

DRAFT

Appendix D, Rev. 9

Scenario Outline

Form ES-D-1

Facility: V.C. Summer Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: _____

Turnover: 100% IC, AT MOL.

1. Thunder storms in the area, severe weather check list being implemented.
2. S/G "A," Small tube leak, approx. 8 gpd. MAL-RCS002A
3. Motor Driven AFW Pump "A" Impeller replacement in progress with 48 hours to complete, have done 12 hours so far.
4. Turnover that the "B" S/G rad monitor is OOS.
5. Painting in the area of the TD AFW pump.
6. Senior Resident is Walking down the CVCS system with system engineer.

Event No.	Malf. No.	Event Type*	Event Description
1		RO (I)	Turbine Impulse Pressure Transmitter PT-416 Fails HI, Should be the selected channel. If 446 is selected to auto rods, then the rods will move out. RO take manual control of the rods. Does Summer use auto rod control?
2		BOP (I)	Steam Generator Steam Flow Transmitter Failure, 474 fails LOW, Ramp over a 4 minute period, or look at the consequences to be able to do this and not receive a reactor trip. Allow the applicant to be able to diagnose and correct.
3		RO C SRO (TS) BOP(N)	Accidental VCT suction valve 115C closure by system engineer while doing a line up with the SR Resident Observing. This will cause the running Charging pump to cavitate, requiring securing the running pump. Possible loss of letdown. Requires switching the Charging pumps and then TS evaluation of loss of one CCP. If loss of LD occurs, possibly change malfunction, so the scenario is not to long with to many Reactivites and Normals. BOP restore LD if required.
4		SRO (TS)	TD AFW pump Trip and Throttle valve trips, due to a ladder in the area while painting . The ladder falls on the TDAFW pump trip and throttle valve reset bar and breaks it, being unable to reset the TD AFW pump. This will cause the SRO to enter TS 3.7.1.2, and the need to be in hot standby in 6 hours and hot shutdown with in the following 6 hours.

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5		RO (Rx) BOP (N)	Reduce power to take the unit off line. In accordance with GOP -004B.00D. Power Operation Mode 1 (Descending Power)
6		BOP(C)	During the Down power, the "A" FRV fails as is, this will cause the operator to have to place the "A" FRV in manual and control the A SG in manual during the Shut Down
7		BOP (C)	SG Tube Leak on the "C" SG, ramping to approximately the output of the existing charging pump(s). Ramp up over a 5 minute period.
8		M all	S/G tube rupture on the "C" SG to full flow of a tube, requires reactor trip. The Reactor Will not trip (ATWT) (EOP -13), Entry, (Response to Abnormal Nuclear Power Generation)
			Loss of power on the emergency bus that supplies the B Emergency feed water pump. The Emergency Diesel generator starts automatically but will trip on overspeed, the DG will be able to be reset and restarted and it will work. IF the crew requests the restart, it will start otherwise entry into FR-H.1 will most likely be required.

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

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>1</u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		<u>AOP-401.7</u>
	RO	Operator acknowledges annunciator 615 2-5 (RCS TAVG-TREF DEV HI/LO), recognizes IPT0446 failure, and responds IAW AOP-401.7
Critical	RO	Place ROD CNTRL BANK SEL Switch in MAN.
	RO	Ensure TREF 1 ST STG PRESS Switch is positioned to the operable channel IPT0447, CH IV).
	RO	Adjust Control Rods until Tav _g is within 1.0°F of Tref .
	RO	Check if Main Turbine load Is GREATER THAN 10%.
	RO	Within one hour, verify the following permissives are dim: P13. 1ST STG PRESS. P7. REACTOR TRIP BLOCKED.
	RO	Restore automatic rod control: a. Check if automatic rod control is desired. b. Verify reactor power is GREATER THAN 15% (C-5 status light dim). c. Verify Tav _g is within 1.0°F of Tref. d. Place ROD CNTRL BANK SEL Switch in AUTO (Crew may choose to return the rods to 230 steps prior to returning rods to auto but this is considered a good practice, not a requirement).
	BOP	Place STM DUMP MODE SELECT in STM PRESS.
	BOP	Notify I&C to place AMSAC in BYPASS
	SRO	Within 6 hours, place the failed channel bistables in a tripped condition. SRO evaluation of Tech Spec Table 3.3-1

Op-Test No.: _____ Scenario No.: 1 Event No.: 2 Page _____ of _____Event Description: _____

Time	Position	Applicant's Actions or Behavior
		<u>AOP-401.3</u>
	BOP	The BOP operator acknowledges annunciator 624 4-4 in alarm, recognizes the failure of IFT0474 and responds IAW AOP-401.3
	BOP	Depending on response time, annunciator 624 1-5 (SG A LVL DEV) may also alarm.
	BOP	Verify the failed channel is the controlling channel.
	BOP	Select the operable flow channel: Place FW CONTROL CHANNEL SEL Switch to the operable channel. Place STEAM CONTROL CHANNEL SEL Switch to the operable channel.
	BOP	Verify Turbine Load is LESS THAN 950 Mwe. Using any method available, reduce Turbine Load by 40 Mwe to 50 Mwe. (The crew will likely decide to borate to avoid RAOC concerns and would likely turn on BU heaters for improved mixing. This would not be required for such a small load decrease but would be a good practice).
	BOP	Verify only one SG is AFFECTED.
Critical	BOP	Adjust the Feedwater Flow Control Valve as necessary to restore feed flow to the AFFECTED SG.
	BOP	Restore Narrow Range level in all SGs to between 60% and 65%.
	BOP	Check if Feedwater Pump speed control is operating properly: Feedwater Header pressure is GREATER THAN Main Steam pressure. Feed flow is normal for flow and power level. All operating Feedwater Pump speeds and flows are balanced
	BOP	Verify Narrow Range level in all SGs is normal.
	BOP	Restore the AFFECTED SG control systems to normal:

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 2 </u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		Place the Feedwater Flow Control Valve in AUTO. Place the Feedwater Pump Speed Control System in AUTO. REFER TO SOP-210, FEEDWATER SYSTEM.
	SRO	Within six hours, place the failed channel protection bistables in a tripped condition: SRO evaluates Tech Spec Table 3.3-3
	CREW	Determine and correct the cause of the channel failure.

Op-Test No.: _____ Scenario No.: 1 Event No.: 3 Page _____ of _____Event Description: _____

Time	Position	Applicant's Actions or Behavior
		<u>AOP-102.2</u>
	RO	Operator acknowledges that annunciators 614 4-2 (CHG PP B/C TRIP), 614 5-1 (CHG LINE FLO HI/LO), 617 2-2, 618 2-2, & 619 2-2 (RCP A, B, C #1 SEAL INJ FLO LO) are all in alarm, recognizes the "B" Charging Pump has tripped, and responds IAW AOP-102.2
	RO	<p>Check if Charging Pump flow is normal: IF Charging Pump has tripped or flow is abnormal, THEN perform the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Ensure the Charging Pump is secured. <input type="checkbox"/> Close all Letdown Isolation Valves: PVT-8149A(B)(C), LTDN ORIFICE A(B)(C) ISOL. PVT-8152, LTDN LINE ISOL. LCV-459, LTDN LINE ISOL. LCV-460, LTDN LINE ISOL. <input type="checkbox"/> Close FCV-122, CHG FLOW. <input type="checkbox"/> Verify CCW flow to the RCP Thermal Barriers is GREATER THAN 90 gpm on FI-7273A(B), THERM BARR FLOW GPM. <input type="checkbox"/> Display Dedicated Display ZZRCPBRG on the IPCS to monitor RCP temperatures. <input type="checkbox"/> Contact Electrical and Mechanical Maintenance to investigate.
	RO	<p>Verify Charging System valve lineup: <input type="checkbox"/> IF Charging Pump suction is aligned to the VCT, THEN ensure both LCV-115C(E), VCT OUTLET ISOL, are open.</p>
Critical	SRO	SRO evaluates Tech Spec 3.5.2 and determines 72 hr. action statement.
	RO	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure the following valves are open: MVG-8106, CHG PP. MVT-8109A(B)(C), CHG PP A(B)(C). MVG-8130A(B), LP A SUCT TO CHG PP C. MVG-8131A(B), LP B SUCT TO CHG PP C. MVG-8132A(B), CHG PP C TO LP A DISCH.

Op-Test No.: _____ Scenario No.: 1 Event No.: 3 Page _____ of _____

Event Description: _____

Time	Position	Applicant's Actions or Behavior
		MVG-8133A(B), CHG PP C TO LP B DISCH
	RO	<input type="checkbox"/> Check the Charging header valve lineup as follows: Ensure MVG-8107, CHG LINE ISOL, is open. Ensure MVG-8108, CHG LINE ISOL, is open. Ensure FCV-122, CHG FLOW, is in MAN and CLOSE.
	RO	Ensure one of the following valves is open: PVT-8146, NORM CHG TO RCS LP B. OR PVT-8147, ALT CHG TO RCS LP A.
	BOP?	<input type="checkbox"/> Locally verify Charging Pump suction pressure is between 50 psig and 100 psig as indicated on the following PI-151A, SUCTION PRESS, for Charging Pump A. PI-152A, SUCTION PRESS, for Charging Pump B. PI-153A, SUCTION PRESS, for Charging Pump C.
	RO	With Shift Supervisor's permission, start a Charging Pump, while monitoring RCP temperatures. REFER REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.
	RO	WHEN a Charging Pump is operating, THEN place Charging and Normal Letdown in service.. REFER SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM.
		<u>SOP-102 Section III.F</u>
	SRO	Crew instructs the building operator to perform Attachment VB to mechanically and electrically align "C" charging pump to "B" Train. (If the crew chooses, they might start "A" CCW pump and "A" charging pump to get a charging

Op-Test No.: _____ Scenario No.: <u> 1 </u> Event No.: <u> 3 </u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		pump back while they are waiting to get "C" charging pump racked up on "B" Train.)
	RO	To start XPP-0043C, PUMP C, on miniflow, complete Attachment VB if Charging Pump C is to be aligned to Train B.
	Building	Following the completion of Attachment VA(B), Chilled Water Expansion Tank levels should be monitored for indications of equalization: 1) L9004A, CHILLED WATER EXPANSION TNK A LV, or ILI09004-VU, CHILL WATER EXP TK A LEVEL IND (IB-412). 2) L9006A, CHILLED WATER EXPANSION TNK B LV, or ILI09006-VU, CHILL WATER TK B LEVEL IND (IB-412).
	RO	Verify PI-121, CHG PRESS PSIG, is between 2650 psig and 2850 psig. Monitor the following for proper pump operation: a. LR-459, PZR % LEVEL & LEVEL SP. b. FI-130A, RCP A INJ FLO GPM. c. FI-127A, RCP B INJ FLO GPM. d. FI-124A, RCP C INJ FLO GPM.
	RO	Ensure the appropriate train of Component Cooling is operating per SOP-118.
	RO	Ensure the appropriate train of Chill Water is operating per SOP-501.
	RO	Ensure XPP-43C-PP1, CHG PP C AUX OIL PP, is running.
	Building	Verify IPI00153A, CHG PUMP C SUCT HDR PRESS IND, indicates pump suction pressure is greater than 15 psig (AB-388).
	RO	Start XPP-0043C, PUMP C. (PEER <input type="checkbox"/>)
	RO	Verify XPP-43C-PP1, CHG PP C AUX OIL PP, stops automatically when the Charging Pump comes up to full speed.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>3</u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
	Building	Verify IPI00153A, CHG PUMP C SUCT HDR PRESS IND, indicates pump suction pressure is greater than 15 psig (AB-388).
	RO	Monitor the following to verify proper pump operation: 1) Charging Pump C running current is between 30 amps and 50 amps. 2) PI-121, CHG PRESS PSIG, is between 2650 psig and 2850 psig. 3) XVG-9684C-CC, CCW TO CHG PP C, is open.
		<u>SOP-102 Section IV.M</u>
	RO	Place FCV-122, CHG FLOW, in MAN and close.
	RO	Place PCV-145, LO PRESS LTDN, in MAN and open to 70%. (PEER <input type="checkbox"/>)
	RO	Place TCV-144, CC TO LTDN HX, in MAN and open to 100%.
	RO	Place TCV-143, LTDN TO VCT OR DEMIN, in VCT.
	RO	Open PVT-8152, LTDN LINE ISOL.
	RO	Open the following: a. LCV-459, LTDN LINE ISOL. b. LCV-460, LTDN LINE ISOL.
	RO	Ensure the following Charging Line Isolation Valves are open: a. MVG-8107, CHG LINE ISOL. b. MVG-8108, CHG LINE ISOL.
	RO	Slowly open FCV-122, CHG FLOW, to establish 60 gpm flow as indicated on FI-122A, CHG FLOW GPM.
	RO	Open Orifice Isolation Valves to obtain the desired Letdown flow rate (60 gpm to 120 gpm): a. PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). b. PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). c. PVT-8149C, LTDN ORIFICE C ISOL (60 gpm).

