATER PUMP CKTBKR (TRIP)	BKR1CCW001	1	-	-	-	2		
EVENT 3:	LOW PRESSURE LETDOWN INE, 1HC-135 OSCILLATIONS IN AUTO AND MANUAL								
PLE	1-HC135 LOW PRESS LETDOWN LINE OSC AUTO/MAN	CNH1CVC014C	50	-	-	-	3		
EVENT 4:	STEAM GENERATOR “B” TUBE LEAK DEVELOPS								
PLE	STEAM GNERATOR B TUBE RUPTURE (50 GPM)	MAL1RCS008B	1.25	00:5:00 300 Sec.	-	-	4		
EVENT 6:	TUBE LEAK INCREASES TO RUPTURE REQUIRING REACTOR TRIP.								
PLE	STEAM GNERATOR B TUBE RUPTURE (400 GPM)	MAL1RCS008B	INCREASE TO 10	00:01:00 60 Sec.	-	-	-		
EVENT 6:	Codes to start MFWP Seal Water Pumps when requested by crew.								
AT CREWS REQUEST	1-P99A SGFP SEAL WATER INJECTION PUMP C.S.	LOA1CFW083	ON	-	-	-	-	-	-
AT CREWS REQUEST	1-P99B SGFP SEAL WATER INJECTION PUMP C.S.	LOA1CFW084	ON	-	-	-	-	-	-

ANTICIPATED BOOTH COMMUNICATION/GUIDANCE:

Event 1: This event is a failure (high) of SG 'B' controlling steam flow transmitter 1FT-474. This will require the crew to take manual control of SG 'B' Main Feed Regulating Valve. Following the failure of 1FT-474, the Instructor SM will field crew requests for I&C, STA, and DCS support. There are no anticipated booth communications.

Event 2: This event is a failure of the running CC pump with a failure to auto-start of the standby pump. Ensure the pre-load for the auto start failure is active, and insert the failure of 1P-11A at the request of the lead examiner. It is important that the insertion of this failure be coordinated such that the BOP is most likely to respond to the failure and not the Unit 1 CO (for position specific malfunction response counting numbers only). The crew should contact the PAB AO to investigate the tripped CC pump (1P-11A) as well as the status of 1P-11B once running. The AO should report back to the crew that the CC pump motor is very hot. If the breaker is checked, it has tripped on over-current. The running CC pump (1P-11B) is running normally if asked. A request to Chemistry for CCW sampling and DCS notification will be fielded by the Instructor SM. No specific response is necessary. The Instructor SM will also be informed to implement the E-plan. This can be acknowledged, and later reported back (if desired) that no E-plan applicability was discovered for this event. Preparation of a tag series for 1P-11A may also be requested, and should be acknowledged.

Event 3: This event is a failure of Letdown Pressure Control Valve 1HC-135. This is an oscillating type failure of the controller affecting both auto and manual control. Letdown must be isolated to mitigate this event. If an AO is sent to investigate the valve, it should be reported that the valve is cycling. The PAB AO may also be contacted due to the Waste Disposal System alarm that occurs when Letdown is isolated. This communication should be acknowledged. Notifications to the DCS and I&C will be fielded by the Instructor SM. No additional booth communications are anticipated.

Event 4, 5: This event involves a tube leak on SG 'B'. Leak size is approximately 50 gpm. The leak size will require a unit shutdown. Chemistry and RP may be contacted to confirm the tube leak. It may be reported back to the crew that there are increased radiation levels near SG 'B' steam line. The crew should choose AOP-17A to perform the downpower. If the crew should decide to use OP-3A, the Instructor SM will inform the SRO that AOP-17A is preferred as it will ensure a timely downpower. Notification of plant conditions should be made to the field operators, and these communications should be acknowledged. All notifications to the STA, DCS, and SM will be fielded by the Instructor SM. The Lead Examiner will determine when the downpower is sufficient which will be the trigger for the next event.

