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 is tagged out for a coupling alignment and will be restored to operable in 4 hours. Shift orders are to alternate CCW Pumps to P-52A in service and P-52B/P-52C in standby.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	BOP (N)	Alternate operating CCW pumps
2	MS09B	BOP (C) SRO (C)	CV-0511, Turbine Bypass Valve Controller fails high; requires manual action to terminate steam demand (ONP-9)
3	ED45A	SRO (T)	D/G 1-1 inoperable (local overspeed trip device broken)
4	CW01A	SRO (C, T) BOP (C) RO (R)	P-39A, Cooling Tower Pump, trips (ONP-14) and rapid downpower (ONP-26)
5	RX23B	SRO (I) RO (I)	TYT-0200, T_{AVE}/T_{REF} Controller, Power Failure (ONP-13)
6	MS03A	SRO (C) RO (C)	'A' S/G Main Steam Line Leak inside Containment (small requiring a manual reactor trip)
7	MS03A	ALL (M)	ESDE inside Containment (ramped in at time of trip) (EOP-6.0)
8	CH05A CH05B	RO (I)	CHP Channels Auto Initiate Failure

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

- Reset to IC-17
- Ensure FIC-0210A set for 40-gallon dilution on Panel C-02
- ENSURE CCW Pump P-52C is in service, with P-52A and P-52B in STANDBY
- INSERT MF CH05A and CH05B (PIDCH01)
- 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
- Create Event Trigger 6: Event: rdsr(13)<100 Action: imf ms03a 7 (raises severity to 7%)

Event #	Remote or Trigger #	Instructions
2	**REMOTE 1**	**MS09B** (PID MS03) Turbine Bypass Valve Controller fail high
3	**REMOTE 2**	**ED45A** (PIDED08) Local Overspeed trip Lever for D/G 1-1 = **IN**
4	**REMOTE 3**	**CW01A** (PIDCW01) C/T Pump P-39A Trip
5	**REMOTE 4**	**RX23B** (PIDRX04), TYT-0200 power failure
6	**REMOTE 5**	**MS03A** (PIDMS01) 'A' S/G Main Steam Line Break Inside Containment; Severity value = 2%, 5 minute ramp
7	**TRIGGER 6**	Raises severity of steam rupture to 7%
8		ACTIVE AT SETUP (left and right CHP auto initiate failure)

Special instructions:

None

Scenario ONE - Turnover Information

The Plant is at 100% power. P-66B HPSI Pp. is tagged out for pump coupling alignment and it is estimated that it will be restored to operable in 4 hours (LCO 3.5.2.B.1 - 72 hrs (60 hours remaining). Shift orders are to alternate CCW Pumps to P-52A in service with P-52B and P-52C in standby.

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

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

Time	Position	Applicant's Actions or Behavior
SIMULATOR EVALUATOR: Ensure the Surrogate SE/SM directs the CRS to have the BOP perform this evolution.		
	BOP	Refers to SOP-16, section 7.3.6.
	BOP	Ensures locked open all available CCW pp. suction/discharge valves.
SIMULATOR OPERATOR: if asked as AO, report: • **MV-CC919 and MV-CC940, P-52A suction and discharge valves are locked open** • **MV-CC556, P-52A Vent, is opened and closed to vent air from the casing** • **Initial CCW Hx dPs are E-54A = 6.6 psid, E-54B = 6.8 psid.**		
	BOP	Verifies both CCW Heat Exchangers in operation.
	BOP	Starts P-52A by placing control switch to TRIP and then to START.
SIMULATOR OPERATOR: if asked as AO after starting P-52A report: • **CCW Hx dPs are: E-54A = 14.1 psid, E-54B = 14.2 psid.**		
	BOP	Stops P-52C by placing control switch to TRIP.
SIMULATOR OPERATOR: if asked as AO after starting P-52A report: • **CCW Hx dPs are: E-54A = 6.8 psid, E-54B = 6.5 psid.**		
	BOP	Places P-52C in standby: • Depress amber STANDBY button above handswitch • Verify amber light is LIT
	BOP	May request final reading on CCW Heat Exchangers differential pressure, but not required.
When directed by the Lead Examiner, <u>INSERT REMOTE #1</u>		

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **2** 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 • 'Fail' light on PIC-0511 lit Possible alarms including: • Nuclear Power / ΔT, EK-0603, 4, 7, 8, Rack D (if TBV is open long enough) • Charging Pump Seal Cooling Low Pressure, EK-0734, due to charging pump starting on lowering PZR level (if TBV is allowed to stay open long enough)
	SRO	Enters and directs the actions of ONP-9, "Excessive Load Increase" May review trip criteria of ONP-9
	BOP	Manually closes the TBV: • Places controller PIC-0511 to Manual • Lowers output signal to zero • May direct AO to isolate
	SRO BOP	Reduce turbine load to restore reactor power to pre-event power level or less. (Not required if TBV is manually closed.)
	SRO	Initiate troubleshooting/repair
At the discretion of the Lead Examiner, <u>INSERT REMOTE #2</u>		

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

Event Description: ***D/G 1-1 Inoperable (broken overspeed trip device)***

Time	Position	Applicant's Actions or Behavior
	BOP	Respond to alarms: • EK-0551, D/G 1-1 Trouble • EK-0552, D/G 1-1 Start Signal Blocked
	SRO	Enters and directs the actions of ARP-3.

NOTES:

1. Simulator Operator call Control Room as Aux Operator and report that a contractor inadvertently hit a lever on the side of D/G 1-1 (overspeed trip lever) with a scaffolding pole.

2. When asked as AO to reset overspeed trip lever, inform Control Room that linkage is broken and will need repair (cannot be reset as-is).