Op-Test No.: _____ Scenario No.: 1 Event No.: 3 Page _____ of _____Event Description: _____

Time	Position	Applicant's Actions or Behavior
	RO	Adjust FCV-122, CHG FLOW, as required to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining Pressurizer level.
	RO	Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig.
	RO	Place PCV-145, LO PRESS LTDN, in AUTO.
	RO	Adjust TCV-144, CC TO LTDN HX, potentiometer as necessary to maintain the desired VCT temperature and place in AUTO. Refer to VCS Curve Book, Figure VII.15.
	RO	When Pressurizer level matches reference level, place FCV-122, CHG FLOW, in AUTO per Section IV.
	RO	After the Letdown temperatures have stabilized, place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO.

Op-Test No.: _____ Scenario No.: 1 Event No.: 34 Page _____ of _____Event Description: _____

Time	Position	Applicant's Actions or Behavior
	Building	Building operator reports oil leak on TDEFP governor
	SRO/BOP	Crew determines TDEFP is inoperable and decides to remove it from service by taking both 2030 valve switches to the closed position. Both annunciators 623 2-3 and 622 2-3 (TD EFP AUTOSTART DEFEATED) alarm as the 2030 valves close.
Critical	SRO	SRO evaluates Tech Spec 3.7.1.2 and determines that a plant shutdown is necessary

Op-Test No.: _____ Scenario No.: 1 Event No.: 5 Page _____ of _____Event Description: _____

Time	Position	Applicant's Actions or Behavior
		<u>GOP-4B</u>
	BOP	Reduce load by one of the following methods: 1) By use of the DEC LOAD RATE circuit 2) By use of the load limiter
	SRO	MDS calls and requests that the load decrease be raised to 1%/min because of approaching severe thunderstorm.
	BOP	As load decreases, adjust Megavars using GEN FIELD VOLT ADJ as requested by the Load Dispatcher and within the Estimated Generator Capability Curve (Enclosure A).
	RO	Maintain Tavg within the control band by Control Rod motion or boron concentration changes.
Critical	RO	Borate or dilute per SOP-106, Reactor Makeup Water System, to maintain the following parameters: 1) ΔI within limits. 2) Control Rods above the Rod Insertion Limit.

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____

Event Description: _____

Time	Position	Applicant's Actions or Behavior
		<u>AOP-210.1</u>
	BOP	As load decreases, BOP operator notices that FCV-0478 is failed as is and takes manual control of the valve IAW AOp-210.1. (could possibly receive annunciator 624 1-5 SG A LVL DEV.) Crew may also decide to conservatively stop the load reduction until they can determine that they have manual control of the vlave but this would not be required because it is not in the procedure.
	BOP	1 Manually adjust the AFFECTED Feedwater Flow Control Valve as necessary to maintain Narrow Range SG level between 60% and 65%: <input type="checkbox"/> PVT-478, SG A FWF. <input type="checkbox"/> PVT-488, SG B FWF. <input type="checkbox"/> PVT-498, SG C FWF.
	SRO	Dispatch I&C to determine cause of auto control failure.

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>7</u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		<u>AOP-112.2</u>
	RO	RO acknowledges that annunciator 646 2-1 (MN STM LINE RMG-19 HI RAD) is in alarm and pulls the ARP.
	RO	Verify the alarm is valid and identify the Main Steam line affected by observing RM-G19A, B, and C and R/R-8.
	SRO	Request Health Physics perform radiological surveys around the Main Steam lines.
	SRO	Direct Chemistry to sample all Steam Generators for activity.
	Building	Align the condenser exhaust to the Auxiliary Building Charcoal Exhaust as follows: a. Open XVB00110-AR, MN&AUX COND VAC PP CHAR EXH DISCH VALVE (TB-436). b. Close XVB00109-AR, MN&AUX COND VAC PUMP ATMOS DISCH VALVE (TB-436).
	BOP	Reduce all Steam Generator blowdown flows to minimum.
	SRO	If the alarm is valid, refer to AOP-112.2.
	BOP	If they have not already done so in previous event, the crew may elect to stop the load reduction and stabilize power at this point.
	BOP	The tube leak will likely cause annunciator 624 3-5 (SG C LVL DEV) to alarm (expected alarm).
	RO	Check if PZR level can be maintained: a. Open FCV-122, CHG FLOW, as necessary to maintain PZR level this will cause annunciator 614 5-1 (CHG LINE FLO HI/LO) to alarm – expected alarm). b. Verify PZR level is at or trending to program level .
	RO	Reduce Letdown to one 45 gpm
	RO	IF PZR level continues to decrease, THEN perform the Following Close PVT-8149A, LTDN ORIFICE A ISOL Start a second CCW Pump.

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Event Description: _____

Time	Position	Applicant's Actions or Behavior
		Start a second Charging Pump.
	SRO	Check if SI is required
		Verify VCT level is being maintained between 20% and 40%.
	SRO	CRS directs the RO to insert a manual reactor trip and that they will actuate SI when directed by EOP-1.0

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>6</u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		<u>EOP-13.0</u>
	RO	Verify Reactor Trip: Trip the Reactor using both Reactor Trip Switches.
Critical	RO	IF the Reactor will NOT trip OR is NOT subcritical, THEN insert Control Rods at the fastest control rod insertion rate
	SRO	Direction given to trip the reactor locally using Attachment 1
		Follow-up question – may ask SRO to classify this emergency event (Site Area Emergency)
Critical	BOP	Verify Turbine/Generator Trip: Verify all Turbine STM STOP VLVs are closed. Depress Emerg Trip Sys TRIP.
	BOP	Ensure Generator Trip ' (after 30 second delay) 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
	BOP	Ensure EFW Pumps are running:
Critical	RO	Initiate emergency boration of the RCS: Ensure at least one Charging Pump is running. Verify PZR pressure is LESS THAN 2335 psig. Verify SI ACT status light is NOT lit. Verify SI flow on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. GO TO Step 5. Observe the CAUTION prior to Step 5.
Critical	Building	Building Operator locally trips the RTBs at this point. Verify all Reactor Trip and 'Bypass Breakers are open. Verify all Rod Bottom Lights are lit. Verify Reactor Power level is decreasing.
	RO	5 Verify Containment Ventilation Isolation Valves closed by verifying the Safety INJECTION monitor

Op-Test No.: _____ Scenario No.: <u>1</u> Event No.: <u>6</u> Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicant's Actions or Behavior
		lights are dim,
	RO	Verify the Reactor is subcritical: Power Range channels indicate LESS THAN 5%. Intermediate Range channels indicate a negative startup rate
	SRO	GO TO Step 15. Observe the CAUTION prior to Step 15.
	SRO	RETURN TO the Procedure and Step in effect (EOP-1.0).
		<u>EOP-1.0</u>
	RO	Verify Reactor Trip: Trip the Reactor using either Reactor Trip Switch. Verify all Reactor Trip and ' Bypass Breakers are open. Verify all Rod Bottom Lights are lit. Verify Reactor Power level is decreasing.
	BOP	Verify Turbine/Generator Trip: Verify all Turbine STM STOP VLVs are closed. Ensure Generator Trip (after 30 second delay): Ensure the GEN BKR is open. Ensure the GEN FIELD BKR is open. Ensure the EXC FIELD CNTRL is tripped.
	BOP	Verify both ESF buses. BOP operator notes that there is no power on IDB and that the diesel did not start. He announces that there is a lockout on XFMR-XTF31 (by recognizing annunciator 639 4-2 in alarm). BOP operator also notes that annunciator 637 6-1 (DG B ENG START FAIL) is in alarm
	BOP	BOP operator depresses the "B" DG Emergency Start Pushbutton and notes that the diesel does start and the

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____

Event Description: _____

Time	Position	Applicant's Actions or Behavior
		DG breaker does close to energize 1DB.
	RO	Check if SI is actuated: Check if either SI ACT status light is bright on XCP-6107 1-1 or Any red first-out SI annunciator is lit on XCP-626 top row. Actuate SI using either SI ACTUATION Switch.
Critical	BOP	Complete ATTACHMENT 3, SI EQUIPMENT VERIFICATION.
	SRO	Announce plant conditions over the page system.
	RO	Verify RB pressure has remained LESS THAN 12 psig on PR-951, ' RB PSIG (P-951), red pen.
	BOP	Check RCS temperature: With any RCP running, RCS Tavg is stable at OR trending to 557°F. With no RCP running, RCS Tcold is stable at OR trending to 557°F IF Narrow Range SG level is LESS THAN 30% [50%] in all SGs, THEN reduce EFW flow as necessary to stop the cooldown, while maintaining total EFW flow GREATER THAN 450 gpm. WHEN Narrow Range SG level is GREATER THAN 30% [50%] in at least one SG, THEN control EFW flow as necessary to stabilize RCS temperature at 557°F.
	RO	Check PZR PORVs and Spray Valves: PZR PORVs are closed. PZR Spray Valves are closed. Verify power is available to at least one PZR PORV Block Valve. MVG-8000A, RELIEF 445 A ISOL. MVG-8000B, RELIEF 444 B ISOL. MVG-8000C, RELIEF 445 B ISOL. Verify at least one PZR PORV Block Valve is open
	RO	Check if RCPs should be stopped: RCS pressure is LESS THAN 1400 psig AND SI flow is

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____

Event Description: _____

Time	Position	Applicant's Actions or Behavior
		indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. Note: RCS pressure should be about 1800 psig so no RCP trip should be required.
	BOP	Verify no SG is FAULTED: No SG pressure is decreasing in an uncontrolled manner. No SG is completely depressurized.
	RO	Verify Secondary radiation levels indicate SG tubes are NOT RUPTURED: RM-G19A(B)(C), STMLN HI RNG GAMMA. RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR.
Critical	SRO	GO TO EOP-4.0, STEAM GENERATOR TUBE RUPTURE, Step 1.

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____
 Event Description: _____

Time	Position	Applicant's Actions or Behavior

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____
 Event Description: _____

Time	Position	Applicant's Actions or Behavior
	RO	<p>Check if RCPs should be stopped: Check if either of the following criteria is met:</p> <p>Annunciator XCP-612 4-2 is lit (PHASE B ISOL).</p> <p>OR RCS pressure is LESS THAN 1400 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM.</p> <p>Note: RCS pressure should be about 1800 psig so it should not be necessary to secure any RCPs</p>
	SRO	<p>Identify the RUPTURED SG(s): Narrow Range level in any SG increasing in an uncontrolled manner, OR High Radiation on any of RM-G19A(B)(C), STMLN HI RNG. GAMMA, OR Local hand held radiation monitor readings taken by Health Physics on the blowdown lines at following penetrations: XRP0326, SG A Blowdown Line (AB-412 West Pen). XRP0224, SG B Blowdown Line (IB-412 East Pen XRP0219, SG C Blowdown Line (IB-412 East Pen), OR As determined by Chemistry ample analysis for abnormal activity using a frisker.</p>
	BOP	<p>Isolate flow from each RUPTURED SG: Place the Steamline PWR RELIEF A(B)(C) SETPT Controller(s)</p>

Op-Test No.: _____ Scenario No.: 1 Event No.: 6 Page _____ of _____
 Event Description: _____

Time	Position	Applicant's Actions or Behavior
		in MAN and closed. Adjust the PWR RELIEF A(B)(C) SETPT Controller(s) to 8.85 (1150 psig). Place the Steamline Power Relief A(B)(C) Mode Switch(s) in PWR RLF. Place the PWR RELIEF A(B)(C) SETPT Controller(s) in AUTO.
	BOP	WHEN RCS Tavg is LESS THAN P-12 (552°F), THEN place both STM DUMP INTERLOCK Switches to BYP INTLK.
	BOP	Verify the Steamline PORV closed.
Critical	BOP	IF at least one MD EFW Pump is running, THEN isolate the TD EFW Pump by placing PVG-2030, STM SPLY TO TD EFP to CLOSE.
	BOP/Building	Open XMC1DB2Y 05EH, EMERG FEEDWATER PUMP MAIN STEAM BLOCK XVG2802B-MS (AB-463). Close XVG02802B-MS, MS HEADER C EF PUMP TURBINE SUPPLY VLV
	BOP	Close the following for each RUPTURED SG: SG Blowdown, PVG-503A(B)(C). MS Drain Isolation, PVT-2843A(B)(C). MS Drain Isolation, PVT-2877B for SG C.
Critical	BOP	Close the following for each RUPTURED SG: MS Isolation Valve, PVM-2801A(B)(C) AND MS Isolation Bypass PVM-2869A(B)(C). The ruptured SG is now Isolated.

