Facility: **Palisades** Scenario No.: **ONE** Op-Test No.: **1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 100% power with P-66B HPSI Pump tagged out.

Turnover: P-66B HPSI Pump is tagged out for bearing inspection and will be restored to operable in 4 hours. Shift orders are to alternate running Service Water pumps and then lower power to approximately 87% at 4% per hour to perform Turbine valve testing on the next shift.

Event No.	Malf. No.	Event Type*	Event Description
1	NA	SRO (N) RO (N)	Alternate Running Service Water Pumps
2	NA	SRO (N) BOP (N) RO (R)	Power Reduction
3	Override	BOP (C) SRO (C)	'A' Train CR HVAC Outside Air Damper fails closed
4	RP22A	SRO (I, T) BOP (I)	Hot Leg RTD Failure Low
5	SG01A	SRO (C, T)	'A' S/G tube leak at 0.25 gpm (requires controlled shutdown). Leak then rises to require a reactor trip. (≥ 0.4 gpm requires reactor trip.)
6	Override	BOP (I)	C-02 Reactor Trip P/B fails (requires trip from C-06)
7	SG01A	ALL (M)	SGTR on 'A' S/G
8	Override	RO (C)	Loop Injection MO-3066 fails to open on SIAS

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

- Reset to IC 17
- Hang Caution Tag on HPSI Pump P-66B (OOS) hand switch
    - RACKOUT breaker for P-66B using SI24 on PIDSI02
    - Ensure EOOS indicates that P-66B is out of service
- Ensure SW Pumps P-7B and P-7C inservice
- INSERT the following OVERRIDES
    - Reactor Trip Pushbutton on Panel C-02 to OFF
    - MO-3066-1 to ON (HS stuck in close position)
    - MO-3066-R to OFF (red light off)
- Create Event Triggers 5 and 6: Event: ZDI1P(171) *[MO-3066 switch to OPEN position]*
- Create Event Trigger 7: Event: rdsr(13)<100
- Create Event Trigger 8: Event ZDI6P(1060) *[V-96 switch to ON position]* Action: dmf ANN-K-02-49
- Create Event Trigger 9: Event ZDI6P(1070) *[V-26A switch to ON position]* Action: dmf ANN-K-02-49

Event #	Remote or Trigger #	Instructions
1		Alternate running SW Pumps- No actions required.
2		Power Reduction – No actions required.
3	**REMOTE 1**	**Overrides** HS-1673-D2-G (to ON), HS-1673-D2-R (to OFF), and ANN-K-02-49 (to ON) (Panel C-11A) CR HVAC Train 'A' Outside Air Damper failed closed
4	**REMOTE 2**	**RP22A** (PIDRPNI1) Hot Leg #1 RTD Fail TE-0112H, Final Value = 0.0
5	**REMOTE 3**	**SG01A** (PIDSG01) Severity 0.025. Causes a S/G Tube Leak on 'A' S/G.
	REMOTE 4	Event: 0 Action: imf sg01a 0.40 *[raises the severity of the tube leak to 4 gpm]*
6		ACTIVE AT SETUP (override for reactor trip pushbutton on C-02 Panel)
7/8	**TRIGGER 5**	Action: dor MO-3066-1
	TRIGGER 6	Action: dor MO-3066-R
	TRIGGER 7	Action: imf sg01a 24.0 *[raises severity of tube leak to 240 gpm]*

Special instructions:

- ***During SW Pp. swap, if called as Chemistry to recalculate mixing basin discharge flow volume, inform CR this is not required if they are alternating SW pps. When called as AO for SW Pp. parameters, report discharge valve open, oil levels normal. Once P-7C has been started, when asked, report PI-1320 indicates 72 psig and stable; packing leakoff is NOT excessive.***

Scenario ONE - Turnover Information

The plant is at 100% power. P-66B HPSI Pp. is tagged out for pump coupling alignment and will be restored to operable in 4 hours (LCO 3.5.2.B.1 - 72 hrs.). Shift orders are to alternate running Service Water pumps (Start P-7A and stop P-7B and place it in STDBY) and then commence a power reduction at 4% per hr. for performance of turbine valve testing on the next shift. GOP-8 has been completed up to Att. 1, Step 2.0.

Op-Test No.: 1 Scenario No.: ONE Event No.: **1** Page **1** of **1**

Event Description: ***Alternate Running Service Water Pumps***

Time	Position	Applicant's Actions or Behavior
	RO	Refers to SOP-15, 7.1.1 and 7.1.2.
	RO	Starts P-7A SW pump. • Make PA announcement. • Check discharge valve, oil levels for P-7C. • Remove P-7A from standby (place handswitch to TRIP). • Starts P-7A. • Check amps less than 92 amps. • Check local discharge pressure (call to AO). • Check packing leakoff not excessive. • Expected alarm: EK-1132 for P-7A basket strainer low dp (clears on its own)
	RO	Stops P-7B. Note: Chemistry recalculation of mixing basin volume is NOT required.
	RO	Places P-7B to Standby • Ensure P-7A and P-7C operating. • Depress STANDBY button on handswitch. • Check amber STANDBY light on.

Op-Test No.: 1 Scenario No.: ONE Event No.: **2** Page **1** of **1**

Event Description: ***Power Reduction***

Time	Position	Applicant's Actions or Behavior
	SRO BOP	Ensure DEH is setup for 4% / hour load reduction. ENTERS setter value SELECTS rate of 4% per hour
	SRO	Reviews Precautions and Limitations of GOP-8.
	RO BOP	Reviews Precautions and Limitations of applicable SOPs
	RO	INSERTS Group 4 Control Rods to less than 128 inches: ▪ Control Rod "joystick" MANIPULATED to lower control rods
	RO	Borates to commence downpower. ▪ RESET BA and PMW Controllers if not already RESET ▪ SET quantity and batch flow limit on FIC-0210B, BA flow controller ▪ SET quantity and batch flow limit on FIC-0210A, PMW flow controller ▪ START BA Pump (P-56B preferred) ▪ OPEN CV-2155, Make Up Stop Valve ▪ PUSH start pushbutton on FIC-0210B ▪ MONITORS reactor power and T_{AVE} ▪ VERIFIES FIC-0210B output signal at zero when boration complete ▪ PUSH start pushbutton on FIC-0210A ▪ VERIFIES FIC-0210A output signal at zero when PMW flush complete ▪ CLOSES CV-2155
	BOP	Initiates turbine de-rate: PUSHES "GO" pushbutton and observes white light illuminate Informs CRS/RO that turbine is in "GO"

After power has been lowered 1%-2% *OR* at the discretion of the Lead Examiner, INSERT REMOTE #1

Op-Test No.: 1 Scenario No.: ONE Event No.: 3 Page **1** of **2**

Event Description: ***Train 'A' CR HVAC Outlet Damper failed closed***

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose loss of 'A' Train CRHVAC: Indications: V-95, Air Handling Unit Fan, stops running; noticeable lowering of back-round sound Major alarm: EK-0249, Control Room LOW Pressure DPIC-1659/1660
	BOP	Operator actions from EK-0249: ▪ CHECK CR HVAC not operating per SOP-24, Ventilation and Air Conditioning System ▪ PLACE opposite CR HVAC train in service OR place operating train in Emergency Mode per SOP-24
	SRO	Directs BOP to either: • Place 'A' Train CRHVAC in Emergency Mode per SOP-24, **OR** • Place 'B' train CR HVAC in service per SOP-24
	BOP	If directed by SRO, transfer CR HVAC to 'A' Train to Emergency Mode per SOP-24, Section 7.7.9: • PLACE Control Switch for V-26A, Air Filter Unit Fan, to ON • Verify Outside Air Damper or Modulating Damper is CLOSED (D-1 OR D-2) • Verify at least one Exhaust Fan Damper is CLOSED (D-18) • Verify at least one Purge Fan Damper is CLOSED (D-15) • Check remaining components status for Train 'A' per procedure • Ensure off Purge Fan V-94 and Switchgear Exhaust Fan V-47