	SRO	Determines the following Tech Spec Actions apply • 3.8.1.B.1: Directs offsite source check within 1-hour • 3.8.1.B.3.1: Determines no common cause failure within 24 hours • 3.8.1.B.4: Restore D/G 1-1 to operable status within 7 days
	SRO	Contact maintenance to initiate troubleshooting and repairs.
	SRO	Direct performance of offsite source checks per SR 3.8.1.1.
	BOP	Performs offsite source check per SR 3.8.1.1.

At the discretion of the Lead Examiner, <u>INSERT REMOTE #3</u>

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **4** Page **1** of **3**

Event Description: ***P-39A Cooling Tower Pump Trip***

Time	Position	Applicant's Actions or Behavior
	BOP/SRO	Diagnoses that P-39A has tripped: • EK-3522, "CLG TWR PUMP P-39A TRIP" • P-39A red light OUT, green light ON • P-39A ammeter reads ZERO • Possible lowering trend on Main Condenser vacuum.
	SRO	Enters and directs the actions of ONP-14, Loss of Condenser Vacuum and ONP-26, Rapid Downpower. • Reviews trip criteria of ONP-14 • Reviews trip criteria of ONP-26
	SRO/RO/ BOP	Initiate a rapid downpower to approximately < 55% at a rate of ≤ 300% per hour, as directed by ONP-14 and as controlled by ONP-26, Rapid Downpower.
	RO	INSERTS Group 4 Control Rods 10 inches: • Rod Control Switch operated to INSERT Group 4 control rods 10 inches
	BOP	Stabilize power at < 55% as specified by SRO. • COMMENCE turbine load reduction in Operator Auto using RUNBACK at a rate ≤ 300%/hour at the DEH panel, as ordered by the Control Room Supervisor: ○ DEPRESS “Control Setpoint” pushbutton ○ SELECT “300%/hour” (or rate specified by CRS) by either typing in number for rate or utilizing programmable pushbuttons (yellow) ○ DEPRESS “Runback to 5%” pushbutton ○ VERIFY Governor valves closing

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **4** Page **2** of **3**

Event Description: ***P-39A Cooling Tower Pump Trip***

Time	Position	Applicant's Actions or Behavior
	RO	Stabilize power at < 55% as specified by SRO. MAINTAIN T_{AVE} within 5°F of T_{REF} during the rapid power reduction by regulating rod insertion and/or boration. For Control Rod manipulations: • Operates Rod Control Switch to INSERT Group 4 Regulating Rods in increments specified by CRS • MONITORS reactor power and T_{AVE} For Boration: • RESET PMW and BA Controllers if required • SET quantity and batch flow limit on FIC-0201B, BA flow controller • SET quantity and batch flow limit on FIC-0210A, PMW flow controller • START P-56B (preferred) OR P-56A, Boric Acid Pump • OPEN CV-2155, Make Up Stop Valve • PUSH start pushbutton on FIC-0210B • VERIFIES FIC-0210B output signal at zero when boration complete • PUSH start pushbutton on FIC-0210A • VERIFIES FIC-0210A output signal at zero when flush complete • CLOSES CV-2155 • MONITORS reactor power and T_{AVE} **Note: This will take some time to stabilize; i.e., crew will slow rate of power reduction significantly when vacuum starts to stabilize**.
	SRO	Refers to and implements the following Tech Spec LCOs: • 3.1.6.A, 2-hour action to restore rods above PDIL
	BOP	Performs ONP-14, Attachment 1 to control 'A' Cooling Tower basin level and maintain cooling to the affected waterbox. • THROTTLE P-39A Waterbox Inlet, MO-5301 • ENSURE CLOSED Dilution Water Pump Discharge to Mixing Basin, MO-5311 • ENSURE OPEN Dilution Water Pump Discharge to Cooling Towers, MO-5313 and MO-5315 • ENSURE CLOSED Cooling Tower Blowdown Valve, MO-5326A • May throttle closed 'B' Cooling Tower Condenser Inlet, MO-5302, to lower level in the 'B' Cooling Tower

Op-Test No.: **1** Scenario No.: **ONE** Event No.: **4** Page **3** of **3**

Event Description: ***P-39A Cooling Tower Pump Trip***

Time	Position	Applicant's Actions or Behavior
	RO	May need to balance Group 4 control rods. • PLACE Rod Selector Switch in the position for the rod to be moved • TURN Group Selector Switch to the position for the group containing the rod to be moved • PLACE Mode Selector Switch to MI (Manual Individual) position • PERFORM the following to reposition the rod: ○ OPERATE the Raise-Lower Switch ○ MONITOR Nuclear Instruments and T_{AVE} closely while repositioning rod ○ IF necessary to maintain power level, THEN STOP single rod motion AND COMPENSATE with Regulating Rods • PLACE the Group Selector Switch to desired position • PLACE the Mode Selector Switch in MS (Manual Sequential) position or as directed by the Shift Manager
	BOP	May place one Main FW pp. to MANUAL at minimum speed per SRO direction.
After power has been lowered to 55% *OR* at the discretion of the Lead Examiner, INSERT REMOTE #4		

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

Event Description: ***TYT-0200 Power Failure (ONP-13)***

Time	Position	Applicant's Actions or Behavior
	RO/BOP	Diagnose loss of TYT-0200: • T_{AVE} indicates minimum (approx 515°F) • 'B' PZR Level Controller goes to maximum Letdown signal • P-55A Charging pump speed lowers to minimum • All three Letdown Orifice Stop Valves open • Major Alarms: o EK-0761, Pressurizer Level HI-LO o EK-0924, Group 1 PDIL o EK-0967, Loop 1 Loop 2 Tave Deviation
	SRO	Enters ONP-13, "T_{AVE} /T_{REF} Controller Failure" • DIRECTS "AVG TEMP DISPLAY SELECT" Switch on Panel C-02 to "LOOP 1" position
	RO	• PLACES "AVG TEMP DISPLAY SELECT" Switch on Panel C-02 to "LOOP 1" position • ENSURES Pressurizer Level Control program level and Charging/Letdown components return to normal programmed level operation
	SRO	COMPARE ΔT Power for PIP Node and SPI Node/Host Computer on a workstation to actual Reactor Power: • PIP Node power = POWER_PIP_DELTA_T • SPI system power = POWER_SPI_DELTA_T IF a ΔT Power value is < actual Reactor Power by more than 4%, THEN that Node shall be declared INOPERABLE for PDIL monitoring.
After CRS has briefed on loss of TYT-0200 OR at the discretion of the Lead Examiner, <u>INSERT REMOTE #5.</u>		