Event 6,7,8,9: After reducing power a sufficient amount, the tube leak will be increased to a full tube rupture that will require a Reactor Trip on lowering Pressurizer level. Upon initiating the trip, a fault will occur inside Containment on SG ‘B’, making SG ‘B’ both ruptured and faulted. Also, the Main Turbine will fail to trip requiring the RO to manually trip the turbine. Steam Generator Blowdown Valve 1MS-5959 will fail to isolate and the in-series valve 1MS-2045 must be manually closed. A request will be made for the status of valves SW-LW-61&62, and it should be reported that both valves are shut. A request will also be made for the closing of local valves for SG isolation in EOP-2. After approximately 5 minutes, it can be reported that the valves are closed. No other booth communications are anticipated. All other requests for support (E-plan, RP, Chemistry, STA, etc.) will be fielded by the Instructor SM.

Event Description: **Steam Generator steam flow (FT-474) Fails High**

Time	Position	Applicant's Actions or Behavior
	BOP	Identify failure of FT-474 ('B' S/G Steam Flow BLUE Channel).
	RO/BOP	Acknowledge and respond to receipt of annunciators 1C03 1D 3-11, "Steam Line B Isolation Channel Alert" and 1C03 1E2 1-5, "Steam Generator B Level Setpoint Deviation" Operator Actions: - HC-476 'B' Main Feed Regulating Valve controller taken to manual.
	DOS	Direct entry into AOP-24, "Response to Instrument Malfunctions".
	BOP	Identify Failed Instrument – FT-474 ('B' S/G Steam Flow BLUE Channel).
	BOP	Check if failed instrument is a controlling channel – FT-478 is a controlling channel for Steam Generator Level Control.
	BOP	Establish Manual Control – If not previously performed, manual control of the 'B' Main Feed Regulating Valve is required to manually control level.
	BOP/DOS	Return Affected Parameter(s) to desired value(s). - Manual control of the 'B' Main Feed Regulating Valve is used to re-establish level at 64%.

Event Description: **Steam Generator steam flow (FT-474) Fails High**

Time	Position	Applicant's Actions or Behavior
	DOS	Direct entry into 0-SOP-IC-001, "Routine Maintenance Procedure Removal of Safeguards or Protection Sensor from Service". - Obtain and implement 0-SOP-IC-001 - Review precautions and limitations - Identify applicable Technical Specifications (reference 0-SOP-IC-002): - LCO 3.3.1 is not met: - Action Condition 'A' is entered immediately – Required Action is to enter the Condition referenced in Table 3.3.1-1 for the channel. - Condition 'D' is referenced from Table 3.3.1-1 Functions 14-2. Required Action is to place the channel in trip within 1 hour OR be in Mode 3 in 7 hours. - LCO 3.3.2 is not met: - Action Condition 'A' is entered immediately – Required Action is to enter the Condition referenced in Table 3.3.2-1 for the channel. - Condition 'D' is referenced from Table 3.3.2-1 Functions 4d-1 and 4e-1. Required Action is to place the channel in trip within 1 hour OR be in Mode 3 in 7 hours AND Mode 4 in 13 hours. - Conduct pre-job brief for removing FT-474 from service - Obtain DSS permission to remove channel from service - Direct 0-SOP-IC-001Attachment A for FT-474 removal from service

Event Description: **Steam Generator steam flow (FT-474) Fails High**

Time	Position	Applicant's Actions or Behavior
	RO/BOP/DOS	Perform actions as directed by DOS from Attachment A for PT-478 removal. - Place HC-476 in MANUAL (BOP) - Place the loop B steam flow and feedwater flow selector switches in YELLOW (BOP) - Place HC-476 in AUTO, unless directed otherwise by DSS (BOP) - Place the following bistables to TRIP inside C-115: (BOP) - Verify alarms and trip status lights are proper (RO) 1. High Trip 2. High-high Trip 3. SF<FF (F-476) 4. SF>FF (F-476) - Remove F-474V from scan (BOP)
	DOS	Inform DSS FT-474 is removed from service and that DCS and STA notifications need to be made
	DOS	Exits AOP-24
Proceed to next Event at the Lead Examiners Discretion.		