Op-Test No.: 1 Scenario No.: ONE Event No.: 3 Page **2** of **2**

Event Description: ***Train 'A' CR HVAC Outlet Damper failed closed***

Time	Position	Applicant's Actions or Behavior
	BOP	If directed by SRO to place CR HVAC to 'B' Train inservice per SOP-24, Section 7.7.2: • ENSURE Control Switch for V-26A, Air Filter Unit Fan, in AUTO • PLACE Control Switch for VC-11, Condensing Unit, to OFF/RESET • When VC-11 has pumped down and stopped: • ENSURE Control Switch for V-96, Air Handling Unit Fan, PLACED to ON • PLACE Control Switch for V-95 to AUTO • PLACE Control Switch for VC-11 to AUTO • ENSURE Control Switch for VC-10 in AUTO • CHECK indications for train being stopped: • Notes that Train 'A' Dampers reposition to CLOSED: o Outside Air Damper, D-1 o Modulating Damper, D-2 o Recirc Damper, D-3 o Discharge Damper, D-4 • CHECK indications for train ('B') being placed in service: o All Dampers in correct position (OPEN/MODULATING)
	SRO	Refer to Technical Specifications and determine the following 30-day required actions MAY conservatively be entered for the inoperable 'A' CR HVAC train: ▪ LCO 3.7.10.A.1
At the discretion of the Lead Examiner, INSERT REMOTE #2		

Op-Test No.: 1 Scenario No.: ONE Event No.: 4 Page _**1**_ of _**1**_

Event Description: ***Hot Leg RTD Failure LOW***

Time	Position	Applicant's Actions or Behavior
	RO	Diagnoses low failure of Loop #1 Thot signal - EK-0967, LOOP 1 LOOP 2 Tave DEVIATION, alarms - EK-0968, LOOP 1 Tave/Tref GROSS DEVIATION, alarms - EK-06 Rack D 04, NUCLEAR - DT POWER DEVIATION T-INLET OFF - NORMAL/CALCULATOR TROUBLE CHANNEL A Lowering of calculated ΔT and calculated TM/LP trip setpoint for channel 'A' TI-0112HA, Loop 1 Hot Leg Temperature, indicates low
	RO	Checks ARP-5 and ARP-21 for alarms present: report to CRS that ONP-13 needs to be referenced.
	SRO	Enters and directs the actions of ONP-13, Tave/Tref Controller Failure
	RO	Checks ΔT Power for the PIP Node and the SPI Node/Host Computer on a workstation and compares to actual heat balance power per ONP-13
	SRO	Refers to and implements the following Tech Spec LCOs: • 3.3.1 (Table 3.3.1-1 Items 1 and 9) • 3.3.8 (Table 3.3.8-1 item 4)
	BOP	Bypass the Variable High Power Trip and the TM/LP Trip for Channel 'A' per SOP-36 (does not need to be in-hand) 1. Insert bypass key above affected RPS Trip Unit. 2. Turn key 90º clockwise. 3. Verify lit yellow light above bypass keyswitch. 4. Log evolution in the Reactor Logbook
	SRO	Initiates troubleshooting and repairs
After RPS has been bypassed *OR* at the discretion of the Lead Examiner, INSERT REMOTE #3		

Op-Test No.: **1** Scenario No.: ONE Event No.: **5/6/7/8** Page **1** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	SRO BOP RO	Diagnoses Steam Generator Tube Leak on 'A' S/G: EK-1364, GASEOUS WASTE MONITORING HI RADIATION alarms Monitors PZR level, pressure Monitors VCT level Charging-Letdown mismatch
	SRO RO BOP	Notes trends on any of the following: • RIA-0631, Condenser Off-Gas Monitor • RIA-2323, Main Steam Gamma Monitor ('B' S/G) • RIA-2324, Main Steam Gamma Monitor ('A' S/G) • RIA-0707, Steam Generator Blowdown Monitor • RIA-2325/2326, Stack Gas Effluent Monitors • RIA-2327, High Range Noble Gas Monitor
	SRO BOP	Uses ONP-23.2, Att.1 and/or Att.2 or PPC Page 540 to calculate leak rate. Calculates leak rate of ~ 0.25 gpm. May also use DWO-1 method (15 min)
Simulator Operator: If asked as Chemistry, PCS Gas Total Isotope activity = 0.57 µCi/cc		
	SRO	'A' S/G tube leak is identified and quantified, determines that plant shutdown per GOP-8 must occur (Mode 3 within 6 hours). Action level 3
	SRO	Determines that Tech. Spec. 3.4.13.B applies - 6 hours to MODE 3, 36 hours to MODE 5. (> 150 gpd)
	SRO	Have HP determine dose rates on C-42 cation columns Have HP perform surveys per EOP Supplement 14
Simulator Operator: Inform control room that cation surveys for 'A' S/G indicate a higher than normal dose rate.		

Op-Test No.: **1** Scenario No.: ONE Event No.: **5/6/7/8** Page **2** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	BOP/RO	Isolates S/G Blowdowns by closing the following valves on panel C-13: CV-0704, Blowdowns to mixing basin CV-0739, 'A' S/G Surface B/D CV-0767, 'A' S/G Bottom B/D CV-0771, 'A' S/G Bottom B/D CV-0738, 'B' S/G Surface B/D CV-0768, 'B' S/G Bottom B/D CV-0770, 'B' S/G Bottom B/D
	SRO BOP	May raise RIA-0631, Condenser off-gas monitor, setpoint on back of panel C-11
	BOP	Operates turbine generator controls on the DEH panel for shutdown: Enters setter value Selects rate of ≤ 30% per hour Pushes GO and observes white light energize Informs CRS/RO that turbine is in "GO"
Simulator Operator: Once plant de-rate commences, raise severity of leak to 4 gpm by <u>INSERTING REMOTE #4</u>		
	ALL	Diagnoses that leak rate has risen to above 0.4 gpm. Requires reactor trip
	SRO	Directs Reactor Trip
Plant Trip		
	RO	Attempts Reactor trip from C-02 Panel, does not function
	BOP	DEPRESSES C-06 Panel Reactor Trip Pushbutton **(CRITICAL TASK PL-000 447 05 01)**

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **5/6/7/8** Page **3** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	RO	Reactivity Control: **YES**: reactor was tripped from C-06 Panel ▪ Reactor power lowering ▪ negative SUR ▪ maximum of one control rod not inserted
	BOP	Main Turbine Generator criteria: **YES** ▪ Main Turbine tripped ▪ Generator disconnected from grid
	BOP	Feedwater criteria: **YES**: ▪ PLACES Main FWP Controllers to 'MANUAL' RAMPS to minimum speed ▪ Main FRV and B/Ps CLOSED
	BOP	Vital Auxiliaries-Electric: ▪ Buses 1C and 1D energized: **YES** ▪ Bus 1E energized: **NO (if SIS present)** ▪ Bus 1A and 1B energized: **YES** ▪ Y-01 energized: **YES** ▪ Six DC Buses energized: **YES** ▪ 3 of 4 Preferred AC Buses energized: **YES**