DRAFT

Facility: _____ Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: AT approximately 45% power and increasing.

Turnover: At the point of the GOP when the second feed water pump is going to be placed in service. The crew is to place the B Main Feed Water Pump in service IAW XXXX.

Thunder storms in the area, severe weather check list being implemented.

1. S/G "A," Small tube leak, approx. 8 gpd. MAL-RCS002A
2. Motor Driven AFW Pump "A" Impeller replacement in progress with 48 hours to complete, have done 12 hours so far.
3. Turnover that the "B" S/G rad monitor is OOS.
4. Painting in the area of the TD AFW pump.
5. Senior Resident is Walking down the CVCS system with system engineer.

Event No.	Malf. No.	Event Type*	Event Description
1		BOP (N)	The BOP will place the second feed water pump in service IAW XXXX. Once the pump is in service and reported to the SRO that it is in service and the master controller is controlling both S/Gs proceed to the next event. This event should be set up just as the feed pump is ready to be paralleled to the other feed pump to save time.
2		RO (I) SRO (TS)	Power Range Channel N44, Failure, with the failure of the rods to move in the incorrect direction. In this case the rods, will move in the inward direction. This may need an over ride of some sort to be able to do this. Use the transmitter that is associated with the controlling channel. Make sure this will not cause a reactor trip. Trouble shooting this event for the rest of the scenario. Use turbine load to control tave tref mismatch or with boration.
3		BOP (I)	Feedwater Flow transmitter (476) Failure, Failing closed, slowly, a ramp at approximately 3 minutes from full open to 50% closed, this will be mitigated by taking the automatic controller to manual.
4		BOP (C)	Running EH pump trips. (Must manually start other pump)
5		RO (I)	Pressurizer pressure channel 444 failure, High. Control

Facility: _____ Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: AT approximately 45 % power and increasing.

Turnover: At the point of the GOP when the second feed water pump is going to be placed in service. The crew is to place the B Main Feed Water Pump in service IAW XXXX.

Thunder storms in the area, severe weather check list being implemented.

1. S/G "A," Small tube leak, approx. 8 gpd. MAL-RCS002A
2. Motor Driven AFW Pump "A" Impeller replacement in progress with 48 hours to complete, have done 12 hours so far.
3. Turnover that the "B" S/G rad monitor is OOS.
4. Painting in the area of the TD AFW pump.
5. Senior Resident is Walking down the CVCS system with system engineer.

Event No.	Malf. No.	Event Type*	Event Description
		SRO (TS)	severity to prevent a trip. Adjust as necessary to allow a PORV to look like its closed but, in fact it is not, this would required the operators to determine that the block valve would need to be isolated.
6		All SRO (TS) <i>RO (R)</i> <i>BOP (W)</i>	Small steam line break occurs, to allow determination for a reactor shut down requirement. Run this until the team realizes a reactor trip is going to happen. This should not be to fast but fast enough that we don't have to do a reactivity controls evolution. When the reactor is tripped it will not trip, ATWT, since ROD control is backwards, and not fixed from event 2, the crew may elect to not drive rods or they may try the opposite way in order to get rods to move. In any event, they must get the outside operator to trip the Reactor trip breakers ASAP.
7	MAL-MSS003C	All-(M)	Just before the reactor is tripped locally, a large main steam line break occurs on the C Steam Generator, up stream of the MSIVs. All MSIV do not automatically isolate upon the appropriate signal. A full manual isolation will occur when the appropriate hand switches have been manipulated. The isolation valves from feed water do not isolate automatically (adding energy to the containment), requiring the manual isolation of those feed water valves.
			Following to the Major event.
			Failure of the "B" train Containment Spray pump to operate automatically. Will manually start.

Facility: _____ Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

Initial Conditions: AT approximately 45 % power and increasing.

Turnover: At the point of the GOP when the second feed water pump is going to be placed in service. The crew is to place the B Main Feed Water Pump in service IAW XXXX.

Thunder storms in the area, severe weather check list being implemented.

1. S/G "A," Small tube leak, approx. 8 gpd. MAL-RCS002A
2. Motor Driven AFW Pump "A" Impeller replacement in progress with 48 hours to complete, have done 12 hours so far.
3. Turnover that the "B" S/G rad monitor is OOS.
4. Painting in the area of the TD AFW pump.
5. Senior Resident is Walking down the CVCS system with system engineer.

Event No.	Malf. No.	Event Type*	Event Description
			The "A" train of Containment Spray, the flow meter will read with Zero or NO flow.
			Will have to manually start a Reactor Building Cooling Unit.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
<u>SOP-210</u>		
	BOP	<p>Place B FPT SPEED CONTROL in Cascade Mode as follows:</p> <p>1) Increase the MASTER SPEED CNTRL (MCB m/a station) in MAN until the Feed Pump speed demand, as indicated on SCY-509C, is between 4100 rpm and 5000 rpm (indicated on GRAPHIC 310 screen only). (PEER <input type="checkbox"/>)</p> <p>2) Adjust the SP value (up and down arrows) on B FPT SPEED CONTROL until turbine RPM is within 25 rpm of SCY-509C rpm (indicated on GRAPHIC 310 screen only).</p> <p>3) Click on the C icon on the B FPT SPEED CONTROL (S icon) face plate.</p>
	BOP	<p>Stop TPP22B-PP2, AUX OIL PP, and return the switch to AUTO.(PEER <input type="checkbox"/>)</p>
	BOP	<p>Stop Feedwater Pump B TURN GEAR and return switch to AUTO. (PEER <input type="checkbox"/>)</p>
	BOP	<p>If With more than one Main Feedwater Pump is operating, perform the following for the pump being placed in service:</p> <p>a. Adjust the setpoint potentiometer dials on PUMP B SPEED CNTRL (MCB M/A station) as necessary to maintain all operating Feedwater Pumps within 120 RPM of each other.</p> <p>b. When plant load is greater than 15%, close MOV-1-5(B) TURB DRN VLV (MCB).</p>
<i>End of placing 2nd FWP in service event.</i>		

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<u>AOP 401.3</u>
		<i>FT-477 STEAM FLOW FAILURE. Enter AOP-401.3. First 7 steps are Immediate Operator Actions. FCV-478 will travel closed.</i>
		<i>Alarm XCP-624, 4-4 SG A FWF>STF MISMATCH</i>
	BOP	1 Verify the failed channel is the controlling channel.
	BOP	2 Select the operable flow channel: <ul style="list-style-type: none"> • Place FW CONTROL CHANNEL SEL Switch to the operable channel. • Place STEAM CONTROL CHANNEL SEL Switch to the operable channel
	CRS/BOP	3 Verify Turbine Load is LESS THAN 950 MWe
	CRS/BOP	4 Verify only one SG is AFFECTED
Critical	CRS/BOP	5 Adjust the Feedwater Flow Control Valve as necessary to restore feed flow to the AFFECTED SG.
	CRS/BOP	6 Restore Narrow Range level in all SGs to between 60% and 65%.
	CRS/BOP	7 Check if Feedwater Pump speed control is operating properly: <ul style="list-style-type: none"> • Feedwater Header pressure is GREATER THAN Main Steam Header pressure • Feed flow is normal for steam and flow and power level • All operating Feedwater Pump speeds and flows are balanced
	CRS/BOP	8 Verify Narrow Range level in all SGs is normal.

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/BOP	<p>9 Restore the AFFECTED SG control systems to normal:</p> <ul style="list-style-type: none"> • Place the Feedwater Flow Control Valve in AUTO • Place the Feedwater Pump Speed Control System in AUTO. REFER ' TO SOP-210, FEEDWATER SYSTEM
	CRS	<p>10 Within six hours, place the failed ' channel protection bistables in a ' tripped condition:</p> <p>a. Identify the associated bistables for the failed channel.</p> <p>REFER TO ' Attachment 1.</p> <p>b. Record the following for each associated bistable on SOP-401, REACTOR PROTECTION AND CONTROL SYSTEM, Attachment I:</p> <ul style="list-style-type: none"> • Instrument. • Associated Bistable. • Bistable Location. • STPs. <p>c. Notify the I&C Department to ' place the identified bistables in trip.</p> <p>TS 3.3.1, Table 3.3-1, item 14</p>
	CRS/SE	<p>11 Determine and correct the cause of the channel failure.</p> <p><i>No repair will occur for this event.</i></p>
		<p><i>End of FT-477 failure event.</i></p>
		<p><u>ARP 631 1-2</u></p>
		<p><i>Running EHC pump trips event</i></p>
	BOP	<p>A EHC Pump trips, Receives alarm XCP 631, 1-2, EHC FLUID PRESS LO, BOP reviews procedure and hands to CRS.</p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<i>Crew may or may not reference SOP-222 SWITCHOVER OF THE EHC PUMPS for starting the idle EHC pump</i>
Critical	BOP/CRS	Start the idle EHC pump.
	BOP/CRS	Verify the following: <ul style="list-style-type: none"> • Starting amps decay off within 30 seconds. • The started pump discharge pressure is greater than 1550 psig as indicated at the EHC unit by HFPM-A OUTPUT PRESSURE or HFPM-B OUTPUT PRESSURE. • EHC header pressure is greater than 1550 psig as indicated by PI-5676, EHC FLUID PRESS PSIG.
	BOP/CRS	Place the previously running EHC pump switch in After-Stop. <i>CRS may direct placing pump in PTL due to apparent motor failure.</i> <i>End of running EHC pump trips event.</i>
		<u>AOP-401.5</u>
		<i>Start of PT-444 Failure event.</i>
	RO	Receives annunciators XCP 616 2-3 PZR PRESS HI/LO, 616 2-5 PZR CNTRL PRESS HI, 616 4-4 PRT LVL LO/TEMP/PRESS/LVL/Hi Verifies PT-444 is failing high
	CRS	Enters AOP-401.5, Pressurizer Pressure Control Channel Failure. Verifies first 3 steps are completed which are immediate actions.
Critical	RO	1. Verify the PZR PORVs are closed: <ul style="list-style-type: none"> • PCV-445A. PWR RELIEF • PCV-445B. PWR RELIEF • PCV-444B. PWR RELIEF