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

Event Description: ***'A' S/G Steam Leak Inside Containment***

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: o EK-1148, Fire System Panel C-47, C-47A/B or C-49 Off Normal o EK-1344, Containment Air Cooler VHX-2 Dry Pan HI Level o EK-1346, Containment Air Cooler VHX-4 Dry Pan HI Level o EK-1362, Containment Pressure Off Normal
	RO/BOP	No Operator actions apply for EK-1148, EK-1344, EK-1346, and EK-1362, for ESDE
	SRO	Enters ONP-9, Excessive Load • DIRECTS Plant trip based on load exceeding 1% change in Power
	RO	DEPRESSES Panel Reactor Trip Pushbutton on Panel C-02
	BOP/RO	PERFORM immediate actions of EOP-1.0, Standard Post Trip Actions

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	RO	When Containment pressure reaches 4.0 psig, PERFORMS the following per EOP-1.0 Immediate Actions (attached): • DEPRESS Containment Hi Rad actuation pushbuttons, CHR-L and CHR-R (push buttons will not work) • CLOSE MSIVs (CV-0501 and 0510) • CLOSE CCW to/from Containment isolation valves, CV-0910, 0911 and 0940 • ENSURE closed FRVs and FRV Bypass Valves • DEPRESS Left and Right Channel SI Initiate pushbuttons • ENSURE ALL available HPSI and LPSI pumps operating with associated loop isolation valves open • ENSURE Containment Air Coolers in accident mode • ENSURE operating all CAC 'A' Fans • OPEN Containment Spray Valves, CV-3001/3002 • START Containment Spray Pumps, P-54A/B/C **(CRITICAL TASK PL-000 433 05 01)**
	SRO	Commence EOP-1.0 verbal verifications.
	RO	Reactivity Control: • Reactor power lowering **YES** • negative SUR **YES** • maximum of one control rod not inserted **YES**
	BOP	Main Turbine Generator criteria: • Main Turbine tripped **YES** • Generator disconnected from grid **YES**

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	BOP	Feedwater criteria: • PLACES MFP Controller to 'MANUAL' and RAMPS to minimum speed: **YES** (However, MSIVs are closed due to no steam to MFPs) • Main FRV and B/Ps CLOSED **YES**
	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% and trending toward 42% - 57% **NO** Applicable Contingency Actions: o Ensure all orifice stop valves are closed o Ensure all available charging pumps are operating • PCS 25°F subcooled **YES**
	RO	PCS Pressure Control: • PZR pressure 1650 to 2185 psia and trending toward 2010 to 2100 psia **NO** Applicable Contingency Actions: o Manually operates PZR heaters and spray; heaters will be off due to low PZR level, spray valves closed o 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 • If PCS pressure is < 1300 psia, stops two PCPs (one in each loop) (may already be stopped due to loss of CCW to Containment)

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	RO	Core Heat Removal: May secure ALL PCPs due to loss of CCW for cooling • At least one PCP operating: **YES or NO** (depends on timing) o If NO, there is no contingency • Verify Loop ΔT less than 10°F: **NO** (No Contingency Actions) • Verify PCS at least 25°F subcooled: **YES**
	BOP	PCS Heat Removal: • Verify at least one S/G has level between 5% to 70% with Feedwater available to maintain S/G level **YES** • Verify T_{AVE} between 525°F and 540°F **NO** If T_{AVE} is less than 525°F: o ENSURE FW flow is NOT excessive o RESTORE T_{AVE} between 525°F and 540°F using Turbine Bypass Valve (preferred) or Atmospheric Steam Dump Valves • Verify BOTH S/G pressures between 800 psia and 970 psia **NO** If <800 psia: o ENSURE Turbine Bypass Valve is closed o ENSURE Atmospheric Steam Dump Valves are closed o CLOSE BOTH MSIVs: CV-0510 (‘A’S/G) and CV-0501 (‘B’ S/G): places one handswitch to CLOSE momentarily and back to OPEN If <500 psia, ENSURE CLOSED the following valves: o BOTH MSIVs, CV-0510 (‘A’ S/G) and CV-0501 (‘B’ S/G) o CV-0703, ‘B’ S/G Main Feed Reg Valve o CV-0734, ‘B' S/G Bypass Feed Reg Valve
	SRO	MAY direct isolating AFW to ‘A’ Steam Generator

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	BOP	If directed to isolate 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: • Containment pressure < 0.85 psig **NO** • Applicable Contingency Actions (> 4 psig): o DEPRESS Containment Hi Rad actuation pushbuttons, CHR-L and CHR-R (push buttons will not work) o CLOSE MSIVs (CV-0501 and 0510 and CCW to/from Containment isolation valves, CV-0910, 0911 and 0940 o ENSURE closed FRVs and FRV Bypass Valves o DEPRESS Left and Right Channel SI Initiate pushbuttons o ENSURE ALL available HPSI and LPSI pumps operating with associated loop isolation valves open **(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 corroborated 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.: **ONE** Event No.: **7/8** Page **5** of **7**