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **5/6/7/8** Page **4** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	RO	PSC Inventory Control: **YES OR NO** (Depends on Plant conditions) ▪ PZR level 20% - 85% ▪ PZR level trending 42% - 57% ▪ PCS 25°F subcooled IF **NO**, would be on PCS being 25°F subcooled (NO CONTINGENCY) or PZR Level < 20% (CONTINGENCY: All available Charging Pumps in service and Orifice Stop Valves Closed)
	RO	PCS Pressure Control: **NO** Contingency – manually operates PZR heaters and spray, heaters will be off due to low PZR level, spray valves closed. When PCS pressure is < 1605 psia, verify safety injection initiated, EK-1342 in alarm and all available HPSI and LPSI pumps in service and valves open Notes MO-3066 did not open, opens MO-3066 on panel C-03 **(CRITICAL TASK PL-000 433 05 01)** If PCS pressure is < 1300 psia, stop 'A' and 'D' PCPs.
	RO	Core Heat Removal: **YES** ▪ at least one PCP operating ▪ Verify Loop ΔT less than 10°F ▪ Verify PCS at least 25°F subcooled
	BOP	PCS Heat Removal: **YES** ▪ verify BOTH S/G level 5% to 70% with Feedwater available ▪ Verify T_{AVE} between 525°F and 540°F ▪ Verify BOTH S/G pressures between 800 psia and 970 psia May start AFW Pump P-8A manually using start switch on panel C-01

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **5/6/7/8** Page **5** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	RO	Containment Isolation: **YES** ▪ Verify containment pressure less than 0.85 psig
	BOP	Containment Isolation: ▪ Containment Area Monitors CLEAR: **YES** ▪ Condenser Off Gas Monitor, RIA-0631, CLEAR: **NO** ▪ Main Steam Line Monitor: **NO**
	RO	Containment Atmosphere: **YES** ▪ Verify temperature less than 125°F ▪ Verify Containment pressure less than 0.85 psig
	RO	Vital Auxiliaries – Water: **YES** ▪ Verify at least two Service Water Pumps operating ▪ Verify BOTH Critical SW Header Pressures greater than 42 psig ▪ Verify at least one CCW Pump operating
	RO	Vital Auxiliaries – Air: **YES** ▪ Instrument Air header pressure greater than 85 psig
	BOP	Verify BOTH of the following: **YES** ▪ At least one Condensate Pump operating ▪ At least one Cooling Tower Pump operating
	BOP	PLACES left train CRHVAC in emergency mode: ▪ STARTS V-26A Air Filter Unit Fan ▪ ENSURES OFF: V-94, Purge Fan; V-47, Switchgear Exhaust Fan

Op-Test No.: **1** Scenario No.: ONE Event No.: **5/6/7/8** Page **6** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	ALL	Diagnose 'A' S/G as affected
	SRO	MAY direct isolating AFW to 'A' S/G
	BOP	When directed, isolates AFW to 'A' S/G: ▪ SELECTS 'MANUAL' on FIC-0737A ▪ SELECTS 'MANUAL' on FIC-0749 ▪ Raises output to 100% on each controller ('RED' signal indicator to the full right position)
	SRO	Performs EOP-1.0, attachment 1, Event Diagnostic Flow Chart Diagnoses a SGTR and enters EOP-5.0, Steam Generator Tube Rupture Recovery
	SRO	Directs PCS cooldown to below 524°F on Loop Thots
	RO	Commences a cooldown of the PCS: Selects manual on PIC-0511 Adjusts signal on controller to achieve desired TBV position Monitors S/G pressures and cooldown rate Controls 'B' S/G level 60 - 70 %
	BOP	Perform SIS checklist, EOP Supplement 5 (SAT)
	SRO/RO	Establish PCS temperature and pressure control bands
	BOP/RO	Closes Letdown orifice isolation valves on Panel C-02: Places control switches for CV-2003, CV-2004, CV-2005, to CLOSE

Op-Test No.: **1** Scenario No.: ONE Event No.: **5/6/7/8** Page **7** of **7**

Event Description: ***'A' Steam Generator Tube Leak/Rupture/Plant Trip***

Time	Position	Applicant's Actions or Behavior
	BOP	Places right train CRHVAC in emergency: Starts CRHVAC Emergency Fan V-26B Ensures Purge Fan, V-94, & Switchgear Exhaust Fan, V-47 secured
	SRO	Direct chemistry to sample S/G for lithium and activity
	SRO	Direct EOP supplement 4, HPSI flow verification, completed
	SRO	When lowest hot leg temperature is < 524 °F, orders 'A' S/G isolated per EOP Supplement 13
	BOP	Performs EOP Supplement 13 to isolate 'A' S/G inside control room (**CRITICAL TASK PL-000 209 05 01**): If removing heat using the TBV, ensures MO-0501, 'B' S/G MSIV Bypass valve is open Closes MSIVs and 'A' S/G MSIV Bypass valve on panel C-01 Closes 'A' FRV, CV-0701, on panel C-01 Closes 'A' FRV Block valve, CV-0742, on panel C-01 Closes CV-0749, CV-0737, CV-0737A, AFW to 'A' S/G (if not performed earlier), on panel C-01 Closes 'A' S/G Blowdown Valves CV-0767, CV-0771, CV-0739, on panel C-13 Directs AO to perform EOP Supplement 13 to isolate 'A' S/G from outside control room

SIM OP: Use MS20/MS21 and SG09/SG11 on PIDMS01 to isolate 'A' S/G

SRO: Emergency Classification Level: FA1 Alert

Terminate Scenario when S/G is isolated or at examiner discretion

Facility: **Palisades** Scenario No.: **TWO** Op-Test No.: **1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 60% power. P-7C, Service Water Pump, is out of service.

Turnover: Shift orders are to alternate running Component Cooling Water pumps and then continue power ascension at 6% per hour.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	SRO (N) RO (N)	Alternate operating CCW pumps
2	N/A	SRO (N) RO (R) BOP (N)	Power ascension
3	RX08B	SRO (I) RO (I)	PZR Level Control Channel failed low
4	SI04D	SRO (C, T)	T-82D, Safety Injection Tank loss of pressure (leak)
5	RM08G	SRO (I, T) RO(I)	West ESS Room Ventilation Radiation Monitor Failure
6	MS06B	SRO (C) RO (C)	Main Steam Relief Valve RV-0706 leak
7	FW03	BOP (C)	Failure of AFW Pumps to start in AUTO
8	RC04	ALL (M)	Primary Coolant System leak
9	RD16	SRO (C) RO (C)	Two stuck control rods

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

Scenario TWO - Simulator Operator Instructions

- Reset to IC-15 (or similar) 60% power MOL IC.
- SW Pump P-7C is OOS with a Caution Tag hung on the handswitch.
    - Use SW16 on PIDSW03 to rackout P-7C breaker
    - Ensure EOOS indicates P-7C is out of service
- ENSURE CCW Pump P-52C is in service, with P-52A and P-52B in STANDBY.
- INSERT MF, FW03A (PIDFW01) P-8A Fail to AUTO start
- INSERT MF, FW03B (PIDFW01) P-8B Fail to AUTO start
- INSERT MF, FW03C (PIDFW01) P-8C Fail to AUTO start
- INSERT RD16 for two stuck control rods (31, 35)
- Create Event Trigger 5: Event: Reg Group 1 Rod 21 less than 110”

Event #	Remote or Trigger #	Instructions
1		No actions required.
2		No actions required.
3	**REMOTE 1**	**RX08B** (PID RX01), PRESSURIZER LEVEL CONTROL CHANNEL DOWNSCALE DEMAND.
4	**REMOTE 2**	**SI04D** (PIDSI04) T-82D, Safety Injection Tank loss of pressure
5	**REMOTE 3**	**RM08G** (PID RM04) Low Rad West Eng SFGD Vent Monitor RIA-1811
6	**REMOTE 4**	**MS06A** (PIDMS01) RV-0706, Main Steam Line Relief Valve Leak, Severity = 100
7		ACTIVE AT SETUP – No actions required
8	**TRIGGER 5**	**RC04** (PIDRC01) Primary Coolant Leak, Severity = 75, Ramp = 15 minutes
9		ACTIVE AT SETUP – No actions required

Special instructions:

- ***(EVENT #1) For alternating CCW pps. if asked:***
    - ***Initial CCW Hx dP is E-54A = 6.6 psid, E-54B = 6.8 psid.***
    - ***After starting P-52A, dPs are: E-54A = 14.1 psid, E-54B = 14.2 psid.***
    - ***When P-52C has been secured, dPs are E-54A = 6.8 psid, E-54B = 6.5 psid.***

Scenario TWO - Turnover Information

The plant is at 60% power, MOL. A power ascension was in progress when an engineering hold was implemented to monitor the performance of both Main Feedwater Pumps. The engineering hold is no longer required and both Main Feedwater Pumps have been deemed acceptable for 100% power operation.
P-7C, Service Water Pump, is out of service for a bearing inspection. It is expected to be 6 hours before bearing inspection is completed.