Event Description: _____

Time	Position	Applicants Actions or Behavior
	RO	<p>2. Compare the PZR control channel indication to the protection channel indications:</p> <ul style="list-style-type: none"> • . PI-455. PRESS PSIG • . PI-456. PRESS PSIG • . PI-457. PRESS PSIG
	RO	<p>3. Check if PI-444. CNTRL CHAN PRESS PSIG is NORMAL</p>
Critical	CRS/RO	<p>3. IF PT-444 failed, then perform the following:</p> <p>a) Ensure the PZR Spray Valves are closed:</p> <ul style="list-style-type: none"> • . PCV-444C. PZR SPRAY • . PCV-444D, PZR SPRAY
		<p>b) Control PZR PRESS MASTER CONTROL in MAN.</p> <p>c) Operate the PZR Heaters and Spray Valves in manual to control RCS pressure between 2220 psig and 2250 psig.</p>
		<p>d) Within one hour; close MVG-8000B. RELIEF 444 B ISOL.</p> <p><i>Per TS 3.4.4.b, must also remove power from block valve, XVG-8000B.</i></p>
	CRS/RO	<p>4. Check If PI-445. CNTRL CHAN PRESS PSIG, indication is NORMAL</p>
	CRS/RO	<p>5. Ensure ROD CNTRL BANK SEL Switch is In AUTO.</p>
	CRS/RO	<p>6. Maintain RCS pressure between 2220 psig and 2250 psig.</p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/SE	7. Determine and correct the cause of the channel failure. <i>No repair will occur for this event.</i>
	CRS	Reference TS 3.4.4.b. for PORV failure. Must remove power from block valve in this case.
		<i>End of PT-444 failure event..</i>
		<u>AOP-401.10</u>
		<i>Start of N-44 Failure and Rods Fail To Move event. Crew should enter:</i> <ul style="list-style-type: none"> • <i>AOP-401.10 for N-44 Failure (steps 1&2 are immediate actions).</i> • <i>AOP-403.4 for Stuck Control Rods (steps 1&2 are immediate actions)..</i> <i>RO should notice rods did not move when N-44 failed.</i>
	RO	N-44 starts failing hi, the following alarms are received: XCP 620 1-1 PR HI SETPT FLUX HI XCP 620 1-4 PR CHAN DEV XCP 620 1-5 PR UP DET FLUX HI DEV AUTO DEFEAT XCP 620 1-6 PR LO DET FLUX HI DEV AUTO DEFEAT
	RO	1. Verify normal indication on Power Range Channel N-44. IF Power Range Channel N-44 has failed, THEN place the ROD CNTRL BANK SEL Switch in MAN.
	RO	2. Stabilize any plant transients in progress.
	CRS/RO	3. Maintain stable plant conditions
	CRS/RO	4. Verify no testing .is in progress on the operable Power Range channels.
	CRS/RO	5. Place ROD STOP BYPASS Switch for the failed Power Range channel in BYPASS.

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/RO	<p>6. Verify the appropriate Rod Stop Bypass status light is lit:</p> <ul style="list-style-type: none"> • For N-44, B2 OP ROD STOP BYP (XCP-6111 4-4).
	CRS/RO	<p>7. Adjust Control Rods to maintain Tavg within 1.0°F of Trcf</p>
		<p><i>The empty fuse holders should NOT be reinstalled as this will allow a small amount of current flow through the blown fuse indicator</i></p>
	CRS/RO	<p>8. Deenergize the failed Power Range channel:</p> <ul style="list-style-type: none"> • Remove the CONTROL POWER fuses from the POWER RANGE A drawer of N-44. • Remove the INSTR POWER fuses from the POWER RANGE B drawer of N-44.
	CRS/RO	<p>9. Align the Power Range channel comparator circuits:</p> <ol style="list-style-type: none"> a. Place the following switches to the failed Power Range channel (N-44) position: <ul style="list-style-type: none"> • COMPARATOR CHANNEL DEFEAT Switch (on the COMPARATOR AND RATE drawer) • UPPER SECTION Switch (on the DETECTOR CURRENT COMPARATOR drawer) • LOWER SECTION Switch (on the DETECTOR CURRENT COMPARATOR drawer).
	CRS/RO	<p>10. Ensure NR-45 is selected to the appropriate operable channels.</p>
	CRS/SE	<p>11. Within six hours, place the failed channel</p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>protection bistables in a tripped condition:</p> <p>a. Identify the associated bistables for the failed channel (N-44). REFER to Attachment 1.</p> <p>b. Record the following for each associated bistable on SOP-401, REACTOR PROTECTION AND CONTROL SYSTEM, Attachment I:</p> <ul style="list-style-type: none"> • Instrument • Associated Bistable • Bistable Location. • STPs. <p>c. Notify the I&C Department to place the identified bistables in trip.</p>
	CRS/RO	12. Verify Reactor Power is LESS THAN 75%.
	CRS	13. Refer to Tech Spec 3.3.1.
	CRS/SE	14. Determine and correct the cause of the Power Range channel failure.
		<i>Cause of failure will not be determined for this event.</i>
		<u>AOP-403.4</u>
	CRS	<i>Following are the actions for Failure of Control Rods to Move. Steps 1& 2 are immediate actions. This event will be occurring simultaneously with the N44 failure so the crew will be forced to prioritize between the two AOPs</i>
	RO	1. The ROD CNTRL BANK SEL Switch is already in MAN
	RO	2. Main Turbine load is already stabilized

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/RO	3. Stop any boration or dilution in progress
	CRS/RO	<p>1. Adjust Control Rods to maintain Tav_g within 1.0 degrees of Tref.</p> <p>Since Control Rods will NOT move, THEN perform the following:</p> <ul style="list-style-type: none"> • Adjust Main Turbine load until Tav_g is within 5 degrees of Tref • Initiate GTP-702, Attachment IV.A, INOPERABLE CONTROL ROD
Critical	CRS	CRS evaluates Tech Specs 3.3.3.1.C which will require a plant shutdown, then performs the following:
	SE	<p>a. Notify the following plant personnel;</p> <ul style="list-style-type: none"> • Management Duty Supervisor • Reactor Engineering
	BOP	<p>b. Decrease Main Turbine Load to 50 MW at a rate determined by the Shift Supervisor. (Refer to GOP-4, POWER OPERATION, MODE 1)</p>
	BOP/RO	<p>c. Maintain Tav_g within 5 degrees of Tref using the following:</p> <ul style="list-style-type: none"> • Main Turbine Load adjustment • RCS Boration. Refer to SOP-106, REACTOR MAKEUP WATER SYSTEM
		<p><i>While attempting to lower load, the SMALL STEAM LEAK will initiate. A MANUAL Rx Trip may be initiated due to degrading plant conditions. RX WILL NOT TRIP. Approximately 20 minutes later LARGE STEAM BREAK.</i></p>
		<p><i>Should receive the following annunciators: XCP 606 2-2 RBCU 1A/2A DRN FLO HI XCP 607 2-2 RBCU 1B/2B DRN FLO HI</i></p> <p><i>DNB TS 3.2.5 for low PZR Pressure will occur.(2206 psig)</i></p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<u>EOP-1.0 & EOP-13.0</u>
		<i>Crew will enter EOP-1.0 Step 1 and transition to EOP-13.0 since Rx will not trip. EOP 13.0 Steps 1&2 are immediate actions.</i>
	RO	<p style="text-align: center;">1. Verify Reactor Trip</p> <p>SINCE the Reactor will NOT trip NOR is subcritical, THEN insert Control Rods.</p> <p>SINCE Control Rods will NOT insert THEN Trip the Reactor per ATTACHMENT 1, TRIPPING THE REACTOR LOCALLY.</p>
Critical		<p>Note: At this point the conditions are met to declare an EAL classification of "Site Area Emergency". This declaration can be made as a follow-up question at the completion of the scenario</p>
Critical	BOP	<p>2. Verify Turbine/Generator Trip:</p> <p>a. Verify all Turbine STM STOP VLVs are closed.</p> <p>12. Ensure Generator Trip (after 30 second delay):</p> <ol style="list-style-type: none"> 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
	ALL	<p>3. Ensure EFW Pumps are running:</p> <p>a. Ensure both MD EFW Pumps are running.</p> <p>b. Verify the TD EFW Pump is running if necessary to maintain SG levels.</p>
Critical	ALL	<p>4. Initiate emergency boration of the RCS: <i>(Not if SI in progress)</i></p> <p>a. Ensure at least one Charging Pump is running.</p>

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		b. Verify PZR pressure is LESS THAN 2335 psig. c. Verify SI ACT status light is NOT lit. d. Open MVT-8104, EMERG BORATE. e. Verify XPP-13B, BA XFER PP B, is running. f. Verify GREATER THAN 30 gpm on FI-110, EMERG BORATE FLOW GPM.
		<i>If an SI signal exists or occurs, Steps 1 through 8 of EOP-1.0, REACTOR TRIP/SAFETY INJECTION ACTUATION, should be performed to verify proper SI actuation, while continuing with this procedure. CRS may hand BOP EOP-1.0 while continuing with EOP-13.0</i>
	ALL	12. Verify Containment Ventilation Isolation Valves closed by verifying the following SAFETY INJECTION monitor lights are dim: <ul style="list-style-type: none"> • XCP-6103 3-4 (POST ACCID HR EXH 6057 & 6067) • XCP-6103 2-1 (POST ACCID HR EXH 6056/6066).
Critical		At this point the building operator is successful at getting the RTBs open locally
	ALL	6. Verify the Reactor is subcritical: <ul style="list-style-type: none"> a. Power Range channels indicate LESS THAN 5%. b. Intermediate Range channels indicate a negative startup rate.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>12. GO TO Step 15. Observe the CAUTION prior to Step 15. <i>This is a continuous action step. Should have the Rx Tripped locally by time arriving at this step.</i></p>
	ALL	<p>15. Return to procedure and step in effect.</p>
		<p><u>EOP-1.0</u></p>
		<p><i>Returns to EOP-1.0 Step 1. Large Steam Break should occur at this time. Most Likely an AUTO SI will occur prior to MANUAL actuation due to size of steam break.</i></p>
	RO	<p>1. Verify Reactor Trip:</p> <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip Switch • Verify all Reactor Trip and Bypass Breakers are open. • Verify all Rod Bottom Lights are lit. • Verify Reactor Power level is decreasing.
	BOP	<p>2. Verify Turbine/Generator Trip:</p> <p>a. Verify all Turbine STM STOP VLVs are closed.</p> <p>b. Ensure Generator Trip (after 30 second delay):</p> <ol style="list-style-type: none"> 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
	BOP	<p>3. Verify both ESF buses are energized.</p>
	ALL	<p>4. Check if SI is actuated:</p> <p>a. Check if either:</p> <ul style="list-style-type: none"> • SI ACT status light is bright on XCP-6107 1-1. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Any red first-out SI annunciator is lit on XCP-626 top row. <p>b. Actuate SI using either SI ACTUATION Switch.</p> <p>GO TO Step 6.</p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
	ALL	5. Check if SI is required: a. Check if any of the following conditions exist: <ul style="list-style-type: none"> • PZR pressure LESS THAN 1850 psig. OR • RB pressure GREATER THAN 3.6 psig. OR • Steamline pressure LESS THAN 675 psig. OR • Steamline differential pressure GREATER THAN 97 psid. b. Actuate SI using either SI ACTUATION Switch.
Critical	CRS/BOP	6.Complete ATTACHMENT 3, SI EQUIPMENT VERIFICATION.
	RO	Notes that RBCU XFN-0064B did not auto start in SS on the SI and manually starts XFN-0064B
	CRS/SE	7. Announce plant conditions over the page system.
	CRS/RO	8.Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen.
	RO	8 Perform the following: a) Verify both the following annunciators are lit: XCP-612 3-2 (RB SPR ACT). XCP-612 4-2 (PHASE B ISOL). IF either annunciator is NOT lit, THEN actuate RB Spray by placing the following switches to ACTUATE: Both CS-SGA1 and CS-SGA2. OR Both CS-SGB1 and CS-SGB2. MVG-3003A(B), SPRAY HDR ISOL LOOP A(B).
	RO	b) Verify Phase B Isolation by ensuring RB PRAY/PHASE B ISOL monitor lights are bright on XCP-6105.
	RO	c) Ensure the following are open: MVG-3001A(B), RWST TO SPRAY PUMP A(B) SUCT.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		MVG-3002A(B), NAOH TO SPRAY PUMP A(B) SUCT.
	RO	d) Ensure both RB Spray Pumps are running <i>(If the RO has not already done so, at this point the RO manually starts the "B" RB Spray pump that did not auto start on the Phase B isolation signal.)</i>
	RO	e) Verify RB Spray flow is GREATER THAN 2500 gpm for each operating train on FI-7368, SPR PP A DISCH FLOW GPM. FI-7378, SPR PP B DISCH FLOW GPM. <i>(At this point the RO notes that there is no flow indicated on FI-7368 but that all other indications are normal and diagnoses it as a failed indicator.)</i>
Critical	RO	f) Stop all RCPs (if not already stopped on <1400 psig and SI flow).
	CRS/RO	9. Check RCS temperature: <ul style="list-style-type: none"> • With any RCP running, RCS Tavg is stable at OR trending to 557°F <li style="text-align: center;">OR • With no RCP running, RCS Tcold is stable at OR trending to 557°F. IF RCS temperature is LESS THAN 557°F AND decreasing, THEN: <ol style="list-style-type: none"> a) Place the STM DUMP CNTRL Controller in MAN and closed. b) Place the STM DUMP MODE SELECT Switch in STM PRESS. c) Ensure all Steamline PORVs and Condenser Steam Dumps are closed. d) IF RCS cooldown continues, THEN: <i>(Could get red path on EOP-15.0 if throttle too</i>