Event Description: **Running CCW Pump Trips with a Failure of the Standby Pump to AUTO Start**

Time	Position	Applicant's Actions or Behavior
	BOP/RO	Respond to numerous Annunciator alarms on 1C03.
	BOP/DOS	Recognize Motor Breaker Trip of 1P-11A (running CCW Pump) occurred and the Auto Pump (1P-11B) did not AUTO start.
	BOP/DOS	Start 1P-11B (standby CCW Pump) – this pump should have started on low pressure but did not, it is expected that the pump be manually started to back up the auto start that failed (also required to be started per ARB).
	DOS	Directs entry into AOP-9B, "Component Cooling System Malfunction"
	DOS/BOP	Check Component Cooling Pumps at least one running (1P-11B manually started)
	DOS/BOP	Check Surge Tank Level lowering (recognizes level is stable and proceeds to next step)
	DOS/BOP	Check Surge Tank Level greater than 10%
	DOS/BOP	Check Component Cooling System for In-leakage (recognizes surge tank level is not rising and proceeds to next step)
	DOS/RO	Check Reactor Trip - NOT REQUIRED - Check reactor critical - Check VCT high temperature alarm-CLEAR
	DOS/BOP	Check RHR Status-RHR not in service and proceeds to next step

Event Description: **Running CCW Pump Trips with a Failure of the Standby Pump to AUTO Start**

Time	Position	Applicant's Actions or Behavior
	DOS	Request Chemistry analyze CCW (may request DSS to perform this step).
	DOS	Notify DCS and implement E-plan (may request DSS to perform these actions)
	DOS/BOP	May place 1P-11A in Pull-Out which clears Motor Breaker Trip annunciator.
	DOS	Check TS applicability: DOS should determine that LCO 3.7.7 is not met. - Action Condition 'A' is entered. Required Action is to restore the CC pump to operable status in 72 hours AND 144 hours from discovery of failure to meet the LCO.
Proceed to next Event at the Lead Examiners Discretion.		

Event Description: **Letdown Line Pressure Controller (HC-135) oscillates in auto and manual, requiring isolation of Letdown.**

Time	Position	Applicant's Actions or Behavior
	RO	Acknowledge and respond to receipt of annunciator 1C04 1C 1-6, 2-6 and 4-6. Operator Actions: - Check for associated alarms - Check operation of CV-135 - Take manual control of letdown pressure controller (HC-135) – CV-135 oscillation continues in manual - Recommend isolating letdown.
	DOS	Direct manual isolation of Letdown.
	DOS	Direct entry into AOP-1D, "Chemical and Volume Control System Malfunction". Note: AOP-24, "Response to Instrument Malfunctions", may initially be entered to stabilize charging and letdown.
	DOS/RO	Review foldout page criteria.
	DOS/RO	Check for Charging Pump Malfunction – there is no charging pump malfunction, pumps are operating properly
	DOS	If LP Letdown Line pressure Control Valve failed, go to step addressing 1CV-135
	DOS/RO	Check LP Letdown Line Pressure Control Valve failed
	RO	Establish Manual Control – CV-135 oscillation continues in manual

Event Description: **Letdown Line Pressure Controller (HC-135) oscillates in auto and manual, requiring isolation of Letdown.**

Time	Position	Applicant's Actions or Behavior
	RO	Shut Letdown Orifice Outlet valves
	RO	Reduce charging flow to minimum
	DOS/RO	Establish excess letdown per OP-5E, "Establishing and Securing Excess Letdown"
	DOS	Notify DCS and I&C Duty and Call, Return to Procedure and Step in Effect
	DOS	Check TS applicability: If PZR level $\geq$ 48% (parametric value), DOS should determine that LCO 3.4.9 is not met. - Action Condition 'A' is entered. Required Action is to restore PZR level to within limit in 1 hour.
Excess Letdown will not be established, proceed to next event at the Lead Examiners discretion.		

Op-Test No: 2003301 Scenario No: 2 Event No: 4,5 Page 14 of 25

Event Description: Steam Generator 'B' tube leak requiring a Power Reduction.

Time	Position	Applicant's Actions or Behavior
	CREW	'B' S/G Tube leak identified. Indications are: - Lowering pressurizer level - Auto Charging pump speed rising - Lowering VCT level - Main Steam Line Radiation rising (RE-232) - Air Ejector Radiation rising (RE-215) - 'B' S/G level deviations
	DOS	Enters AOP-3 "Steam Generator Tube Leak" based on available indications.
	DOS	Reviews foldout page criteria with crew.
	DOS/RO	Check Safety Injection Not Required (continuous action step) - Check pressurizer level within 10% of program - Check RCS subcooling > 30^{o} F Reactor trip is not required due to this criteria at this time. **NOTE: The initial tube leak rate is approximately 50 gpm.**
	DOS/RO	Check Reactor Trip Not Required (continuous action step) - Check reactor critical - Check charging pump suction aligned to the VCT Reactor trip is not required due to this criteria.