Shift orders are to alternate running CCW pumps by placing P-52A in service, and P-52C in STANDBY, per SOP-16, section 7.3.6. Once this is complete, the power ascension is to resume at 6% per hour. At 86% power, the rate of power ascension will be adjusted to 4% per hour.

Op-Test No.: 1 Scenario No.: TWO Event No.: **1** Page **1** of **1**

Event Description: ***Alternate CCW Pumps***

Time	Position	Applicant's Actions or Behavior
	SRO RO	Enters SOP-16, section 7.3.6.
	RO	Ensures locked open all available CCW pp. suction/discharge valves.
	RO	Coordinates with AO to open vent for P-52A.
	RO	Verifies both CCW Heat Exchangers in operation.
	RO	Starts P-52A.
	RO	Stops P-52C.
	RO	Places P-52C in standby: • Depress amber STANDBY button above handswitch. • Verify amber light is LIT.
	RO	May request final reading on CCW Heat Exchangers differential pressure, but not required.

Op-Test No.: 1 Scenario No.: TWO Event No.: **2** Page **1** of **1**

Event Description: ***Power Ascension***

Time	Position	Applicant's Actions or Behavior
	SRO	Enters/continues and directs the actions of GOP-5.
	BOP	Operates turbine generator on the DEH panel for power escalation @ 6% per hour: ENTERS setter value SELECTS rate of 6% per hour PUSHES "GO " pushbutton and observes white light illuminate Informs CRS/RO that turbine is in "GO"
	RO	Performs periodic dilutions and/or control rod manipulations to maintain T_{AVE} within 3°F of T_{REF} For Dilution: ▪ RESET PMW Controller if not already RESET ▪ SET quantity and batch flow limit on FIC-0210A, PMW flow controller ▪ OPEN CV-2155, Make Up Stop Valve ▪ PUSH start pushbutton on FIC-0210A ▪ VERIFIES FIC-0210A output signal at zero when dilution complete ▪ CLOSES CV-2155 ▪ MONITORS reactor power and T_{AVE} For Control Rod manipulations: ▪ WITHDRAWS Group 4 Regulating Rods in increments specified by CRS MONITORS reactor power and T_{AVE}
	BOP	Operates turbine generator on the DEH panel for power escalation @ 6% per hour:
	RO	May divert CVCS letdown to Clean Waste as VCT level rises: ▪ PLACES CV-2056, Letdown to VCT or Radwaste, in the "TO CLEAN WASTE RCVR TANKS" position ▪ When desired VCT level is achieved, PLACES CV-2056 to the "AUTO" or "TO VOL CNTRL TANK" position (then "AUTO")

After power has been raised 1%-2% *OR* at the discretion of the Lead Examiner, INSERT REMOTE #1

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

Event Description: ***PZR LEVEL CONTROL CHANNEL DOWNSCALE DEMAND***

Time	Position	Applicant's Actions or Behavior
	SRO RO	Diagnoses a failure of the 'B' PZR level control channel: • EK-0761, Pressurizer Level HI-LO - alarm due to LIC-0101B failed low • EK-0703, Letdown HT EX Tube Outlet HI Temp - alarm due to closure of Letdown Orifice Stop Valves • Observes all three Letdown Orifice Stop Valves open. • P-55A variable speed pp lowers to minimum speed. • LIC-0101B process output at 0% and setpoint failed low.
	SRO	Directs RO to shifts PZR level control to 'A' Channel per SOP-1A
	RO	Shifts PZR level control to 'A' Channel per SOP-1A section 7.2.1.f: • Adjust output signal of 'A' channel to 0% • Place selector switch 1/LRC-0101 to CHANNEL 'A' • Place Pressurizer Heater Control Channel Selector Switch to CHANNEL 'A' • Place 'A' Channel Pzr Level Controller to CASCADE: o Adjust raise/lower pushbutton to match blue pointer to red pointer o Depress 'A' pushbutton o Adjust raise/lower pushbutton to adjust blue pointer to approximately 51% level o Depress 'C' pushbutton

After PZR level control is reestablished *OR* at the discretion of the Lead Examiner, INSERT REMOTE #2

Op-Test No.: 1 Scenario No.: TWO Event No.: **4** Page **1** of **1**

Event Description: ***T-82D, Safety Injection Tank loss of pressure***

Time	Position	Applicant's Actions or Behavior
	RO	Diagnose failure of T-82D: Indications: T-82D nitrogen pressure lowering Major alarms: ▪ EK-1334, Safety Inj Tank HI-LO Pressure ▪ EK-1336, Safety Inj Tank LO pressure
	RO	Operator actions for EK-1134: ▪ CHECK tank level normal ▪ CHECK CLOSED CV-3051, T-82D Vent Valve ▪ MAY adjust tank pressure per SOP-3 to clear alarm (Follow Up Action) • Open CV-1358, Nitrogen to Containment • Open CV-3050, T-82D Nitrogen Valve • Close CV-3050 when T-82D is at desired pressure
	RO	Operator actions for EK-1136: ▪ CHECK tank level normal ▪ CHECK CLOSED CV-3051, T-82D Vent Valve ▪ CHECK tank pressure on PPC ▪ MAY adjust tank pressure per SOP-3 to clear alarm (Follow Up Action) • Open CV-1358, Nitrogen to Containment • Open CV-3050, T-82D Nitrogen Valve • Close CV-3050 when T-82D is at desired pressure
SIMULATOR OPERATOR: Delete malfunction SI04D as soon as crew begins to raise T-82D pressure		
	SRO	Declares Tank inoperable while the pressure switch is actuated The following T.S. LCO applies: ▪ 3.5.1, Action: B.1, enter due to loss pressure in SIT
After CRS has briefed loss of pressure in T-82D *OR* at the discretion of the Lead Examiner, INSERT REMOTE #3		

Op-Test No.: 1 Scenario No.: TWO Event No.: **5** Page **1** of **1**

Event Description: ***West ESS Room Ventilation Radiation Monitor Failure***

Time	Position	Applicant's Actions or Behavior
	RO	Informs the SRO of alarm: EK-1371, Rad Monitor Sys Ckt Failure
	RO	Checks ARP-7 and SOP-38 Attachment 1 section 3 for actions: Coordinates with BOP on status of RIA-1811
	BOP	Checks RIA-1811 on Panel C-11 and notes failure low condition: reports to SRO that RIA-1811 is failed.
	SRO	Enters LCO 3.3.10.A.1 and directs RO to close West ESS Room Damper.
	RO	Closes West ESS Room Damper PO-1811 and directs AO to check status of remote damper PO-1812.
Simulator Operator: If asked as AO to check status of remote ventilation damper PO-1812, report that it is closed		
After CRS has briefed on West ESS Room ventilation rad monitor *OR* at the discretion of the Lead Examiner, INSERT REMOTE #4		

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

Event Description: ***'A' S/G RV-0706 stuck open***

Time	Position	Applicant's Actions or Behavior
	BOP	Informs the SRO that indications of excessive load exist: Reactor power rising Tave lowering
	SRO	Enters ONP-9, "Excessive Load" • Determines that unisolable load rise exceeds 1% change in NI or Delta-T Power (may wait for HB Power Steady to also be above 1%) • Directs a reactor trip.
	RO	Trips reactor by depressing reactor trip pushbutton at Panel C-02
	SRO/BOP	May direct AO to check for source of steam release.