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p><i>much)</i></p> <ol style="list-style-type: none"> 1) IF Narrow Range SG level is LESS THAN 30% [50%] in all SGs, THEN reduce EFW flow as necessary to stop the cooldown, while maintaining total EFW flow GREATER THAN 450 gpm. 2) WHEN Narrow Range SG level is GREATER THAN 30% [50%] in at least one SG, THEN control EFW flow as necessary to stabilize RCS temperature at 557°F. 3) IF RCS cooldown continues, THEN close: <ul style="list-style-type: none"> • MS Isolation Valves, PVM-2801A(B)(C). • MS Isolation Bypass Valves, PVM-2869A(B)(C). <p>IF RCS temperature is GREATER THAN 557°F AND increasing, THEN:</p> <ol style="list-style-type: none"> a) Verify PERMISV C-9 status light is bright on XCP-6114 1-3. b) IF the Condenser is available, THEN ensure Condenser Steam Dump Valves are open. c) IF the Condenser is NOT available, THEN open the Steamline PORVs, PCV-2000(2010)(2020): <ol style="list-style-type: none"> 1) Place the PWR RELIEF A(B)(C) SETPT Controllers in MAN and closed. <p>Place the Steamline Power Relief A(B)(C) Mode Switches in PWR RLF.</p>

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		3) Adjust the PWR RELIEF A(B)(C) SETPT Controllers as necessary to reduce RCS temperature.
Critical	BOP	By step 9 in EOP-1.0 the faulted SG should have been diagnosed as "C" and EFW to "C" SG should be secured (FCV closed) (OAP-103.4)
	CRS/RO	10. Check PZR PORVs and Spray Valves: <ul style="list-style-type: none"> a. PZR PORVs are closed. b. PZR Spray Valves are closed. c. Verify power is available to at least one PZR PORV Block Valve: <ul style="list-style-type: none"> • MVG-8000A, RELIEF 445 A ISOL. • MVG-8000B, RELIEF 444 B ISOL. • MVG-8000C, RELIEF 445 B ISOL. d. Verify at least one PZR PORV Block Valve is open. <p>OPEN one Block Valve unless it was closed to isolate an open PZR PORV.</p>
	CRS/RO	11. Check if RCPs should be stopped: <ul style="list-style-type: none"> a. Check if either of the following criteria is met: <ul style="list-style-type: none"> • Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR • RCS pressure is LESS THAN 1400 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. b. Stop all RCPs (already stopped).
Critical	CRS/BOP	12. Verify no SG is FAULTED: <ul style="list-style-type: none"> • No SG pressure is decreasing in an uncontrolled

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>manner.</p> <ul style="list-style-type: none"> • No SG is completely depressurized. <p>GO TO EOP-3.0, FAULTED STEAM GENERATOR ISOLATION, Step 1.</p> <p><i>Crew will leave this procedure and transition to EOP-3.0, step 1.</i></p>
		<u>EOP-3.0</u>
	CRS/BOP	<p>1. Ensure all the following are closed:</p> <ul style="list-style-type: none"> • MS Isolation Valves, PVM-2801A(B)(G). • MS Isolation Bypass Valves, PW-2869A(B)(C).
	ALL	<p>2. Check if any SG is NON-FAULTED:</p> <ul style="list-style-type: none"> • Pressure in any SG is stable or increasing. • Any SG is not completely depressurized
	ALL	<p>3. Identify any FAULTED SG(s):</p> <ul style="list-style-type: none"> • Any SG pressure decreasing in an uncontrolled manner. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Any SG is NOT completely depressurized
	CRS/BOP	<p>4. Close the following valves for each FAULTED SG:</p> <ul style="list-style-type: none"> • FW Flow Control FCV-498 • FW Isolation, PVG-1611C • SG Blowdown. PVG-503C • FW Flow Control Bypass FCV-3341
	ALL	<p>5. Complete the isolation of each FAULTED SG:</p> <p>a. Close SG Chemical Feed Isolation, MVK-1633C</p>

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>b. Close MS Drain Isolation PVT-2843C</p> <p>c. Close MS Drain Isolation, PVT-2877B for SG C.</p> <p>d. Place the Steamline PWR RELIEF C SETPT Controller in MAN and closed.</p> <p>e. Place the Steamline Power Relief C Mode Switch in PWR RLF</p> <p>f. Close FCV-3551 MD EFP TO SG C</p> <p>g. Close FCV-3556 TD EFP TO SG C</p> <p>h. Locally unlock and close XVG01017C-EF SG C MTR DR EF PUMP SUPPLY HEADER VALVE (IB-423).</p> <p>i. Locally unlock and close XVKO1019C-EF SG C MTR DR EF PUMP SUPPLY STOP CHK VLV (IB-423).</p> <p>j. Locally unlock and close XVG01018C-EF SG C TURB DR EF PUMP SUPPLY HDR VALVE (IB-423).</p> <p>k. Locally unlock and close XVK01020C-EF SG C TURB DR EF PUMP SUP STOP CHK VALVE (IB-423)</p> <p>l. Close and locally deenergize the appropriate valve if SG B or SG C is FAULTED:</p> <ul style="list-style-type: none"> • For SG C: <ol style="list-style-type: none"> 1) Open XMCIDB2Y 05EH. EMERG FEEDWATER PUMP MAIN STEAM BLOCK XVG2802B-MS (AB-463). 2) Close MVG-2802B MS LOOP C TO TD EFP

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
Critical	BOP	Faulted SG is Isolated
	ALL	<p>6. Check if Secondary radiation levels are normal:</p> <p>a. Check radiation levels normal on all unisolated radiation monitors:</p> <ul style="list-style-type: none"> • RM-G19C STMLN HI RNG GAMMA. • RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. • RM-LIO. SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. • RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. <p>b. Notify Chemistry to sample all SG secondary sides and screen samples for abnormal activity using a frisker.</p>
	ALL	<p>7. Check if SI flow should be reduced:</p> <p>a. RCS subcooling on TI-499A(B), A(B) TEMP OF is GREATER THAN 30°F.</p> <p>b. Secondary Heat Sink is adequate:</p> <ul style="list-style-type: none"> • Total EFW flow to INTACT SGs is GREATER THAN 450 gpm. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Narrow Range level is GREATER THAN 30% [50%] in at least one INTACT SG. <p>c. RCS pressure is stable OR increasing.</p> <p>d. PZR level is GREATER THAN 18% [38%] <i>(IF PZR LEVEL < 18%[38%], THEN transition to EOP-2.0, see attachment of EOP-2.0 steps)</i></p>
	CRS/RO	8. Reset both SI RESET TRAIN A(B) Switches.
	CRS/RO	<p>9. Reset Containment Isolation:</p> <ul style="list-style-type: none"> • RESET PHASE A TRAIN A(B) CNTMT ISOL.

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<ul style="list-style-type: none"> • RESET PHASE B TRAIN A(B) CNTMT ISOL.
	CRS/BOP	<p>10. Place both ESF LOADING SEQ A(B) RESETS to:</p> <ul style="list-style-type: none"> a. NON-ESF LCKOIJTS. b. AUTO-START BLOCKS.
	CRS/RO	<p>11. Establish Instrument Air to the RB:</p> <ul style="list-style-type: none"> a. Start one Instrument Air Compressor and place the other in Standby. b. Open PVA-2659, INST AIR TO RB AIR SERV. c. Open PVT-2660. AIR SPLY TO RB
	CRS	<p>12. GO TO EOP-1.2, SAFETY INJECTION TERMINATION, Step 1.</p>
		<p><i>Examiners may wish to end scenario at this point, but have included some actions from EOP-1.2 if needed.</i></p>
		<p><i>If previously entered EOP-2.0, EOP-2.0 will transition back to EOP-1.2.</i></p>
		<p><u>EOP-1.2</u></p>
	CRS/RO	<p>a. Stop all but one Charging Pump and place in Standby.</p>
	CRS/RO	<p>b. Verify RCS pressure is stable OR increasing.</p>
	CRS/RO	<p>3. Establish Normal Charging:</p> <ul style="list-style-type: none"> a. Close FCV-122, CHG FLOW. b. Open both MVG-8107 and MVG-8108, CHG LINE ISOL. c. Adjust FCV-122, CHG FLOW, to obtain 60 gpm

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		Charging flow. c. Close both MVG-8801A(B), HI HEAD TO COLD LEG INJ
	CRS/RO	d. Control FCV-122, CHG FLOW, to maintain PZR level.
Critical	RO	SI terminated and normal charging restored.
	CRS/RO	5. Check if RHR Pumps should be stopped: a. Check if any RHR Pump is running with suction aligned to the RWST. e. Stop any RHR Pump which is running with suction aligned to the RWST and place in Standby.
	CRS/RO	f. Verify SI flow is NOT required: g. RCS subcooling on TI-499A(B), A(B) TEMP "F, is GREATER THAN 30"F h. PZR level is GREATER THAN 18% [38%].
	CRS/RO	7. Check if RB Spray should be stopped: a. Check if any RB Spray Pumps are running. b. Verify RB pressure is LESS THAN pressure is LESS THAN 11 psig. c. Depress both RESET TRAIN A(B) RB SPRAY. i. Verify EOP-14.0, RESPONSE TO INADEQUATE CORE COOLING , has NOT been implemented.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>e. Stop both RB Spray Pumps and place in Standby.</p> <p>f. Close MVG-3003A(B), SPRAY HDR ISOL LOOP A(B).</p>
	CRS/RO	<p>9. Check if Letdown can be established:</p> <p>a. Verify PZR level is GREATER THAN 30% [50%]</p> <p>b. Establish Normal Letdown:</p> <ol style="list-style-type: none"> 1) Adjust FCV-122, CHG FLOW, to obtain 60 gpm Charging flow. 2) Set PCV-145, LO PRESS LTDN, to 70%. 3) Open TCV-144, CC TO LTDN HX. 4) Open PVT-8152, LTDN LINE ISOL. 5) Open both LCV-459 and LCV-460, LTDN LINE ISOL. 6) Open desired Orifice Isolation Valve(s) to obtain 60 gpm to 120 gpm: <ul style="list-style-type: none"> • PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). • PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). • PVT-8149C, LTDN ORIFICE C ISOL (60 gpm). 7) Adjust FCV-122, CHG FLOW, to maintain TI-140, REGEN HX OUT TEMP "F, between 250°F and 350°F while maintaining PZR level. 8) Adjust PCV-145, LO PRESS LTDN, to maintain

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig. 9) Place PCV-145, LO PRESS LTDN, in AUTO. 10) Place TCV-144, CC TO LTDN HX, in AUTO.
	CRS/RO	9. Check the Reactor Makeup System: a. Set FCV-113 A&B, BA FLOW, Controller to 8.6. j. Ensure the Reactor Makeup System is in AUTO.
	CRS/RO	10. Transfer Charging Pump suction to the VCT: a. Open both LCV-115C(E), VCT OUTLET ISOL. k. Close both LCV-115B(D), RWST TO CHG PP SUCT.
		<i>Examiners should end scenario at this point as SI is now secured.</i>
		<u>EOP-2.0 (if necessary)</u>
		<i>The following are applicable steps of EOP-2.0, Loss of Reactor or Secondary Coolant. This would be entered if PZR Level was too low for EOP-1.2 transition.</i>
	ALL	1. Check if RCPs should be stopped: a. Check if either of the following criteria is met: <ul style="list-style-type: none"> • Annunciator XCP-612 4-2 is lit (PHASE B ISOL). <li style="text-align: center;">OR • RCS pressure is LESS THAN 1400 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. b. Stop all RCPs.