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	RO	Containment Atmosphere: • Containment temperature < 125°F **NO** • Containment Pressure < 0.85 psig **NO** • Applicable Contingency Actions (> 4 psig): o ENSURE Containment Air Coolers in accident mode o ENSURE operating all CAC 'A' Fans o OPEN Containment Spray Valves, CV-3001/3002 o START Containment Spray Pumps, P-54A/B/C **(CRITICAL TASK PL-000 433 05 01, If not previously done)**
	RO	Vital Auxiliaries – Water: • Verify at least two Service Water Pumps operating **YES** • Verify BOTH Critical SW Header Pressures greater than 42 psig **YES** • Verify at least one CCW Pump operating **YES**
	RO	Vital Auxiliaries – Air: • Instrument Air header pressure greater than 85 psig **YES**
	SRO	• DIRECTS performance of EOP Supplement 6, Checklist For Containment Isolation and CCW Restoration • DIRECTS performance of EOP Supplement 5, Checklist for Safeguards Equipment Following SIAS
	BOP	PERFORMS EOP Supplement 5 and Supplement 6
	BOP	Verifies BOTH of the following: • At least one Condensate Pump operating • At least one Cooling Tower Pump operating

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	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 • May follow-up with SOP-24 verification
	ALL	Diagnose 'A' S/G as affected
	SRO	Directs isolating AFW to ‘A’ S/G (if not already done)
	BOP	When directed, isolates AFW to ‘A’ S/G (if not already done): • 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 an ESDE and enters EOP-6.0, Excess Steam Demand Recovery
	SRO	DIRECTS 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 • Manual control level taken to the OPEN position • MONITORS S/G pressures and cooldown rate
	SRO	DIRECTS SE to perform Safety Function Status checks for EOP-6.0

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

Event Description: ***'A' S/G ESDE Inside Containment/Failure of Auto CHP***

Time	Position	Applicant's Actions or Behavior
	RO	Commences emergency boration (may have been automatically started by Safety Injection actuation): • STARTS Boric Acid Feed Pumps, P-56A/B • OPENS Pumped Feed Valve, MO-2140 • OPENS Boric Acid Gravity Feed Valves, MO-2169/2170 • CLOSES VCT Outlet, MO-2087 • CLOSES SIRWT to Charging Pumps, MO-2160 (may re-open if VCT level is low)
	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
	SRO	Directs EOP Supplement 4, HPSI flow verification, completed.
	SRO	DIRECTS isolating 'A' S/G per EOP Supplement 17, 'A' S/G ESDE Isolation Checklist
	BOP	Isolates 'A' S/G per Supplement 17: • 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 (may be performed in EOP supplement 6) • DIRECTS Auxiliary Operator to isolate 'A' S/G per EOP Supplement 17 **(CRITICAL TASK PL-000 209 05 01)**

Simulator Operator: When instructed by BOP to isolate 'A' S/G outside the Control Room per Supplement 17, then perform the following:
MS20 (PIDMS01) Main Steam Dump Manual Valve CA-0781, value = CLOSE
MS21 (PIDMS01) Main Steam Dump Manual Valve CA-0782, value = CLOSE
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: NONE

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

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

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: 3% power, Main Turbine is at 1800 rpm. P-10B, Heater Drain Pump, is out of service for packing repair.

Turnover: Shift orders are to synchronize Turbine to the grid and then raise power to 25% at 12% per hour.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	SRO (N) BOP (N)	Synchronize Turbine to Grid
2	N/A	SRO (N) RO (R) BOP (N)	Raise power to 25% at 12%/hr
3	RM08G	SRO (T) RO (C)	RIA-1811, West ESG Rm Ventilation Radiation Monitor failure
4	P-40A-1	SRO (C, T) BOP (C)	P-40A, Dilution Water Pump, trip/breaker failed
5	ED38A	SRO (C) RO (C) BOP (C)	D11-1, DC Bus, fuse failure (ONP-2.3)
6	RC04	ALL (M)	LOCA (requires reactor trip)
7	ED38A	BOP (C)	Main Generator Bkr Auto Open Failure
8	RD16	RO (C)	Two stuck Control Rods (EOP-9.0)

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

Scenario TWO - Simulator Operator Instructions

- Reset to IC-13, 3% power MOL IC.
- INSERT RF FW36 (PIDFW02) P-10B Heater Drain Pump Breaker, Final Value = Rackout
    - Hang Caution Tag on P-10B Handswitch
- Place both Feed Reg Bypass Valves in Auto.
- Ensure FIC-0210A set for 40-gallon dilution on Panel C-02
- INSERT MFs RD16-05 and RD16-20 (PIDRD02) Control Rods #5 and #20, Final Value = 5-Stuck

Event #	Remote or Trigger #	Instructions
1		No actions required.
2		No actions required.
3	**REMOTE 1**	**RM08G** (PID RM04) Low Rad West Eng SFGD Vent Monitor RIA-1811
4	**REMOTE 2**	**P-40A-1** (DWS P-40A Selector Stop) to ON (= trips P-40A) **P-40A-W** (P-40A white light) to OFF **P-40A-G** (P-40A green light) to OFF
5	**REMOTE 3**	**ED38A** (PIDED14) D-11-1 DC Bus Fuse Failure
6	**REMOTE 4**	**RC04** (PIDRC01) Severity = 60 (600 gpm LOCA)
7/8		No actions required.

Special instructions:

- ***Prepare copy of GCL-4 completed through step 4.1.***
- ***Prepare copy of GCL-5 completed through step 2.3.***
- ***Prepare copy of SOP-8 section 7.1.3 completed through step 7.1.3.a.***

Scenario TWO - Turnover Information

The Plant is at 3% power, MOL. Procedure currently in use is GOP-4, “MODE 2 to MODE 1.” GCL-4 is completed through step 4.1. P-10B, Heater Drain Pump, is out of service for packing repair. Shift orders are to synchronize Turbine to grid per GCL-4 and then raise power to 25% at 12% per hour.