Simulator Operator: If contacted by Control Room as AO to check on steam leak, wait a few minutes and REPLY back: there is a Steam Generator relief valve open that is blowing steam in SIRWT roof area.

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **1** of **6**

Event Description: ***'A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Position	Applicant's Actions or Behavior
	BOP	Informs SRO that S/G pressures < 800 psia, CONTINGENCY ACTION: ▪ MSIVs, CV-0510 and CV- 0501, CLOSED by taking one HS to CLOSE
	BOP	Informs SRO that AFW did not initiate, CONTINGENCY ACTION: P-8A or C STARTED OR CV-0522B, Steam Supply to P-8B OPENED
	RO	Informs SRO that PCS pressure < 1300 psia, CONTINGENCY ACTION: ▪ STOP an operating PCP in each loop, P-50A and P-50D
	SRO	EOP-1.0 verbal verifications
	RO	Reactivity Control: ▪ Determines Reactivity Control acceptance criteria are NOT MET due to TWO stuck rods. Commences emergency boration. **(CRITICAL TASK PL-000 024 05 01)** to ensure reactivity control is met. (Event 9) ▪ STARTS at least one Boric Acid Pump, P-56A AND/OR P-56B ▪ OPENS MO-2140, Boric Acid Pump Feed Isolation ▪ VERIFIES Charging Flow greater than 33 gpm <u>AND/OR</u> ▪ OPENS Boric Acid Tank Gravity Feed Isolation Valves: MO-2169 and MO-2170 ▪ CLOSE CV-2155, Boric Acid Blender Outlet Control Valve ▪ CLOSE MO-2087, VCT Outlet Isolation Valve ▪ ENSURE CLOSED MO-2160, SIRW Tank to Charging Pumps Isolation ▪ VERIFIES Charging Flow greater than 33 gpm

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **2** of **6**

Event Description: ***A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Position	Applicant's Actions or Behavior
	BOP	Main Turbine Generator criteria verified ▪ Main Turbine tripped ▪ Generator disconnected from grid
	BOP	Feedwater criteria performed: ▪ PLACES Main FWP Controllers to 'MANUAL' RAMPS to minimum speed ▪ PLACES Main FW Controllers to 'MANUAL,' Main FRV and B/Ps CLOSED
	BOP	Vital Auxiliaries-Electric verified: ▪ Buses 1C and 1D energized ▪ Bus 1E energized ▪ Buses 1A and 1B energized ▪ Y-01 energized ▪ Six DC Buses energized ▪ 3 of 4 Preferred AC Buses energized
	RO	PSC Inventory Control: ▪ PZR level 20% - 85% **NO**: verifies max Charging and min Letdown ▪ PZR level trending 42% - 57% **NO**: verifies max Charging and min Letdown ▪ PCS 25°F subcooled
	RO	PCS Pressure Control: PZR pressure 1650 – 2185 psia and trending toward 2010 – 2100 psia **NO**: verifies PZR spray valves closed and maximum heaters • At 1605 psia, verifies Safety Inj Initiated alarm EK-1342 and ensures all available HPSI and LPSI pumps operating with the associated loop isolation valves open • At 1300 psia, stop PCPs as needed to establish one PCP operating in each loop

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **3** of **6**

Event Description: ***'A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Position	Applicant's Actions or Behavior
	BOP	PCS Heat Removal ▪ At least one S/G has; level 5% - 70% with Feedwater available **NO**: CONTINGENCY taken: Start an AFW Pump **(CRITICAL TASK PL-061 102 01 01)** to ensure PCS Heat Removal is met: (Event 7) ▪ Places P-8A or P-8C Handswitch to START and verifies flow to S/Gs is 165 gpm on FIC-0727/0749 or FIC-0736A/0737A (may elect to isolate AFW flow to 'A' S/G. **OR** ▪ Places P-8B Handswitch to OPEN and verifies flow to S/Gs is 165 gpm on FIC-0727/0749(may elect to isolate AFW flow to 'A' S/G. ▪ T_{AVE} 525°F - 540°F **NO**: verifies Turbine Bypass Valve and ADVs are closed ▪ Verify BOTH S/G pressures 800 psia – 970 psia **NO**: CONTINGENCY: CLOSE MSIVs, CV-0510 and CV-0501 if S/G pressures < 800 psia, by taking one of these HSs to CLOSE
	RO	Containment Isolation: **YES** ▪ Containment pressure < 0.85 psig (may be NO, depends on timing of verification: no contingencies until 4 psig)
	BOP	Containment Isolation: **YES** ▪ Containment Area Monitor alarms clear ▪ Condenser Off Gas Monitor alarm clear ▪ Main Steam Line Monitor alarms clear
	RO	Containment Atmosphere: **YES** ▪ Containment temperature < 125°F ▪ Containment Pressure < 0.85 psig (may be NO, depends on timing of verification: no contingencies until 4 psig)

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **4** of **6**

Event Description: ***'A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Time	Time
	RO	Vital Auxiliaries – Water: **YES** ▪ At least two SW Pumps operating ▪ BOTH Critical SW Headers in operation with pressure > 42 psig ▪ At least one CCW Pump operating
	RO	Vital Auxiliaries – Air: **YES** ▪ Instrument Air Pressure > 85 psig
	BOP	PLACES left train CRHVAC in emergency mode: ▪ STARTS V-26A Air Filter Unit Fan ▪ ENSURES OFF: V-94, Purge Fan; V-47, Switchgear Exhaust Fan
	BOP	Verify BOTH of the following: **YES** ▪ At least one Condensate Pump operating ▪ At least one Cooling Tower Pump operating
	SRO	MAY direct isolating AFW to 'A' S/G
	BOP	When directed, isolates AFW to 'A' S/G: ▪ SELECTS 'MANUAL' on FIC-0749, P-8A/B flow to S/G 'A' ▪ SELECTS 'MANUAL' on FIC-0737A, P-8C flow to S/G 'A' ▪ Raises flow output to 100% on each controller ('RED' signal indicator to the full right position)
	RO/BOP	May TRIP both MFW Pumps

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **5** of **6**

Event Description: ***A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Position	Applicant's Actions or Behavior
	SRO	▪ Performs Event Diagnostic Flow Chart per EOP-1.0, Attachment 1 ▪ Diagnoses EOP-9.0, Functional Recovery Procedure, LOCA and ESDE ▪ Performs EOP-9.0 strategy brief ▪ Establishes PCS pressure and temperature bands with RO
	SRO	Directs closing CV-1064 and CV-1065, CWRT vent valves
	BOP	CLOSES CV-1064 and CV-1065
	SRO	Directs performance of EOP Supplement 5, Checklist for Safeguards Equipment Following SIAS
	BOP	Completes EOP Supplement 5
	SRO	Directs placing a Hydrogen Monitor in service
	BOP	Places left train H_2 monitor in service on back of Panel C-11A: ▪ PLACES HS-2417 to OPEN and RELEASES ▪ PLACES HS-2413A, HS-2413B, HS-2415A, and HS-2415B, to OPEN ▪ Energizes H_2 Recorder, AR-2401, by: PLACING to 'ON' Power Switch and PLACES to 'ON Chart Drive Switch ▪ PLACES HS-2427L to "ANALYZE' position