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/BOP	2. Verify no SG is FAULTED: <ul style="list-style-type: none"> • No SG pressure is decreasing in an uncontrolled manner. • No SG is completely depressurized.
	CRS/BOP	3. Check INTACT SG levels: <ol style="list-style-type: none"> a. Verify Narrow Range level in INTACT SGs is GREATER THAN 30% [50%]. <ol style="list-style-type: none"> i. Control EFW flow to maintain Narrow Range level in each INTACT SG between 40% [50%] and 60%.
	CRS/RO	4. Reset both SI RESET TRAIN A(B) Switches.
	CRS/RO	5. Reset Containment Isolation: <ul style="list-style-type: none"> • RESET PHASE A -TRAIN A(B) CNTMT ISOL. • RESET PHASE B -TRAIN A(B) CNTMT ISOL.
	ALL	6. Check if Secondary radiation levels are normal: <ol style="list-style-type: none"> a. Check radiation levels normal on: <ul style="list-style-type: none"> • RM-G19A(B)(C), STMLN HI RNG GAMMA. • RM-A9, CNDSR EXHAUST GAS ATMOS MONITOR. • RM-L3, STEAM GENERATOR BLOWDOWN LIQUID MONITOR. • RM-L10, SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. b. Place SVX-9398A(B)(C), SG A(B)(C) SMPL ISOL, in AUTO. m. Notify Chemistry to sample all ' SG secondary sides and screen ' samples for abnormal activity using a frisker.
	CRS/RO	7. Check PZR PORVs and Block Valves: <ol style="list-style-type: none"> a. Verify power is available to the PZR PORV Block

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>Valves:</p> <ol style="list-style-type: none"> 1) MVG-8000A, RELIEF 445 A ISOL. 2) MVG-8000B RELIEF 444 B ISOL. 3) MVG-8000C, RELIEF 445 B ISOL. <p><i>If any PZR PORV opens because of high PZR pressure, Step 7.b should be repeated after pressure decreases to LESS THAN 2300 psig, to ensure the PORV recloses.</i></p> <ol style="list-style-type: none"> b. Verify all PZR PORVs are closed. c. Verify at least one PZR PORV Block Valve is open.
	CRS/BOP	<p>8. Place both ESF LOADING SEQ A(B) RESETS to:</p> <ol style="list-style-type: none"> a. NON-ESF LCKOUTS. b. AUTO-START BLOCKS.
	CRS/RO	<p>9. Establish Instrument Air to the RB:</p> <ol style="list-style-type: none"> a. Start one Instrument Air Compressor and place the other in Standby. b. Open PVA-2659, INST AIR TO RB AIR SERV. c. Open PVT-2660, AIR SPLY TO RB.
	ALL	<p>10. Check if SI flow should be reduced:</p> <ol style="list-style-type: none"> a. RCS subcooling on TI-499A(B), A(B) TEMP "F, is GREATER THAN 30"F. b. Secondary Heat Sink is adequate: <ul style="list-style-type: none"> • Total EFW flow to INTACT SGs is GREATER THAN 450 gpm. <li style="text-align: center;">OR • Narrow Range level is GREATER THAN 30% [50%] in at least one INTACT SG.

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Event Description: _____

Time	Position	Applicants Actions or Behavior
		<p>c. RCS pressure is stable increasing.</p> <p><i>NOTE - Step 10.d</i> <i>If PZR level is LESS THAN 18% [38%], the PZR should refill from SI flow after pressure is stabilized.</i></p> <p>n. PZR level is GREATER THAN 18% [38%]</p> <p><i>(IF PZR still less than 18%[38%], then go to Step 11), if not then continue) GO TO Step 11.</i></p> <p>o. GO TO EOP-1.2, SAFETY INJECTION TERMINATION, Step 1.</p>
	ALL	<p>11. Check if RB Spray should be stopped:</p> <p>a. Check if any RB Spray Pumps are running</p> <p>b. Verify RB pressure is LESS THAN 11 psig</p> <p>c. Depress both RESET TRAIN A(B) ' RB SPRAY.</p> <p><i>NOTE - Step 11.d</i></p> <ul style="list-style-type: none"> • <i>RB Spray must run for a minimum of two hours.</i> • <i>Anytime RB Spray Pumps are stopped, MVG-3003A(B), SPRAY HDR ISOL LOOP (B), should be closed for containment isolation.</i> <p>d. Consult with TSC personnel concerning RB Spray System operation.</p>
	CRS/RO	<p>12. Check if RHR Pumps should be stopped:</p> <p>a. Check RCS pressure:</p> <ol style="list-style-type: none"> 1) RCS pressure is GREATER THAN 250 psig 2) RCS pressure is stable OR increasing.

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Event Description: _____

Time	Position	Applicants Actions or Behavior
		b. Check if any RHR Pump is running with suction aligned to the RWST c. Stop any RHR Pump which is running with suction aligned to the RWST and place in Standby.
	CRS/RO	13. Check if RCS pressure is stable OR decreasing. <i>This would be a "do loop" back to step 1 until PZR Level was greater than 18% [38%]</i> RETURN TO Step 1.
		<i>This is end of EOP-2.0 for this scenario.</i>

SPACE

Scenario Event Description VC Summer-2005-301

Facility: VC Summer	Scenario No.: 3	Op-Test No.: 2005-301	
Examiners: _____ _____	Operators: _____ _____		
Initial Conditions: The Unit is at 0% power in Mode 2 with a MOL reactor startup in progress.			
Turnover: The previous crew has initiated the reactor startup per XXX. Source range counts are stable and Control bank 'C' is presently at XX steps. 1/M data now projects criticality at XX steps on Control bank 'D'. Continue with the reactor startup beginning with step XX of XXX , and stabilize reactor power between 1-3%.			
The Severe Weather thunderstorms approaching. High winds are possible within the hour.			
S/G "A," Small tube leak, approx. 8 gpd.			
Painting in the area of the TD AFW pump.			
Event No.	Malf. No. / Position	Event Type*	Event Description
1	RO	R	Pull control rods to establish critical reactor.
2	BOP SRO (TS)	C	Train 'A' Service Water Pump #A trips and standby pump needs to be started.
3	RO	I	Controlling channel Pressurizer Level Transmitter fails low and L/D isolates.
4	BOP	N	Re-establish letdown.
5	BOP	I	Steam Generator B ARV Pressure Transmitter fails high.
6	BOP / RO SRO (TS)	C	Letdown line break inside Containment
7	RO	C	RCP High Vibration and seal failure when secured.
8	ALL	M	Small break LOCA
9	BOP or RO	C	Safety injection Train 'A' fails to actuate and 'B' HSI fails to automatically start when safety injection is manually initiated. The reactor fails to automatically trip.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____		
Event Description: _____ _____ _____		
Time	Position	Applicants Actions or Behavior
		<u>GOP-3.0</u>
		q. Within 15 minutes before achieving criticality, verify Tavg greater than or equal to 551°F.
		r. Announce criticality over the page system.
		s. Verify critical rod position is above the Rod Insertion Limit per Tech Spec 3.1.3.6.
		t. At the AUDIO COUNT RATE CHANNEL drawer, place the following switches in OFF: 1) AUDIO MULTIPLIER. 2) CHANNEL SELECTOR.
		3.11 Increase Reactor Power to 10 ⁻³ % as follows: / a. Establish a stable Startup Rate of less than one decade per minute.
		b. At 7.5x10 ⁻⁶ %, perform the following: 1) Verify P6 Permissive energizes to bright. 2) Verify a minimum of one decade overlap between Source Range Channels and Intermediate Range Channels.
		c. Prior to 10 ⁵ CPS, perform the following: 1) Momentarily place SR TRAIN A Switch in BLOCK. 2) Verify SR A TRIP BLCK Permissive energizes to bright. 3) Momentarily place SR TRAIN B Switch in BLOCK. 4) Verify SR B TRIP BLCK Permissive energizes to bright.
		d. Select one Intermediate Range Channel and one Power Range Channel on NR-45, NIS RECORDER.
		e. Stabilize Reactor Power at 10 ⁻³ %.
		<i>This ends the pull to criticality event.</i>
	RO	A SWP trips. RO responds to various alarms and references the ARP: XCP-604 1-2: SWP A/C TRIP

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		XCP-604 3-3: SW CCW HX A FLO LO/TEMP HI XCP-604 3-4: DG A CLR SW FLO LO TEMP HI
	CRS/RO	ARP is handed to CRS, the IB operator is dispatched to SW PP house to investigate. Electricians may also be notified.
	CRS	Decision should be made to place C SWP on A Train
		CORRECTIVE ACTIONS: I. Place the spare Service Water Pump in service per SOP-117.
	ALL	2.1 Shift from Service Water Pump A to Service Water Pump C in service, as follows: a. With the exception of racking down XSW1EA 04, SERVICE WATER PUMP XPP0039A-SW, complete Attachment V.
	ALL	b. Start XPP-0039C, PUMP C TRAIN A. (PEER <input type="checkbox"/>)
	RO	c. Verify MVB-3116C, SWP C DISCH, automatically opens.
	ALL/Building	d. Ensure sufficient Service Water Pump C cooling water flow, by throttling the following (SW-436): 1) XVT03157C-SW, SW PP C MTR UPPER BRG CLG WTR SUP VALVE, to obtain upper bearing flow between 10 gpm and 12 gpm. 2) XVT03158C-SW, SW PP C MTR LOWER BRG CLG WTR SUP VALVE, to obtain lower bearing flow between 3 gpm and 4 gpm.
	ALL/Building	e. At XPN-13, C SERVICE WATER SCREEN Control Panel (SW-436), verify proper traveling screen operation, as follows: 1) Place the Screen Selector Switch, in HAND. 2) Verify proper screen operation and screen wash flow. 3) Place the Screen Selector Switch, in AUTO.
	RO	f. Stop XPP-0039A, PUMP A, and place the control switch, in PULL TO LK NON-A.
	RO	g. Verify MVB-3116A, SWP A DISCH, automatically closes.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
	ALL/Building	h. Re-verify Service Water Pump C cooling water flow and adjust as necessary, by throttling the following (SW-436): 1) XVT03157C-SW, SW PP C MTR UPPER BRG CLG WTR SUP VALVE, to obtain upper bearing flow between 10 gpm and 12 gpm. 2) XVT03158C-SW, SW PP C MTR LOWER BRG CLG WTR SUP VALVE, to obtain lower bearing flow between 3 gpm and 4 gpm.
	ALL/Building	i. Rack down XSW1EA 04, SERVICE WATER PUMP XPP0039A-SW (SW-425).
	ALL/Building	j. At XPN-11, A SERVICE WATER SCREEN, Control Panel (SW-436), place the Screen Selector Switch, in OFF.
	ALL/Building	k. Complete Attachment V.
	ALL	l. Ensure proper Service Water flow through the operable Train A Chiller per SOP-501.
		<i>This ends the A SWP trip event.</i>
		<i>The following event is the LT-459 Failure, PZR Level Controlling channel.</i>
		LT-459 Fails low and Letdown isolates. The following alarms are received: XCP-614 5-1: CHG LINE FLO HI/LO XCP-616 1-3: BLCK HTRS ISOL LTDN PZR LCS LO XCP-616 1-5: PZR LCS DEV HI/LO XCP-616 3-1: PZR HTR CNTRL OR BU GRP 1/2 TRIP XCP-616 4-6: SCR OUTPT LOSS