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

Event Description: ***Synchronize Turbine to Grid***

Time	Position	Applicant's Actions or Behavior
	SRO	Directs establishing prior to synchronization conditions per GCL-4 step 4.2: • Reactor Power ≤ 13% power • T_{AVE} ≤ 540°F • PIC-0511, TBV Controller output signal > 55% (preferred 75%) • Specifies amount of Control Rod movement allowed to RO
	RO	Manipulates Control Rods to establish pre-synchronization conditions: • Operates Rod Control Switch to WITHDRAW Group 4 Regulating Rods in increments specified by CRS • MONITORS reactor power and T_{AVE}
Simulator Operator: a. If contacted as AO to place the Main Transformer cooling in service, after about 10 minutes report that it has been done (not modeled on simulator.) b. If contacted as AO to verify that the "loss of sensing module" inside the Voltage Regulator cabinet is reset, after 3 to 5 minutes report that it is reset. c. If contacted as System Control, grant permission for Palisades to synchronize.		
	BOP	Places Voltage Regulator in service • CLOSE Field Breaker using 341/CS, Turbine Gen Exciter Field Circuit Breaker • ADJUST 370DC/CS, Voltage Regulator Manual Control Switch, to raise Generator Terminal Voltage to between 21.8 kV to 22.2 kV. Do NOT exceed 23.1 kV • PLACE position 390CS, Voltage Regulator Control Switch, in TEST • OPERATE 390AC/CS, Voltage Regulator Automatic Control Switch, to change the Regulator Balance Meter indication to +5 and -5 volts to verify Voltage Regulator is operable • ADJUST 390AC/CS, Voltage Regulator Automatic Control Switch, to zero the Regulator Balance Meter • PLACE 390CS, Voltage Regulator Control Switch, in ON position • Contacts AO to verify Voltage Regulator "loss of sensing module" is reset • Notifies System Control of impending synchronization • Ensures NCOR ready to synchronize

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

Event Description: ***Raise power to 25%***

Time	Position	Applicant's Actions or Behavior
	BOP	Synchronizes T/G to grid as follows: • ENSURE OPEN 25F7, Generator Output Breaker • ENSURE OPEN 25H9, Generator Output Breaker • ENSURE CLOSED MOD-26H5, Main Transformer Line Disconnect • ENSURE Reactor Operator ready to raise load • ADJUST turbine speed using the Setter to get the Sync Scope turning slowly in the clockwise (fast) direction • ENSURE the Valve Position Limiter is at approximately 10% • ENSURE PIC-0511, Turbine Bypass CV-0511, is in AUTO with a setpoint of 900 psi • CLOSE 25F7, Generator Output Breaker, using 452-25F7CS, ACB 25F7 Control Switch, as the Sync Scope nears "1200" hours • VERIFY 25F7, Generator Breaker, closed light is ON • VERIFY CLOSED (locally) all three phases on 25F7, Generator Breaker. (Requires AO in switchyard to visually observe all three (3) targets indicate RED) • TURN 425-25F7SS, ACB 25F7 Synchronizing Switch to OFF. • ENSURE Generator is loaded to at least 20 MW • VERIFY CLOSING of Turbine Bypass Valve on PIC-0511, Turbine Bypass Control • TURN 425-25H9SS, ACB 25H9 Synchronizing Switch to ON • CLOSE 25H9 Generator Breaker, using 452-25H9CS, ACB 25H9 Control Switch • VERIFY 25H9, Generator Breaker, closed light is ON • VERIFY CLOSED (locally) all three phases on 25H9, Generator Breaker. (Requires AO in switchyard to observe all three (3) targets indicate RED) • TURN 425-25H9SS, ACB 25H9 Synchronizing Switch to OFF • Verifies Generator Hot Gas and Cold Gas delta-T are within limits • Notifies Secondary AO that plant is on line and to prepare to monitor secondary side parameters as load is raised

Simulator Operator: If contacted as AO in the Switchyard to verify that all three phases of generator output breakers 25F7 and 25H9 are closed, after 3 minutes report that all three phases are closed.

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

Event Description: ***Raise power to 25%***

Time	Position	Applicant's Actions or Behavior
	SRO	Direct setup of DEH for power escalation at 12%/hr.
	BOP	Operates turbine generator on the DEH panel for power escalation @ 12% per hour: • ENTERS setter value • SELECTS rate of 12% 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 Dilutions: • RESET PMW and BA Controllers if required • 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: • Operates Rod Control Switch to WITHDRAW Group 4 Regulating Rods in increments specified by CRS • MONITORS reactor power and T_{AVE}

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

Event Description: ***Raise power to 25%***

Time	Position	Applicant's Actions or Behavior
	BOP	• Starts Cooling Tower Fans as necessary o PUSH individual button for desired fan (s) o PUSH START Command Button on selected fan controls • Directs AO to open MSR 1" purge valves at 10% power • VERIFIES EK-06, Rack D Window 2, LOSS OF LOAD TRIP CHANNEL BYPASS, bypass clears at about 15% power • VERIFIES EK-06 Rack D Window 6, RATE TRIP CHANNEL ENABLED, clears at about 15% power

SIMULATOR OPERATOR:
a. If contacted as AO to open 1-inch MSR purge valves, after about 5 to 10 minutes, report that it is done (not modeled.)
b. If contacted as AO to vent Hydrogen Coolers, after about 5 to 10 minutes, report that it is done (not modeled.)

	BOP	• Directs AO to vent Hydrogen Coolers at about 15% power (if time permits)

SIMULATOR OPERATOR:
a. If contacted as AO to vent Hydrogen Coolers, after about 5 to 10 minutes, report that it is done (not modeled.)

At the discretion of the Lead Examiner, <u>INSERT REMOTE #1</u> (NOTE: there is a five-minute time delay until alarm will actuate).