Op-Test No.: 1 Scenario No.: TWO Event No.: **6/7/8/9** Page **6** of **6**

Event Description: ***A' S/G RV-0706 stuck open, PCS LOCA (750 gpm), Failure of AFW Pumps to start in AUTO, Two stuck Control Rods***

Time	Position	Applicant's Actions or Behavior
	RO	MAY secure last two running PCPs **IF** subcooling <25°F **(CRITICAL TASK PL-000 007 05 01)**
	SRO	Determines success paths for each safety function: ▪ Reactivity: RC-3 ▪ Maintenance of Vital Auxiliaries-Electric: DC-1, AC-1 ▪ PCS Inventory: IC-2 ▪ PCS Pressure: PC-3 ▪ PCS/Core Heat Removal: HR-2 ▪ Containment Isolation: CI-1 ▪ Containment Atmosphere: CA-2 (Containment pressure > 0.85 psig) ▪ Maintenance of Vital Auxiliaries-Air: MVAW-1, MVAA-1 Determines PCS/Core Heat Removal is jeopardized S/G Safety Relief Valve open
	SRO	Directs isolating 'A' S/G per EOP Supplement 17, 'A' S/G ESDE Isolation Checklist
	BOP	Isolates 'A' S/G per Supplement 17: (**CRITICAL TASK PL-000 209 05 01**) ▪ CLOSE CV-0742, 'A' S/G Main Feed Reg Block Valve ▪ CLOSE S/G E-50A Blowdown Valves: CV-0767, CV-0771, and CV-0739
SRO: Emergency Classification Level: May initially declare Unusual Event, SU5.1, for PCS Leakage but will finally declare Alert, FA1, Loss of PCS Barrier (PCS Leak Rate)		

TERMINATE Scenario when 'A' S/G has been isolated per EOP Supplement 17 *OR* at the discretion of the Lead Examiner.

Facility: **Palisades** Scenario No.: **THREE** Op-Test No.: **1**

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions: 25% power.

Turnover: The plant is at approximately 25% power MOL following a startup from a forced outage. P-8A, AFW Pump, is OOS for seal replacement and is currently 12 hours into the 72 hour LCO action statement. The Turbine Drain Valves are closed per SOP-8. A Chemistry hold has just been lifted with S/G chemistry within specifications. GCL-5.1, Power Escalation in Mode 1, has been completed through Step 2.12f. Shift orders are to place DEH Speed Loop to OUT and commence a power escalation to full power at 8%/hour.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	BOP (N)	Place DEH Speed Loop to OUT
2	N/A	SRO (N) BOP (N) RO (R)	Power escalation
3	MS11	SRO (C) BOP (C)	Turbine Bypass Valve fails open. Requires manual action to terminate steam demand
4	CV06	SRO (I, T) RO (I)	Loss of CVCS Letdown Backpressure Controller
5	Override	SRO (C, T)	Diesel Generator Low Lube Oil temperature
6	MS03A	SRO (C) RO (C)	'A' S/G Main Steam Line Leak Inside Containment (small leak requiring a manual plant trip)
7	MS03A	ALL (M)	ESDE inside containment (ramped in at time of trip)
8	ED13A ED13B CH05A CH05B	RO (I)	Right and Left Channel SI Initiate Signals fail Right and Left Channel CHP Signals fail

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

- Reset to IC-14
- Place DEH Loop to **IN**.
- Setup for TBV fail open:
  - Place PIC-0511 to Manual (press M)
  - Insert OVRD PIC-0511-M light to OFF
  - Insert OVRD PIC-0511-A light to ON
- Remove P-8A AFW Pump from service:
  - INSERT FW16A (PIDFW01)
  - Override DI P-8A-G (PAL04B2) P-8A AFW Pump Green Light to OFF'
  - Override DI P-8A-W (PAL04B2) P-8A AFW Pump White Light to OFF
  - Place Caution Tag on handswitch for P-8A stating pump is tagged out
  - Ensure EOOS indicates that P-8A is out of service
- INSERT ED13A and ED13B (PIDSI01)
- INSERT CH05A and CH05B (PIDCH01)
- Create triggers to delete TBV malfunction when 'manual' PB is depressed on PIC-0511:

  Event Trigger 6: Event: zdi3p(717) Action dor pic-0511-MNC-2
  Event Trigger 7: Event : zdi3p(717) Action dor pic-0511-m
  Event Trigger 8: Event: zdi3p(717) Action: dor pic-0511-a

Event #	Remote or Trigger #	Instructions
1		No actions required.
2		No actions required.
3	**REMOTE 1**	**PIC-0511-MNC-2** (PAL04B3) to **ON** *[TRIGGERS 6, 7, and 8 allow operator to control CV-0511]*
4	**REMOTE 2**	**CV06** (PIDCV03) Loss of Letdown Pressure Control Low
5	**REMOTE 3**	**ANN-K-05-57(PALARM7C),** Diesel Generator 1-2 Trouble to **ON**
6	**REMOTE 4**	**MS03A** (PIDMS01) 'A' S/G Main Steam Line Break Inside Containment; Severity value = 2%, 5 minute ramp
7	**TRIGGER 5**	Event: Reg Group 1 Rod 21 less than 110" Action: IMF_MS03A_5 *[raises MS03A to 5% severity]*
8		ACTIVE AT SETUP – No actions required.

Special instructions:

- Provide a marked up copy of GCL 5.1 completed through step 2.12f.
- Provide Reactivity Sheets for Core Life.

Scenario THREE - Turnover Information

The plant is at approximately 25% power MOL following a startup from a forced outage. The Turbine Drain Valves are closed per SOP-8. P-8A, AFW Pump, is OOS for seal replacement and is currently 12 hours into the 72 hour LCO action statement. A Chemistry hold has just been lifted with S/G chemistry within specifications. GCL-5.1, Power Escalation in Mode 1, has been completed through Step 2.12f. Shift orders are to place DEH Speed Loop to 'OUT' and commence a power escalation to full power at 8%/hour.

Op-Test No.: 1 Scenario No.: **THREE** Event No.: **1** Page **1** of **1**

Event Description: ***Place DEH Speed Loop to Out***

Time	Position	Applicant's Actions or Behavior
	BOP	Change status of Speed Feedback Loop: ▪ ENSURE DEH is in 'HOLD' ▪ PRESS Feedback Loops on Display keypad ▪ MOVE cursor to 'SPEED' feedback loop field ▪ PRESS 'SELECT' on numeric keypad ▪ PRESS 'STOP' on Control Keypad Speed Feedback Loop on DEH should indicate 'OUT'

Op-Test No.: 1 | Scenario No.: **THREE** | Event No.: **2** | Page **1** of **1**

Event Description: ***Power Ascension***

Time	Position	Applicant's Actions or Behavior
	SRO	Enters/continues and directs the actions of GOP-5.
	BOP	Operates turbine generator on the DEH panel for power escalation @ 8% per hour: ENTERS setter value SELECTS rate of 8% per hour PUSHES "GO " pushbutton and observes white light illuminate Informs CRS/RO that turbine is in "GO"
	RO	Performs periodic dilutions and/or control rod manipulations to maintain T_{AVE} within 3°F of T_{REF} For Dilution: ▪ RESET PMW Controller if not already RESET ▪ SET quantity and batch flow limit on FIC-0210A, PMW flow controller ▪ OPEN CV-2155, Make Up Stop Valve ▪ PUSH start pushbutton on FIC-0210A ▪ VERIFIES FIC-0210A output signal at zero when dilution complete ▪ CLOSES CV-2155 ▪ MONITORS reactor power and T_{AVE} For Control Rod manipulations: ▪ WITHDRAWS Group 4 Regulating Rods in increments specified by CRS MONITORS reactor power and T_{AVE}
	RO	May divert CVCS letdown to Clean Waste as VCT level rises: ▪ PLACES CV-2056, Letdown to VCT or Radwaste, in the "TO CLEAN WASTE RCVR TANKS" position ▪ When desired VCT level is achieved, PLACES CV-2056 to the "AUTO" or "TO VOL CNTRL TANK" position (then "AUTO")