Op-Test No: 2003301 Scenario No: 2 Event No: 4,5 Page 15 of 25

Event Description: Steam Generator 'B' tube leak requiring a Power Reduction.

Time	Position	Applicant's Actions or Behavior
	DOS/RO	Check Pressurizer level stable at or trending to program level. (continuous action step) - If level is trending lower, charging pump speed/flow is raised. - If level continues to lower, letdown is isolated. (Letdown should already be isolated)
	DOS/RO	Check Pressurizer pressure stable at or trending desired pressure. - RCS pressure should be controlling near program in Automatic
	DOS/RO	Check Reactor Makeup control - Makeup set at proper boric acid concentration - Makeup armed and in auto
	DOS	Notify the DCS, Chemistry, and implement the E-plan.
	CREW	Identify the leaking S/G (continuous action step). From available indications, the 'B' S/G is determined to be leaking.
	CREW	Determine Leak Rate (using either or all of the following) - Direct Chemistry to perform CAMP 014 - PBF-2034, Control Room Shift Log Unit 1 - OI-55, Primary Leak Rate Calculation
	CREW	Check Reactor Shutdown Required - Reactor shutdown determined to be required due to primary to secondary leakage exceeding 75 gpd.

Event Description: Steam Generator 'B' tube leak requiring a Power Reduction.

Time	Position	Applicant's Actions or Behavior
	CREW	Determine action response based on S/G Leakage. - First item in Table determined to be applicable – action response is to reduce power to less than or equal to 50% in one hour AND be in Mode 3 in the next two hours.
	CREW	Place the Unit in Mode 3 - AOP-17A determined to be applicable due to required time frame to be in Mode 3.
	DOS	Enters AOP-17A, "Rapid Power Reduction"
	CREW	Determine Desired Power Level – initially less than or equal to 50% in one hour Note: Next four steps may be performed in any order
	DOS	Notify PSS of Load Reduction
	DOS/RO	Check Rod Control System in Auto
	DOS/BOP	Select Rate Reduction Method and Reduce Load – Operator Auto – Impulse In is the recommended mode of operation.
	DOS/RO	Borate as Necessary to Maintain Rods Above the Low-Low Insertion Limit Alarm (continuous action step). - Reference Reactivity Operating Data Book ROD 1.3 for amount of boration required
	DOS/RO	Check PZR pressure stable at or trending to 2235 psig (continuous action step)
	DOS/RO	Check Pressurizer level stable at or trending to program level. (continuous action step)

Event Description: Steam Generator 'B' tube leak requiring a Power Reduction.

Time	Position	Applicant's Actions or Behavior
	DOS/BOP	Check Steam Generator level controlling in Auto (continuous action step)
	DOS/RO	Maintain RCS Tavg (continuous action step) - Greater than 540°F - Less than 574°F - Within 7°F of program Tavg
	DOS	Check TS applicability: - DOS should determine that LCO 3.4.13 is not met. - Action Condition 'A' is entered. Required Action is to reduce leakage to within limits in 4 hours.
Following ≈5% power reduction or at the Lead Examiners discretion, proceed to the next event.		

Op-Test No: 2003301 Scenario No: 2 Event No: 6,7,8,9 Page 18 of 25

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
		Due to a lowering pressurizer level trend, a reactor trip will be required during AOP-3 based on the inability to maintain pressurizer level within 10% of program level. Critical Task: Crew manually trips the reactor prior to pressurizer level going off scale low
	DOS	Direct a Manual Reactor Trip, Safety Injection, Containment Isolation, and entry into EOP-0, "Reactor Trip or Safety Injection" due to lowering pressurizer level.
	RO	Manual Reactor Trip, SI, and CI performed. Immediate Actions of EOP-0 (Steps 1-4) performed and informs DOS they are ready for verification. - Verify reactor trip - Verify turbine trip – **the turbine will not automatically trip however, the turbine will trip from the manual pushbutton.** - Verify safeguard buses energized - Check if SI is actuated
	DOS/RO	Verify Reactor Trip - Check reactor trip and bypass breakers OPEN - Check all rod bottom lights LIT - Check all rod position indicators ON BOTTOM - Check neutron flux LOWERING
	DOS/RO	Verify Turbine Trip – contingency action for manually tripping the turbine is verified.
	DOS/RO	Verify Safeguard buses energized - Check at least one 4160 Vac safeguards bus energized (1A05 or 1A06) - Check at least one 480 Vac safeguards bus energized (1B03 or 1B04)