Op-Test No.: **1** Scenario No.: **TWO** Event No.: **3** 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 alarms: • EK-1371, Rad Monitor Sys Ckt Failure
	RO	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 Dampers.
	RO	Refer to ARP-8 and SOP-38 (no applicable actions). Take actions as directed by SRO from LCO 3.3.10.A.1: • PLACE keyswitch to CLOSE for West ESS Room Damper PO-1811 • 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		
Evaluator Note: RIA-1811 reading is in Orange = INVALID		
	SRO	May refer to ODCM. Item number 6 of Table A-1 specifies that if either channel fails low or is otherwise inoperable, the ventilation dampers associated with that channel shall be closed immediately and action shall be taken to have the affected channel repaired. (This is identical to action statement in LCO 3.3.10.A.1.)
After CRS has briefed on West ESS Room ventilation rad monitor OR at the discretion of the Lead Examiner, <u>INSERT REMOTE #2</u>		

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

Event Description: ***Dilution Water Pump P-40A Trip***

Time	Position	Applicant's Actions or Behavior
	BOP SRO	Diagnoses Dilution Water Pump P-40A trip: • P-40A red light OFF, green light OFF, white light OFF • P-40A amps are ZERO • Notes 'A' Cooling Tower level lowering • EK-3518, Dilution Wtr Pump P-40A Trip
	BOP	THROTTLE OPEN MO-5305 (Cooling Tower Pp. P-39A discharge) to maintain cooling tower basin level.
	BOP	Supply both Water Boxes from P-40B per SOP-14, section 7.3.5: • ENSURE CLOSED MO-5313, P-40A/B Disch to E-30A Makeup/Fill • ENSURE CLOSED MO-5315, P-40A/B Disch to E-30A Makeup/Fill • SLOWLY OPEN MV-CW735, Dilution Water Pumps P-40A/B Disch Xconn (call to AO) • SIMULTANEOUSLY THROTTLE OPEN MO-5315, P-40A/B Disch to E-30A Makeup/Fill, for a total of 15-20 seconds AND THROTTLE CLOSED MO-5316, P-40A/B Disch to E-30B Makeup/Fill • CONTACT chemistry to obtain Cooling Tower samples
SIMULATOR OPERATOR: If directed to open MV-CW735, use CW19 (PIDCW02), value = 100		
	SRO	May order Main Turbine placed in HOLD.
	BOP	DEPRESS HOLD on Main Turbine if directed.
	SRO	Notify Chemistry or RMC concerning degraded dilution capability.
	SRO	Notify AO and Work Week Mgr to investigate P-40A and breaker.
SIMULATOR OPERATOR: Call CRS as AO and inform that P-40A breaker 152-102 has no control power light and there is a smell of burnt insulation from breaker. **SIMULATOR OPERATOR: When asked, inform CRS that P-40B discharge pressure is 11 psig.**		
	SRO	Determines that LCO 3.4.9.B.1, 72 hours to restore to OPERABLE status, applies for P-40A breaker 152-102 being inoperable.
NOTE: After CRS has determined LCO *OR* at the discretion of the Lead Examiner, INSERT REMOTE #3.		

Op-Test No.: **1** Scenario No.: **TWO** Event No.: **5** Page **1** of **3**

Event Description: ***DC Bus D11-1 Fuse Failure***

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	Respond to numerous alarms • May enter Transient alarm response Key alarms: • EK-0523, BUS TRANSFER CONTROL CKT UNDERVOLTAGE • EK-0529, STARTUP TRANSFORMER PROT CKT UNDERVOLTAGE
	SRO	Enters ONP-2.3 “Loss of DC Power”
	SRO RO BOP	Crew diagnoses loss of D11-1 per ONP-2.3 Attachment 2: • CV-0510 Pos. Ind. Lights OFF • K-7A Trip Power Light ON • Bus 1A "Control Power" Light OFF
	RO	IF necessary or desired to shutdown P-8B, THEN direct AO to MANUALLY CLOSE CV-0522B, K-8 Normal Steam Supply, using SOP-12, “Feedwater System,” Attachment 9, "CV-0522B Manual Operation," to stop P-8B.
SIMULATOR OPERATOR: IF directed as AO to manually close CV-0522B, use FW16B on PID FW01.		
	RO	ENSURE CLOSED the following Letdown Orifice Stop Valves: • CV-2003 • CV-2004 • CV-2005
	RO	• CONTROL Pressurizer level manually, as required by stopping P-55A Charging Pump • CONTROL Pressurizer pressure manually, as required • ENSURE OPEN CV-2191, Pri Coolant Pp Controlled Bleedoff Stop

Op-Test No.: **1** Scenario No.: **TWO** Event No.: **5** Page **2** of **3**

Event Description: ***DC Bus D11-1 Fuse Failure***

Time	Position	Applicant's Actions or Behavior
	RO	STOP all Auxiliary Building ventilation • PLACE in TRIP position, the standby Main Exhaust Fan • PLACE Engineered Safeguards Vent Dampers to the CLOSE position, HS-1810A (Key 310) and HS-1811A (Key 311) • Stop the following fans:

Fans	Description
V-70A or V-70B	Fuel Handling Area Exhaust Fan
V-69	Fuel Handling Area Supply Fan
Remaining V-70	Fuel Handling Area Exhaust Fan
V-68A or V-68B	Radwaste Area Exhaust Fan
V-67	Radwaste Area Supply Fan
Remaining V-68	Radwaste Area Exhaust Fan
V-8A or V-8B	Fuel Handling Area Exhauster
V-7	Fuel Handling Area Supply Fan
Remaining V-8	Fuel Handling Area Exhauster
V-14A or V-14B	Radwaste Area Exhauster
V-10	Radwaste Area Supply Fan
Remaining V-14	Radwaste Area Exhauster
V-6A or V-6B	Main Exhaust Fan

SIMULATOR OPERATOR: IF asked, inform Control Room that PO-1817, Dirty Waste Tank Room Ventilation damper, is closed

	SRO	NOTIFY Radiation Protection that Aux Bldg Ventilation is Shutdown, and to monitor Control Room radiation levels.