After power has been raised 1%-2% *OR* at the discretion of the Lead Examiner, INSERT REMOTE #1

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

Event Description: ***Turbine Bypass Valve Fails Open***

Time	Position	Applicant's Actions or Behavior
	SRO BOP RO	Diagnoses Turbine Bypass Valve has failed open: Notes T_{AVE} lowering Power rising Steam flow rising May observe GREEN/RED status light change on C-01 for TBV position. Possible alarms including: Nuclear Power / delta T, EK-0603, 4, 7, 8, Rack D (if TBV is open long enough)
	SRO	Enters and directs the actions of ONP-9.0, “Excessive Load Increase”
	BOP	Manually closes the TBV: Place controller PIC-0511 to Manual Lowers output signal to zero
	SRO BOP	Reduce turbine load to restore reactor power to pre-event power level or less. (Not required if TBV is manually closed.)
	ALL	May go to HOLD on turbine, based on crew judgment
	SRO	Initiate troubleshooting/repair

At the discretion of the Lead Examiner, INSERT REMOTE #2

Op-Test No.: 1 Scenario No.: **THREE** Event No.: **4** Page **1** of **1**

Event Description: ***Loss of CVCS Letdown Back Pressure Controller***

Time	Position	Applicant's Actions or Behavior
	RO	Diagnoses failure of PIC-0202, Intermediate Pressure Letdown Controller: Indications: PIC-0202 red alarm light illuminated; Pressure rising on PIC-0202 (red pen); PIC-0202 output signal 'Full Closed"; TIA-0202, Intermediate Pressure Letdown RV Discharge Temperature rising; FIC-0202, Letdown Flow reads 0. Major alarms: EK-0704, Letdown HT EX Tube Inlet HI-LO Press; EK-0702, Relief Valve 2006 Discharge HI Temp
	RO	Operator Actions from EK-0704 and EK-0702: ▪ MANUALLY CONTROL PIC-0202 at approximately 460 psig
	SRO	Directs MANUAL CONTROL of PIC-0202 with control, approximately 460 psig
	RO	MANUAL CONTROL of PIC-0202: ▪ Depresses 'MANUAL' pushbutton on PIC-0202 ▪ USES Slide Bar to slowly move controller signal the 'OPEN' (to the right) ▪ PIC-0202 CONTROLLED approximately 460 psig
	SRO	The following T.S. LCO applies: 3.4.13, Action: A.1, PCS leakage, 4 hours
	SRO	SRO: Emergency Classification Level: Unusual Event, SU5.1, Unidentified or pressure boundary leakage GREATER THAN 10 gpm

After the SRO has briefed the loss of the Letdown Backpressure Controller OR at the discretion of the Lead Examiner, INSERT TRIGGER #3

Op-Test No.: 1 Scenario No.: **THREE** Event No.:**5** Page **1** of **1**

Event Description: ***Diesel Generator Lube Oil Temperature Low***

Time	Position	Applicant's Actions or Behavior
	BOP	Respond to D/G 1-2 Trouble alarm per ARP-3, window 57: ▪ Contacts Auxiliary Operator to investigate
Simulator Operator: As AO, report back that D/G 1-2 local alarm panel has window #8, "Low Lube Oil Temperature" in alarm and that TI-1488 (K-6B Lube Oil Temp Ind) reads 89°F. If asked, report that Prelube pump is not running and local breaker for Prelube pump is closed and not in the trip-free position.		
Simulator Operator: Clear Override on alarm ANN-K-05-57 after AO report is made.		
	SRO	Determines that D/G 1-2 is operable based on lube oil temperature and enters LCO 3.8.1.B.
	SRO	Directs BOP to perform offsite source check per LCO 3.8.1.B.1 within 1 hour.
	BOP	Performs offsite source check per SR 3.8.1.1
At the discretion of the Lead Examiner, INSERT REMOTE #4		

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

Event Description: ***ESDE Inside Containment requiring a Plant trip***

Time	Position	Applicant's Actions or Behavior
	SRO/RO/BOP	Diagnose ESDE Inside Containment: Indications: T_{AVE} lowering; 'A' Charging Pump speed rising; Containment Pressure rising Major alarms: EK-1148, Fire System Panel C-47, C-47A/B or C-49 Off Normal; EK-1344, Containment Air Cooler VHX-2 Dry Pan HI Level; EK-1346, Containment Air Cooler VHX-4 Dry Pan HI Level; EK-1362, Containment Pressure Off Normal
	RO/BOP	No Operator actions apply to EK-1148, EK-1344, EK-1346, and EK-1362, for ESDE
	SRO	Enters ONP-9, Excessive Load Directs Plant trip
	RO	DEPRESSES CO-2 Panel Reactor Trip Pushbutton

Op-Test No.: 1 Scenario No.: **THREE** Event No.: **7/8** Page **1** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	RO	Informs SRO that Left and Right Channel SI Initiate pushbuttons PUSHED OR STARTED Left and Right Train HPSI and LPSI Pumps and OPENED all Loop Injection Valves, CONTINGENCY ACTION: ▪ Containment pressure > 0.85 psig ▪ ENSURE ALL available HPSI and LPSI Pumps operating with associated Loop Isolation Valves open **(CRITICAL TASK PL-000 433 05 01)**
	RO	Informs SRO that CV-3001 and CV-3002 OPENED and P-54B and P-54C and P-54A STARTED: CONTINGENCY ACTION: ▪ Containment pressure ≥ 4.0 psig ▪ ENSURE OPEN ALL available Containment Spray Vales ▪ ENSURE ALL available Containment Spray Pumps are operating **(CRITICAL TASK PL-000 433 05 01)**
	SRO	EOP-1.0 verbal verifications
	RO	Reactivity Control: **YES** ▪ Reactor power lowering ▪ negative SUR ▪ maximum of one control rod not inserted
	BOP	Main Turbine Generator criteria: **YES** ▪ Main Turbine tripped ▪ Generator disconnected from grid
	BOP	Feedwater criteria: **YES**: ▪ PLACES MFP Controller to 'MANUAL' and RAMPS to minimum speed: **YES/NO**: (A **NO** answer may be given due to MSIVs being closed (no steam to MFPs)) ▪ Main FRV and B/Ps CLOSED

Op-Test No.: 1 Scenario No.: **THREE** Event No.: **7/8** Page **2** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	BOP	Vital Auxiliaries-Electric: ▪ Buses 1C and 1D energized: **YES** ▪ Bus 1E energized: **NO (if SIS present)** ▪ Bus 1A and 1B energized: **YES** ▪ Y-01 energized: **YES** ▪ Six DC Buses energized: **YES** ▪ 3 of 4 Preferred AC Buses energized: **YES**
	RO	PCS Inventory Control: ▪ PZR level 20% - 85% **YES OR NO (Depends on timing)** ▪ PZR level trending 42% - 57% **NO** ▪ PCS 25°F subcooled **YES**
	RO	PCS Pressure Control: ▪ PZR pressure 1650 – 2185 psia **YES OR NO (Depends on timing)** ▪ PZR pressure trending toward 2010 – 2100 psia **NO**
	RO	Core Heat Removal: May secure ALL PCPs due to loss of CCW for cooling ▪ at least one PCP operating: **NO** ▪ Verify Loop ΔT less than 10°F: **NO** ▪ Verify PCS at least 25°F subcooled: **YES**
	BOP	PCS Heat Removal: ▪ Verify at least one S/G has; level 5% - 70%; Feedwater available: **YES** ▪ Verify T_{AVE} 525°F - 540°F: **NO** ▪ Verify BOTH S/G pressures 800 psia – 970 psia: **NO**
	SRO	MAY direct isolating AFW to 'A' S/G