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
	DOS/RO	Check if SI is actuated: - 1C04-1B 4-2, Manual Safety Injection - 1C04 1B 4-3, Containment Pressure High - 1C04-1B 4-4, Pressurizer Low Pressure SI - 1C04-1B 4-5, Steam Line Loop A Lo-Lo Pressure - 1C04-1B 4-6, Steam Line Loop B Lo-Lo PressureB Pressure Low-Low Manual SI actuation was procedurally required.
	DOS	Review foldout page criteria with the crew - Determines that the "Ruptured S/G Isolation Criteria" and "Faulted S/G Isolation Criteria are applicable. - Auxiliary Feedwater flow should be isolated to the 'B' S/G by closing 1AF-4000 and AF-4021. - P-38B Motor Driven AFP is required to be secured when feed is reduced less than 50 gpm.
	DOS	EOP-0 Attachment A "Automatic Action Verification" directed to be completed by the BOP operator while continuing on with EOP-0. **The steps for Attachment A are included near the end of this event section.** - All items of Attachment A should indicate normal with the exception of the 'B' Steam Generator Blowdown Containment Isolation Valve, 1MS-5959 which fails to close.
Critical Task: Crew manually closes 1MS-2045 (in series with 1MS-5959) prior to exiting EOP-2.		

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
	RO/DOS	Verify Secondary Heat Sink: - Level in at least one S/G > [51%] 29%. - Control pumps and align valves as necessary to maintain S/G level between [51%] 29% and 65%. Adequate Aux Feedwater will be available, > 200 gpm should be maintained until level is within the band on the 'A' S/G.
	DOS/RO	Verify RCP Seal Cooling – Check labyrinth seal delta-P > 20 inches OR – Check component cooling to RCP thermal barrier normal
	DOS/RO	Verify RCS temperature control (continuous action step). - This procedure step provides actions to stop dumping steam and reducing total feed flow (if S/G levels are in the required band) with RCS temperature trending lower.
	DOS/RO	Check pressurizer PORVs both shut.
	DOS/RO	Verify pressurizer spray valves shut – Both normal loop spray valves shut. – Auxiliary spray valve shut.
	DOS/RO	Check if RCPs should remain running – RCPs are running and subcooling is > [60 ºF] 30 ºF
	DOS	Start Monitoring Critical Safety Function Status trees. The instructor DSS/STA will acknowledge this report and begin monitoring.

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
	CREW	Verify Containment Sump Recirculation Not Required – sump recirc is not required.
	CREW	Check if secondary system is intact: - No S/G completely depressurized AND - No S/G pressure trending lower in an uncontrolled manner DOS transitions to EOP-2 based on "B" S/G being faulted
	DOS	Reads cautions and reviews foldout page criteria of EOP-2
	DOS/RO	Check RCS wide range Hot Leg Temperatures STABLE: - Control feed and dump steam as necessary using "A" S/G to stabilize RCS hot leg temperatures
	DOS/BOP	Isolate both Main Steam Lines – MSIVs will already be shut.
	DOS/BOP	Check if any S/G in NOT faulted (determines "A" S/G is not faulted)
	DOS/BOP	Identify faulted S/G (determines "B" S/G is faulted)
	DOS/BOP	Reset Loss of Feedwater Turbine Trip
	DOS/BOP	Isolate Feed to faulted S/G - Ensure Main Feed Regulating Valve SHUT - Ensure Main Feed Regulating Bypass Valve SHUT - Ensure Motor Driven AFW pump P-38B is stopped. - Ensure AF-4021 AND 1AF-4000 in manual and SHUT