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
		<i>Crew enters AOP-401.06 PZR Level Control and Protection Channel Failure. Step 1 is an immediate action.</i>
		<u>AOP-401.6</u>
	RO	1 Place PZR LEVEL CNTRL Switch to the position with two operable channels.
	RO	2 Select an operable channel on PZR LEVEL RCDR.
	RO	3 Control the PZR Heaters as necessary to maintain PZR pressure: CNTRL GRP Heaters. BU GRP 1 Heaters. BU GRP 2 Heaters.
	RO	4 Verify Letdown is in service. 4 Re-establish Letdown. REFER TO SOP-102, CHEMICAL AND VOLUME CONTROL SYSTEM. IF Letdown can NOT be established, THEN REFER TO AOP-102.1, LOSS OF LETDOWN, while continuing with this procedure.
	RO	2.1 Place FCV-122, CHG FLOW, in MAN and close.
	RO	2.2 Place PCV-145, LO PRESS LTDN, in MAN and open to 70%. (PEER <input type="checkbox"/>)
	RO	2.3 Place TCV-144, CC TO LTDN HX, in MAN and open to 100%.
	RO	2.4 Place TCV-143, LTDN TO VCT OR DEMIN, in VCT.
	RO	2.5 Open PVT-8152, LTDN LINE ISOL.
	RO	2.6 Open the following: a. LCV-459, LTDN LINE ISOL. b. LCV-460, LTDN LINE ISOL.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
	RO	2.7 Ensure the following Charging Line Isolation Valves are open: a. MVG-8107, CHG LINE ISOL. b. MVG-8108, CHG LINE ISOL.
	RO	2.8 Slowly open FCV-122, CHG FLOW, to establish 60 gpm flow as indicated on FI-122A, CHG FLOW GPM.
	RO	2.9 Open Orifice Isolation Valves to obtain the desired Letdown flow rate (60 gpm to 120 gpm): a. PVT-8149A, LTDN ORIFICE A ISOL (45 gpm). b. PVT-8149B, LTDN ORIFICE B ISOL (60 gpm). c. PVT-8149C, LTDN ORIFICE C ISOL (60 gpm).
	RO	2.10 Adjust FCV-122, CHG FLOW, as required to maintain TI-140, REGEN HX OUT TEMP °F, between 250°F and 350°F while maintaining Pressurizer level.
	RO	2.11 Adjust PCV-145, LO PRESS LTDN, to maintain PI-145, LO PRESS LTDN PRESS PSIG, between 300 psig and 400 psig.
	RO	2.12 Place PCV-145, LO PRESS LTDN, in AUTO.
	RO	2.13 Adjust TCV-144, CC TO LTDN HX, potentiometer as necessary to maintain the desired VCT temperature and place in AUTO. Refer to VCS Curve Book, Figure VII.15.
	RO	2.14 When Pressurizer level matches reference level, place FCV-122, CHG FLOW, in AUTO per Section IV.
	RO	2.15 After the Letdown temperatures have stabilized, place TCV-143, LTDN TO VCT OR DEMIN, in DEMIN/AUTO.
	RO	<p>5 Check if PZR LVL MASTER CONTROLLER is responding appropriately:</p> <ul style="list-style-type: none"> • Verify Charging flow is normal and responding to PZR level error. • Verify PZR level is stable at OR trending to program level.

Op-Test No.: _____ Scenario No.: _____ Event No.: _____ Page _____ of _____

Event Description: _____

Time	Position	Applicants Actions or Behavior
	CRS/SE	<p>6 Within six hours, place the failed channel protection bistables in a tripped condition:</p> <p>a. Identify the associated bistables for the failed channel REFER TO Attachment 1.</p> <p>b. Record the following for each associated bistable on SOP-401, REACTOR PROTECTION AND CONTROL SYSTEM, Attachment I:</p> <ul style="list-style-type: none"> • Instrument. • Associated Bistable. • Bistable Location. • STPs. <p>c. Notify the I&C Department to place the identified bistables in trip.</p>
		<p>7 Determine and correct the cause of the channel failure</p>
		<p><i>This concludes the LT-459 failure event.</i></p>
		<p><i>The next event is IPT-2010 slowly failing high which results in SG PORV IPV-2010 (B Loop) slowly going full open. Valve controller can be taken to Manual and closed. No alarms are associated with this event.</i></p>
	ALL	<p>Crew should notice some excess RCS cooling, increased steam flow and finally notice IPV-2010 is going open.</p>
	CRS/BOP	<p>CRS and/or BOP should recommend placing 2010 controller in Manual and attempting to close.</p>
	BOP	<p>IPV-2010 placed in Manual and closed.</p>
	CRS/SE	<p>MWR should be written and work order generated to repair transmitter.</p>
		<p><i>This concludes the 2010 failing open event.</i></p>

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Time	Position	Applicants Actions or Behavior
		<i>The Letdown leak inside containment is the next event.</i>
		The following alarms are received as leak progresses: XCP-642 3-3: RB ACC AREA RM-G5 HI RAD XCP-642 3-4: RB ACC AREA RM-G5 TRBL XCP-642 3-5: INCOR INSTR AREA RM-G14 HI RAD XCP-642 3-6: INCOR INSTR AREA RM-G14 TRBL
		<u>AOP-101.1</u>
	RO	1 Verify PZR level is at or trending to program level. IF PZR level is decreasing. THEN perform the following: a) Open FCV-122. CHG FLOW as necessary to maintain PZR level b) IF PZR level continues to decrease, THEN reduce Letdown to one 45 gpm orifice: 1) Set PCV-145, LO PRESS LTDN. To 70% 2) Ensure PVT-8149A. LTDN ORIFICE A ISOL. is open. 3) Close both PVT-8149B(C). LTDN ORIFICE B(C)

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Time	Position	Applicants Actions or Behavior
		ISOL. 4) Adjust PCV-145. LO PRESS LTDN. to maintain PI-145. LO PRESS LTDN PRESS PSIG. between 300 psig and 400 psig. 5) Place PCV-145, LO PRESS LTDN. in AUTO.
	CRS/RO	<p>2 Check if SI is required:</p> <p>a. Check if <u>any</u> of the following criteria are met:</p> <ul style="list-style-type: none"> • PZR level is decreasing with Charging maximized and Letdown minimized. • PZR level is approaching 12%. • PZR pressure is approaching 1870 psig. • VCT level is approaching 5%. <p><i>SI should NOT be required, crew should follow ALTERNATIVE ACTION of step 2 which is to GO TO STEP 3</i></p>
	CRS/SE	<p>3 Determine RCS leak rate:</p> <p>a. Estimate the RCS leak rate. REFER TO IPCS CHGNET.</p> <p>b. Calculate the RCS leak rate. REFER TO STP-114.002. OPERATIONAL LEAK TEST.</p> <p>c. Check if the RCS leak rate is GREATER THAN Tech Spec 3.4.6.2</p> <p>d. Comply with the applicable Tech Spec 3.4.6.2 action statement.</p>
	RO	<p>4 Verify RCS pressure is GREATER THAN 2210 psig.</p> <p>a) Ensure all PZR Heaters are on.</p> <p>b) the PZR Spray Valves are closed</p> <p>c) Ensure the PZR PORVs are closed. <u>IF any</u> PORV fails to close, <u>THEN</u> close its Block Valve.</p>
	BOP/CRS	<p>5 Verify no SG tubes are leaking:</p> <p>a. Narrow Range level in no SG is increasing with feed flow LESS THAN steam flow.</p> <p>b. Radiation levels on all of the following are normal:</p> <ul style="list-style-type: none"> • RM-G19A(B)(C). STMLN HI RNG GAMMA. • RM-A9. CNDSR EXHAUST GAS ATMOS MONITOR. • RM-L3. STEAM GENERATOR BLOWDOWN

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Time	Position	Applicants Actions or Behavior
		<p>LIQUID MONITOR.</p> <ul style="list-style-type: none"> • RM-LIO. SG BLOWDOWN CW DISCHARGE LIQUID MONITOR. <p>c. No steam flow/feed flow mismatch (feed flow low). d. As determined by Chemistry sample analysis of ALL SG secondary sides for activity.</p>
	RO	<p>6 Check the PZR PORVs:</p> <p>a. Check if RCS pressure is LESS THAN 2335 psig. b. Verify all PZR PORVs are closed. c. Check if PRT conditions are normal by verifying PRT LVL LO /TEMP/LVL/PRESS HI (XCP-616 4-4). is not lit. d. Verify at least one PZR PORV Block Valve is open.</p>
	RO	<p>7 Check If Reactor Building conditions are normal:</p> <p>a. RB radiation levels are normal on the following:</p> <ul style="list-style-type: none"> • RM-GS. RB PERSONNEL ACCESS AREA GAMMA. • RM-G6. 17 RB REFUEL BRIDGE AREA GAMMA. • RM-A2. RB SAMPLE LINE PARTICULATE(IODINE)(GAS) ATMOS MONITOR. <p>b. RB Sump levels are normal c. RB pressure is LESS THAN 1.5 psig d. The following annunciators are NOT lit:</p> <ul style="list-style-type: none"> • RBCU IA/2A DRN FLO HI (XCP-606 2-2). • RBCU IB/2B DRN FLO HI (XCP-607 2-2). <p><i>Conditions are not normal, so the alternative action of isolating letdown will be performed.</i></p>
	RO	<p>7 Attempt to isolate leakage as follows:</p> <p>a) Close all Letdown Isolation Valves:</p> <ol style="list-style-type: none"> 1) PVT-8149A(B)(G) LTDN ORIFICE A(B)(C) ISOL. 2) LCV-459. LTDN LINE ISOL 3) LCV-460, LTDN LINE ISOL <p>b) Check RCS parameters for indications of leakage.</p> <p><i>Leakage should be isolated by the above actions. Crew should wait and verify no further leakage occurs. Since Normal Letdown will remain isolated, crew should place EXCESS LETDOWN in service.</i></p> <p>REFER TO SOP-102. CHEMICAL AND VOLUME CONTROL SYSTEM</p>

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Time	Position	Applicants Actions or Behavior
		<i>The following is from SOP-102:</i>
	RO	2.1 Ensure HCV-137, XS LTDN HX, is closed.
	RO	2.2 Place PVM-8143, XS LTDN TO VCT(PEER <input type="checkbox"/>)
	RO	2.3 If required, reset Phase A Isolation by depressing the following: a. RESET PHASE A - TRAIN A CNTMT ISOL. b. RESET PHASE A - TRAIN B CNTMT ISOL.
	RO	Open the following: a. MVT-8100, SEAL WTR RTN ISOL. b. MVT-8112, SEAL WTR RTN ISOL.
	RO	2.5 Ensure MVG-9583, FROM XS LTDN HX, is open.
	RO	2.6 Open PVT-8153, XS LTDN ISOL.
	RO	2.7 Open PVT-8154, XS LTDN ISOL.
	RO	2.8 Establish Excess Letdown flow as follows: a. Slowly throttle open HCV-137, XS LTDN HX. b. Monitor TI-139, XS LETDOWN HX OUT TEMP °F, to maintain less than 165°F. c. Monitor the following to ensure flow between 0.2 gpm and 5.0 gpm: 1) FR-154A, RCP SL LKOFF HI RANGE. 2) FR-154B, RCP SL LKOFF LO RANGE.
		<i>This concludes establishing Excess Letdown. More steps do remain from AOP-101.1 for determining if leakage is isolated, but can commence the A RCP high vibration event at this time.</i>

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Time	Position	Applicants Actions or Behavior
		<p>Crew receives annunciator XCP-617 1-3: RCP A VIBR HI <i>RO should notice frame and shaft vibration levels are escalating. A RCP should be secured based on increasing levels. The following steps would apply from SOP-101 for securing the RCP.</i></p>
	RO	<p>2.1 Place the Pressurizer Spray Valve for the affected Reactor Coolant Pump in MAN and close: a. PCV 444D, PZR SPRAY, for Reactor Coolant Pump A.</p>
	RO	<p>2.2 If the Reactor Coolant System is solid, place PCV-145, LO PRESS LTDN, in MAN.</p>
	RO	<p>2.3 Secure one of the following Reactor Coolant Pumps as required: a. XPP-0030A, PUMP A.</p>
	RO	<p>2.4 If the Reactor Coolant System is solid, return PCV-145, LO PRESS LTDN, to AUTO, if desired.</p>
	RO	<p>2.5 Verify Seal Injection to the secured Reactor Coolant Pump using the applicable following indicator: a. FI-130A, RCP A INJ FLO GPM.</p>
	RO	<p>2.6 Maintain Component Cooling Water to the secured Reactor Coolant Pump thermal barrier until RCS temperature is less than 150°F.</p>
	BOP	<p>2.7 Place the following controllers in MAN, as required for the affected RCS loop and maintain Narrow Range Steam Generator level between 60% and 65%:</p>