Op-Test No.: **1** Scenario No.: **TWO** Event No.: **5** Page **3** of **3**

Event Description: ***DC Bus D11-1 Fuse Failure***

Time	Position	Applicant's Actions or Behavior
	SRO	Direct more frequent monitoring of the following: • MFW Suction Pressure • T-5, Moisture Separator and Heater Drain Tank, level • P-10A and P-10B, Heater Drain Pumps
	BOP	PLACE one train of Control Room HVAC in Emergency Mode • PLACE the desired Air Filter Unit Fan handswitch to ON o V-26A or V-26B • ENSURE the remaining component status in at least one Train:

COMPONENT NAME	COMPONENT NUMBER TRAIN "A"	TRAIN "B"	POSITION
Filter Heater	VHX-26A	VHX-26B	ON
Discharge Damper	D-5	D-12	OPEN
Recirculation Damper	D-6	D-13	OPEN
Modulating Damper	D-20	D-21	MODULATING
Air Filter Unit Fan	V-26A	V-26B	ON
Recirculation Damper	D-3	D-10	OPEN
Discharge Damper	D-4	D-11	OPEN
Air Handling Unit Fan	V-95	V-96	ON

• ENSURE OFF Purge Fan V-94
• ENSURE OFF Switchgear Exhaust Fan V-47

	SRO	Conduct Crew Brief for loss of D11-1 affects and potential future contingency actions per ONP-2.3 Attachment 6.

NOTE: After CRS has conducted loss of DC Brief *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: ***LOCA (requires reactor trip)***

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	Diagnose PCS leak: Indications from PPC: • Containment Gas Radiation Monitor rising • Containment Sump level rising • Containment Sump fill rate rising • Charging line flow rising • P-55B Charging Pump Start (may occur) Major alarms: • EK-0734, Charging PP Seal Cooling LO Press (if P-55B starts)
	SRO	Enters ONP-23.1 “PCS Leak” • Determines that PCS leak rate is greater than 10 gpm • Directs a reactor trip
	RO	TRIPS reactor by depressing reactor trip pushbutton at Panel C-02. **(CRITICAL TASK PL-343 223 05 01)**
	RO/BOP	Perform EOP-1.0 immediate actions

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	BOP	Informs SRO that Main Generator is not disconnected from grid, CONTINGENCY ACTION: • Connect jumper between terminals 1 and 10 on Relay 487U (Y phase) (on back of C-04 in simulator) **(CRITICAL TASK PL-000 059 05 01)**
EVALUATOR: Electrical Safety precautions for connecting jumper are all natural fiber clothing.		
SIMULATOR OPERATOR: IF BOP does not perform above action, THEN call CRS as System Control and inform that they are still showing 80 Mw coming from Palisades.		
	RO	Informs SRO that two controls rods are not fully inserted, CONTINGENCY ACTION: • Commences emergency boration ○ STARTS Boric Acid Pump, P-56A ○ OPENS MO-2140, Boric Acid Pump Feed Isolation ○ VERIFIES Charging Flow greater than 33 gpm (may need to start a Charging Pump) **(CRITICAL TASK PL-000 024 05 01)**
	SRO	Commences EOP-1.0 verbal verifications
	RO	Reactivity Control: • Reactor power lowering: **YES** • Negative SUR: **YES** • Maximum of one control rod not inserted: **NO (two rods stuck out)** (Emergency Boration is in progress)

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	BOP	Main Turbine Generator criteria: • Main Turbine tripped: **YES** • Generator disconnected from grid: **YES, but Contingency Action taken to trip generator breakers due to loss of D11-1**
	BOP	Feedwater criteria: • PLACES Main FWP Controllers to 'MANUAL' and RAMPS to minimum speed: **YES** • PLACES Main FW Controllers to 'MANUAL,' Main FRV and B/Ps CLOSED: **YES**
	BOP	Main Vital Auxiliaries-Electric: • Buses 1C and 1D energized: **YES** • Bus 1E energized: **NO (due to SIAS)** • Bus 1A and 1B energized: **YES** • Y-01 energized: **YES** • Six DC Buses energized: **NO (D11-1 de-energized)** • 3 of 4 Preferred AC Buses energized: **YES**
	RO	PCS Inventory Control: • PZR level 20% - 85% and trending toward 42% - 57%: **YES/NO** (depends on conditions) • Contingency Action ○ Verify max Charging and min Letdown • PCS 25°F subcooled: **YES/NO** (Depends on timing: by T_Cs) • No Contingency Actions

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	RO	PCS Pressure Control: • PZR pressure 1650 to 2185 psia and trending toward 2010 to 2100 psia: **NO** • Contingency Actions: o Manually operates PZR heaters and spray; heaters will be off due to low PZR level, spray valves closed o 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 o At <1300 psia, Trip two PCPs (one in each loop) o At < minimum pressure for PCP operations, trips last two PCPs
SIMULATOR OPERATOR: IF called to locally trip P-50A/C, use RC30/RC32 (PID RC03/RC05) Final Value to RACKOUT		
	RO	Core Heat Removal: • At least one PCP operating: **YES** • Verify Loop ΔT less than 10°F: **YES** • Verify PCS at least 25°F subcooled: **YES/NO** (Depends on timing: by T_Cs)