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
	DOS/BOP	Isolate flow from faulted S/G - Ensure 1MS-2015 SHUT (atmospheric dump) - SHUT 1MS-2019 (turbine driven AFW steam supply) - Ensure 1MS-5959/2045 SHUT (S/G Blowdown) – **Note: 1MS-2045 should have previously been closed in EOP-0 Attachment A. Closure of 1MS-2045 prior to exiting EOP-2 is a critical task.** - Locally shut 1MS-237 (1P-29 AFP/Radwaste steam isolation) - Locally shut 1MS-238 (main steam trap isolation)
	DOS/BOP	Check CST Level > 8 Ft
	CREW	Check secondary system radiation normal DOS transitions to EOP-3 based on "B" S/G being ruptured
Upon transition to EOP-3, the scenario may be terminated at discretion of Lead Examiner.		
Inform the Examinees that they are to remain in the simulator until any evaluator follow-up questions are answered. Do not discuss any scenario related events.		

Event Description: Steam Generator 'B' Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B' Steam Leak inside Containment. Steam Generator 'B' Blowdown Valve fails to Isolate.

Time	Position	Applicant's Actions or Behavior
The remainder of steps listed in this event section are those found in EOP-0 Attachment A, "Automatic Action Verification". The DOS should ensure that performance of this Attachment is continued by the BOP operator, and performed in parallel with EOP-0.		
	BOP	Verify feedwater isolation: - Feedwater Regulating and Bypass Valves SHUT. - Both main feed pumps tripped. - MFP discharge MOVs - BOTH SHUT.
	BOP	Verify containment isolation: - CI Panels A and B ALL LIGHTS LIT – **'B' Steam Generator Blowdown CI valve determined not to be shut (1MS-5959). 1MS-5959 will NOT shut. However, 1MS-2045, which is in series with 1MS-5959 can be shut using its control switch.** - RS-SA-9 SHUT. - No other valves open under administrative control (DSS may be asked to verify this).
	BOP	Verify AFW Actuation: - Checks both motor driven AFW pumps running. (P-38B has been previously secured).
	BOP	Check both SI pumps running.
	BOP	Check both RHR pumps running.
	BOP	Check only one CCW pump running.

Event Description: Steam Generator ‘B’ Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B’ Steam Leak inside Containment. Steam Generator ‘B’ Blowdown Valve fails to Isolate.

Time	Position	Applicant’s Actions or Behavior
	BOP	Verify Service Water Alignment: - 6 service water pumps running. - Service water isolation valves shut. - Direct AO to locally check SW-LW-61 or SW-LW-62 shut.
	BOP	Verify Containment Accident Cooling Units Running - All accident fans running. - 1SW-2907 & 2908 OPEN. - Unit 1 Containment Recirc Coolers Water Flow Low Alarm CLEAR.
	BOP	Check Control Room Fans Armed: - W-14A & W-13B2 WHITE LIGHT OFF (white light is off).
	BOP	Check Control Room Ventilation IN ACCIDENT MODE: - At least one control room recirc fan RUNNING - Control room damper solenoid valve PURPLE LIGHT LIT
	BOP	Check if Main Steam Lines Can Remain Open, checks both MSIVs SHUT.
	BOP	Verify proper SI valve alignment: - Unit 1 SI active status panel ALL LIGHTS LIT - Unit 1 SI-Spray Ready status panel NO LIGHTS LIT

Event Description: Steam Generator ‘B’ Tube Rupture requiring a Reactor Trip with failure of the Main Turbine to Automatically Trip. Steam Generator 'B’ Steam Leak inside Containment. Steam Generator ‘B’ Blowdown Valve fails to Isolate.

Time	Position	Applicant’s Actions or Behavior
	BOP	Verify containment spray not required: - Recognize containment pressure is rising and if > 25 psig perform continuous actions of RNO - Containment Spray actuated, C01 B 2-6 LIT - All containment spray discharge valves OPEN - At least one spray pump running - Shutdown one train of spray by placing spray pump in PULL-OUT and shutting it’s associated suction valve. - One spray additive valve verified OPEN
	BOP	Verify SI Flow: - RCS pressure <1400 psig - Check SI pumps flow indicated - RCS pressure < [425] 200 psig
This ends the steps of EOP-0 Attachment A.		