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Time	Position	Applicants Actions or Behavior
		a. PVT-478, SG A FWF. b. FCV-3321, LOOP A MAIN FW BYP.
	CRS	2.8 If not already in Hot Standby, proceed to Hot Standby IAW GOP-5, Reactor Shutdown From Startup To Hot Standby (Mode 2 To Mode 3).
		<i>The following steps are from GOP-5, Reactor Shutdown from Mode 2 to Mode 3. These steps will place the Reactor below 7.5x10⁻⁵% power. Prior to commencing shutdown, should go ahead and begin Small Break LOCA Event.</i>
	CRS/SE	3.1 Complete GTP-702 Attachment II.K, Operational Mode Change Plant Shutdown - Entering Mode 3 Or Plant Trip To Mode 3 From Modes 1 Or 2.
	RO	3.2 Select both Intermediate Range Channels on NR-45, NIS RECORDER.
		3.3 Insert Control Rods with a manual Reactor trip as follows:
	CRS	a. Perform a Pre-job brief per OAP-100.3, Human Performance Tools.
	RO	b. Select one Intermediate Range and one Source Range Channel on NR-45, NIS RECORDER
	BOP	c. Ensure both Motor Driven Emergency Feedwater Pumps are running.
	RO	d. (Optional) If desired, commence RCS boration prior to performing a manual Reactor trip: 1) Open MVT-8104, EMERG BORATE. 2) Ensure XPP-13A(B), BA XFER PP A(B), is running. 3) Verify greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM. 4) Refer to STP-134.001, Shutdown Margin Verification, to determine the required boron concentration needed for the anticipated Plant Mode and temperature: Anticipated Mode: Anticipated RCS temperature: °F Required Boron: _____ ppm 5) When boration is no longer desired, perform the following: a) Close MVT-8104, EMERG BORATE. b) Verify no flow on FI-110, EMERG BORATE

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Time	Position	Applicants Actions or Behavior
		FLOW GPM.
	RO	<p>e. Place RX TRIP Switch CS-CR01 in TRIP.</p> <p>f. Verify all Reactor Trip and Bypass Breakers are open.</p> <p>g. Verify all Rod Bottom lights are lit.</p> <p>h. If two or more Control Rods are not fully inserted, then emergency borate as follows:</p> <ol style="list-style-type: none"> 1) Open MVT-8104, EMERG BORATE. 2) Verify greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM. 3) If required, refer to AOP-106.1, Emergency Boration, to establish greater than 30 gpm flow. 4) Borate 2500 gallons if two Control Rods are not fully inserted. 5) Borate 5800 gallons if greater than two Control Rods are not fully inserted. <p>i. Verify Reactor Power level is decreasing.</p> <p>j. Ensure RCS temperature is being maintained between 555°F and 559°F using the Steam Dump System or Steamline PORVs.</p> <p>k. Place both SOURCE RANGE HIGH FLUX AT SHUTDOWN Switches in BLOCK.</p> <p>l. When Reactor Power decreases below $7.5 \times 10^{-6}\%$, complete the following:</p> <ol style="list-style-type: none"> 1) Verify P6 Permissive de-energizes to dim. 2) When on scale indication is observed, select both Source Range Channels on NR-45, NIS RECORDER.
		<p><i>This concludes the high vibration on A RCP event. The Small Break LOCA event can now commence if not already performed earlier. The following steps would again be the repeat of AOP-101.1 until the size of the leak would require EOP-1.0 entry for TRIP and SI.</i></p>

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Time	Position	Applicants Actions or Behavior
		The following annunciators should come into alarm: XCP 606 2-2: RBCU 1A/2A DRN FLO HI XCP 607 2-2: RBCU 1B/2B DRN FLO HI XCP 616 3-6:PZR PCS LO BU HTRS ON
		<u>AOP-101.1</u>
		<p>1 Verify PZR level is at or trending to program level.</p> <p>1 IF PZR level is decreasing. THEN perform the following:</p> <p>a) Open FCV-122. CHG FLOW. as necessary to maintain PZR level</p> <p>b) IF PZR level continues to decrease, THEN reduce Letdown to one 45 gpm orifice:</p> <ol style="list-style-type: none"> 1) Set PVT-145, LO PRESS LTDN. To 70% 2) Ensure PVT-8149A. LTDN ORIFICE A ISOL. is open. 3) Close both PVT-8149B(C). LTDN ORIFICE B(C) ISOL. 4) Adjust PCV-145. LO PRESS LTDN. to maintain PI-145. LO PRESS LTDN PRESS PSIG. Between 300 psig and 400 psig. 5) Place PCV-145, LO PRESS LTDN. in AUTO.
		<p>2 Check if SI is required:</p> <p>a. Check if any of the following criteria are met:</p> <ul style="list-style-type: none"> • PZR level is decreasing with Charging maximized and Letdown minimized. • PZR level is approaching 12%. • PZR pressure is approaching 1870 psig. • VCT level is approaching 5% <p>b. Perform the following:</p> <ol style="list-style-type: none"> 1) Trip the Reactor. 2) GO TO EOP-1.0. REACTOR TRIP/SAFETY INJECTION ACTUATION. WHEN EOP-1.0 Immediate Actions are complete, THEN actuate SI.

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Time	Position	Applicants Actions or Behavior
		<i>Crew should transition to EOP-1.0. The first 5 steps are immediate operator actions.</i>
		<i>A Train of SI will fail to actuate in BOTH Manual and Automatic. Individual components can be manually started.</i>
		<i>Reactor will NOT trip in Automatic. Reactor can be tripped manually from the BOP side MCB Switch.</i>
		1 Verify Reactor Trip: <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip • Verify all Reactor Trip and Bypass Breakers are open. • Verify all Rod Bottom Lights are lit. • Verify Reactor Power level is decreasing.
		2 Verify Turbine/Generator Trip: <ol style="list-style-type: none"> a. Verify all Turbine STM STOP VLVs are closed. b. Ensure Generator Trip (after 30 second delay): <ol style="list-style-type: none"> 1) Ensure the GEN BKR is open. 2) Ensure the GEN FIELD BKR is open. 3) Ensure the EXC FIELD CNTRL is tripped.
		3 Verify both ESF buses are energized.
		4 Check if SI is actuated: <i>SI may have actuated by this time. Step 5 is the final immediate action.</i> <ol style="list-style-type: none"> a. Check if either: <ul style="list-style-type: none"> • SI ACT status light is bright on XCP-6107 1-1. <li style="text-align: center;">OR • Any red first-out SI annunciator is lit on XCP-626 top row. (<i>If no SI then: GO TO Step 5.</i>) b. Actuate SI using either SI ACTUATION Switch. c. GO TO Step 6.
		6 Initiate ATTACHMENT 3, SI EQUIPMENT VERIFICATION.
		<i>The "B" Charging pump fails to automatically start on SI. The operator is expected to attempt to manually start "B" Charging pump and it will start.</i>

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Time	Position	Applicants Actions or Behavior
		<p>7 Announce plant conditions over the page system.</p>
		<p>8 Verify RB pressure has remained LESS THAN 12 psig on PR-951, RB PSIG (P-951), red pen.</p> <p>8 Perform the following:</p> <p>a) Verify both the following annunciators are lit:</p> <ul style="list-style-type: none"> • XCP-612 3-2 (RB SPR ACT). • XCP-612 4-2 (PHASE B ISOL). <p>IF either annunciator is NOT lit, THEN actuate RB Spray by placing the following switches to ACTUATE:</p> <ul style="list-style-type: none"> • Both CS-SGA1 and CS-SGA2. <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • Both CS-SGB1 and CS-SGB2. <p>b) Verify Phase B Isolation by ensuring RB SPRAY/PHASE B ISOL monitor lights are bright on XCP-6105.</p> <p>c) Ensure the following are open:</p> <ul style="list-style-type: none"> • MVG-3001A(B), RWST TO SPRAY PUMP A(B) SUCT. • MVG-3002A(B), NAOH TO SPRAY PUMP A(B) SUCT. • MVG-3003A(B), SPRAY HDR ISOL LOOP A(B). <p>d) Ensure both RB Spray Pumps are running.</p> <p>e) Verify RB Spray flow is GREATER THAN 2500 gpm for each operating train on:</p> <ul style="list-style-type: none"> • FI-7368, SPR PP A DISCH FLOW GPM. • FI-7378, SPR PP B DISCH FLOW GPM. <p>f) Stop all RCPs.</p>
		<p>9 Check RCS temperature:</p> <ul style="list-style-type: none"> • With any RCP running, RCS Tavg is stable at OR trending to 557:F.

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Time	Position	Applicants Actions or Behavior
		<p style="text-align: center;">OR</p> <ul style="list-style-type: none"> • With no RCP running, RCS Tcold is stable at OR trending to 557°Fc) <p>9 IF RCS temperature is LESS THAN 557°F AND decreasing, THEN:</p> <ol style="list-style-type: none"> a) Place the STM DUMP CNTRL Controller in MAN and Closed b) Place the STM DUMP MODE SELECT Switch in STM PRESS. c) Ensure all Steamline PORVs and Condenser Steam Dumps are closed. d) IF RCS cooldown continues, THEN: <ol style="list-style-type: none"> 1) IF Narrow Range SG level is LESS THAN 30% [50%] in all SGs, THEN reduce EFW flow as necessary to stop the cooldown, while maintaining total EFW flow GREATER THAN 450 gpm. 2) WHEN Narrow Range SG level is GREATER THAN 30% [50%] in at least one SG, THEN control EFW flow as necessary to stabilize RCS temperature at 557°F. e) IF RCS cooldown continues, THEN close: <ul style="list-style-type: none"> • MS Isolation Valves, PVM-2801A(B)(C). • MS Isolation Bypass Valves, PVM-2869A(B)(C). • <p>IF RCS temperature is GREATER THAN 557°F AND increasing, THEN:</p> <ol style="list-style-type: none"> a) Verify PERMISV C-9 status light is bright on XCP-6114 1-3. b) IF the Condenser is available, THEN ensure Condenser Steam Dump Valves are open. c) IF the Condenser is NOT available, THEN open the Steamline PORVs, PCV-2000(2010)(2020): <ol style="list-style-type: none"> 1) Place the PWR RELIEF A(B)(C) SETPT Controllers in MAN and closed.

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Event Description: _____ _____ _____		
Time	Position	Applicants Actions or Behavior
		2) Place the Steamline Power Relief A(B)(C) Mode Switches in PWR RLF. 3) Adjust the PWR RELIEF A(B)(C) SETPT Controllers as necessary to reduce RCS temperature.
		10 Check PZR PORVs and Spray Valves: a. PZR PORVs are closed. b. PZR Spray Valves are closed. c. Verify power is available to at least one PZR PORV Block Valve: <ul style="list-style-type: none"> • MVG-8000A, RELIEF 445 A ISOL. • MVG-8000B, RELIEF 444 B ISOL. • MVG-8000C, RELIEF 445 B ISOL. d. Verify at least one PZR PORV Block Valve is open. .
		11 Check if RCPs should be stopped: a. Check if either of the following criteria is met: <ul style="list-style-type: none"> • Annunciator XCP-612 4-2 is lit (PHASE B ISOL). OR <ul style="list-style-type: none"> • RCS pressure is LESS THAN 1400 psig AND SI flow is indicated on FI-943, CHG LOOP B CLD/HOT LG FLOW GPM. b. Stop all RCPs. <i>Conditions are probably not met for securing any RCPs.</i> GO TO Step 12.
		<i>Examiners may end exam at this point.</i>