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	BOP	PCS Heat Removal: • Verify at least one S/G has; level 5% - 70%; Feedwater available: **YES/NO** (may be >70% if P-8B was not secured) For High level, reduce FW flow to affected S/G • Verify T_{AVE} 525°F - 540°F: **YES/NO** (depends on timing) If T_{AVE} is less than 525°F: o ENSURE FW flow is NOT excessive o RESTORE T_{AVE} between 525°F and 540°F using Turbine Bypass Valve (preferred) or Atmospheric Steam Dump Valves • Verify BOTH S/G pressures 800 psia – 970 psia: **YES/NO** (depends on timing) If <800 psia: o ENSURE Turbine Bypass Valve is closed o ENSURE Atmospheric Steam Dump Valves are closed o CLOSE BOTH MSIVs: CV-0510 (‘A’S/G) and CV-0501 (‘B’ S/G): places one handswitch to CLOSE momentarily and back to OPEN

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	RO	Containment Isolation: • Containment pressure < 0.85 psig **NO** • Applicable Contingency Actions: (> 4 psig) o ENSURE EK-1126 (CIS Initiated) OR PUSH High Radiation Pushbuttons on Panel C-13 o ENSURE CLOSED: Both MSIVs (MO-0510 and MO-0501); Main FRVs; Main FRV Bypasses; CCW Isolation Valves o ENSURE EK-1342 (Safety INJ Initiated) OR PUSH left and right Injection Initiate pushbuttons on Panel EC-13 o ENSURE all available HPSI and LPSI Pumps operating with associated loop isolation valves open
EVALUATOR Note: CV-0510 lights off due to loss of D11-1 and CV-0910 and CV-0940 lights off due to loss of D11-1, valves fail open		
	BOP	Containment Isolation: • Verify Containment Area Monitor alarms clear and no unexplained rise: **YES/NO** (Depends on timing: All four in alarm, not corroborated with High Range Gamma Monitors) • Verify Condenser Off Gas Monitor alarm clear and no unexplained rise: **YES** • Verify Main Steam Line Monitor alarms clear and no unexplained rise: **YES** (EK-02 has no power, must be verified at the Radiation Monitor)

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	RO	Containment Atmosphere: • Containment temperature < 125°F **NO** • Containment Pressure < 0.85 psig **NO** • Contingency Actions: o ENSURE OPERATING ALL available Containment Air Cooler 'A' Fans and ensure all CAC Hi Capacity outlet valves are open per EOP-1.0 immediate actions (attached) • At 4 psig: o ENSURE OPEN Containment Spray Valves CV-3001 and CV-3002 (CV-3001 has no power, but fails open) o ENSURE OPERATING Containment Spray Pump P-54A, P-54B, and P-54C
EVALUATOR note: CV-3001 lights off due to loss of D11-1, valve fails open		
	RO	Vital Auxiliaries – Water: • At least two SW Pumps operating: **YES** • BOTH Critical SW Headers in operation with pressure > 42 psig: **YES** • At least one CCW Pump operating: **YES**
	RO	Vital Auxiliaries – Air: • Instrument Air Pressure > 85 psig: **YES**
	BOP	Verifies right train CRHVAC in emergency mode (already placed in this mode during loss of D11-1 event): • V-26B Air Filter Unit Fan ON • ENSURES OFF V-94, Purge Fan, and V-47, Switchgear Exhaust Fan • May follow up with SOP-24 verification
	BOP	Verify BOTH of the following: • At least one Condensate Pump operating • At least one Cooling Tower Pump operating

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	SRO	• Performs Event Diagnostic Flow Chart per EOP-1.0, Attachment 1 o Diagnoses EOP-9.0, Functional Recovery Procedure, LOCA and two stuck control rods • Performs EOP-9.0 strategy brief • Establishes PCS pressure and temperature bands with NCO
	SRO	Directs closing CV-1064 and CV-1065, CWRT vent valves (CV-1064 has no power, but fails closed)
	BOP	CLOSES CV-1064 and CV-1065 (already closed due to Containment Isolation)
	SRO	Directs performance of EOP Supplement 5, Checklist for Safeguards Equipment Following SIAS
	BOP	Completes EOP Supplement 5 and EOP Supplement 6
	SRO	Directs placing a Hydrogen Monitor in service in accident mode
	BOP	Places right train H_2 monitor in service in accident mode (back of Panel C-11A): • PLACES HS-2418 to ACCI • PLACES HS-2416 to OPEN and RELEASES • PLACES HS-2412A, HS-2412B, HS-2414A, and HS-2414B, to OPEN • Energizes H2 Recorder, AR-2401, by: PLACING to ‘ON’ Power Switch and PLACES to ‘ON' Chart Drive Switch • PLACES HS-2427R to 'ANALYZE' position • REMOVES pen caps from chart pens
	SRO	Directs SE to perform EOP-9.0 SFSCs

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	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-3 • Maintenance of Vital Auxiliaries-Air: MVAW-1, MVAA-1
	SRO	Directs actions from HR-2: • Perform EOP Supplement 4, SI flow verification (SE action) • May secure Emergency Boration • Commence a cooldown of PCS using ADVs ○ CV-0779 and 0781 fail closed due to loss of D11-1 • Verify natural circulation exists
	RO	Performs cooldown: • HIC-0780A, Steam Dump Controller, 'MANUAL' pushbutton PUSHED • 'Slidebar' taken to the OPEN position • MONITORS S/G pressures and cooldown rate on PPC

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

Event Description: ***LOCA/Two Stuck Control Rods/Loss of D11-1***

Time	Position	Applicant's Actions or Behavior
	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 (if not already performed from loss of D11-1 event).
	RO	PLACES handswitches to CLOSE (if not already performed from loss of D11-1 event): • HS-2003 (CV-2003) • HS-2004 (CV-2004) • HS-2005 (CV-2005)
SRO: Emergency Classification Level: FA1.1 due to potential loss of PCS due to > 50 gpm PCS leak.		

TERMINATE Scenario at the discretion of the Lead Examiner.