Op-Test No.: **1** Scenario No.: **THREE** Event No.: **7/8** Page **3** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	BOP	If directed to isolates AFW to 'A' S/G: ▪ SELECTS 'MANUAL' on FIC-0749, P-8A/B flow to S/G 'A' ▪ SELECTS 'MANUAL' on FIC-0737A, P-8C flow to S/G 'A' ▪ Ensuring/raising flow output to 100% on each controller ('RED' signal indicator to the full right position) ▪ CLOSES CV-0522B, Steam from 'A' S/G to P-8B, Turbine Driven AFW Pump
	RO	Containment Isolation: **NO** ▪ Containment pressure > 0.85 psig Contingency Actions: If/When Containment pressure > 4.0 psig perform all of the following: ▪ VERIFY EK-1126 (CIS Initiated) OR PUSH High Radiation Pushbuttons on Panel 13 ▪ ENSURE CLOSED: Both MSIVs (MO-0510 and MO-0501); Main FRVs; Main FRV Bypasses; CCW Isolation Valves ▪ ENSURE EK-1342 (Safety INJ Initiated) OR PUSH left and right Injection Initiate pushbuttons on Panel EC-13 ▪ ENSURE ALL HPSI and LPSI Pumps operating with associated Loop Isolation Valves open **RO will have to CLOSE MSIVs and CCW Isolation Valves and push left and right initiate pushbuttons Panel EC-13–*if not already done*** **(CRITICAL TASK PL-000 433 05 01 if not previously done)**
	BOP	Containment Isolation: ▪ Verify Containment Area Monitor alarms clear: **NO** (Depends on timing: All four in alarm, not collaborated with High Range Gamma Monitors) ▪ Verify Condenser Off Gas Monitor alarm clear: **YES** ▪ Verify Main Steam Line Monitor alarms clear: **YES**

Op-Test No.: 1 Scenario No.: **THREE** Event No.:7/8 Page **4** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	RO	Containment Atmosphere: **NO** ▪ Containment temperature > 125°F ▪ Containment Pressure > 0.85 psig Containment Pressure ≥ 4.0 psig, perform the following: ▪ ENSURE OPERATING ALL available Containment Air Cooler 'A' Fans ▪ ENSURE OPEN ALL available Containment Spray Valves ▪ ENSURE ALL available Containment Spray Pumps are operating **RO will have to OPEN CV-3001 (CV-3002), Left (Right) Channel Containment Spray Valve, and START P-54B and P-54C (P-54A), Containment Spray Pumps –*if not already done*** **(CRITICAL TASK PL-000 433 05 01, If not previously done)**
	RO	Vital Auxiliaries – Water: **YES** ▪ Verify at least two SW Pumps operating ▪ Verify BOTH Critical SW Headers in operation with pressure > 42 psig ▪ Verify at least one CCW Pump operating
	RO	Vital Auxiliaries – Air: **YES** ▪ Instrument Air Pressure > 85 psig
	BOP	PLACES left train CRHVAC in emergency mode: ▪ STARTS V-26A Air Filter Unit Fan ▪ ENSURES OFF: V-94, Purge Fan; V-47, Switchgear Exhaust Fan **Starting V-26A may not have to be done, depending if CHP has occurred**
	BOP	Verify BOTH of the following: **YES** ▪ At least one Condensate Pump operating ▪ At least one Cooling Tower Pump operating
	SRO	MAY direct isolating AFW to 'A' S/G

Op-Test No.: 1 Scenario No.: **THREE** Event No.: 7/8 Page **5** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	BOP	If directed to isolates AFW to 'A' S/G: ▪ SELECTS 'MANUAL' on FIC-0749, P-8A/B flow to S/G 'A' ▪ SELECTS 'MANUAL' on FIC-0737A, P-8C flow to S/G 'A' ▪ Ensuring/raising flow output to 100% on each controller ('RED' signal indicator to the full right position) ▪ CLOSES CV-0522B, Steam from 'A' S/G to P-8B, Turbine Driven AFW Pump
	RO	TRIPS ALL Primary Coolant Pumps due loss of CCW cooling
	SRO	▪ Performs Event Diagnostic Flow Chart per EOP-1.0, Attachment 1 ▪ Diagnoses EOP-6.0, Excess Steam Demand Event ▪ Performs EOP-6.0 strategy brief ▪ Establishes PCS pressure and temperature bands with RO ▪ Directs SE to perform Safety Function Status checks for EOP-6.0
	SRO	Directs performance of EOP Supplement 5, Checklist for Safeguards Equipment Following SIAS
	BOP	COMPLETES EOP Supplement 5
	SRO	Directs check to verify minimum SI flow per EOP Supplement 4, Pre-RAS Minimum HPSI Injection Flow
	BOP	CHECKS EOP Supplement 4
	SRO	Directs performance of EOP Supplement 6, Checklist For Containment Isolation and CCW Restoration
	BOP	COMPLETES EOP Supplement 6

Op-Test No.: 1 Scenario No.: **THREE** Event No.:7/8 Page **6** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
	SRO	May direct steaming unaffected S/G (B) to within 50 psi of affected S/G (A)
	RO	Begins steaming 'B' S/G: ▪ HIC-0780A, Steam Dump Controller, 'MANUAL' pushbutton PUSHED ▪ 'Slidebar' taken to the OPEN position
	SRO	May direct use of PZR Auxiliary Spray to lower PCS pressure
	RO	Refers to EOP Supplement 37, PZR Pressure Control Using Auxiliary Spray: ▪ ENSURE CV-1057 and CV-1059 switches in CLOSE ▪ ENSURE at least one charging pump in operation ▪ ENSURE OPEN HS-2111, Charging Line Stop ▪ ENSURE CLOSED MO-3072, Charging Pump Discharge to Train 2 ▪ OPERATE HS-2117, Aux. Spray CV-2117 keyswitch as desired
	SRO	Directs placing handswitches for Letdown Orifice Stop Valves to close
	RO	PLACES handswitches to CLOSE: ▪ HS-2003 (CV-2003) ▪ HS-2004 (CV-2004) ▪ HS-2005 (CV-2005)
	SRO	Directs isolating 'A' S/G per EOP Supplement 17, 'A' S/G ESDE Isolation Checklist
	BOP	Isolates 'A' S/G per Supplement 17: **(CRITICAL TASK PL-000 209 05 01)** ▪ CLOSE CV-0742, 'A' S/G Main Feed Reg Block Valve ▪ CLOSE S/G E-50A Blowdown Valves: CV-0767, CV-0771, and CV-0739

Op-Test No.: 1 Scenario No.: **THREE** Event No.:7/8 Page **7** of **7**

Event Description: ***EOP-1.0 actions/EOP-6.0 (larger ESDE)/SIAS/CHP Auto Failure***

Time	Position	Applicant's Actions or Behavior
		Simulator Operator: When instructed by BOP to isolate 'A' S/G outside the Control Room per Supplement 13, then perform the following:
		MS20 (PIDMS01) Main Steam Dump Manual Valve CA-0781, value = CLOSED
		MS21 (PIDMS01) Main Steam Dump Manual Valve CA-0782, value = CLOSED
		SG09 (PIDMS01) Manual Throttle Vlv MS-101 for CV-0782, value = 0
		SG11 (PIDMS01) Manual Throttle Vlv MS-103 for CV-0781, value = 0
		SRO: Emergency Classification Level: Unusual Event, FU1, Loss of Containment Barrier (Containment pressure GREATER THAN 4.0 psig with LESS THAN one full train of depressurization equipment operating)
		TERMINATE Scenario when 'A' S/G has been isolated per EOP Supplement 17 *OR* at the discretion of the Lead Examiner.