

Facility: PALISADES	Scenario No.: ONE	Op-Test No.: 1
Examiners: _____		Operators: _____
_____		_____
_____		_____
Initial Conditions: The Plant is at 75% power due to a forced outage. P-54A, Containment Spray Pump out of service for seal cooler inspection and is currently 24 hours into the 72 hour LCO.		
Turnover: Shift orders are to start a power escalation at 6% per hour (conditioned fuel).		

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	SRO(N) RO(R) BOP(N)	Commence power escalation at 3% per hour
2	CC02	SRO(C) RO(C)	P-52A, Component Cooling Water Pump Trips (STANDBY pumps fail to start)
3	FT01B	SRO(C) BOP(C)	'B' Main Feedwater Pump trips
4	SI04D	SRO(C)	T-82D, Safety Injection Tank loss of pressure (leak)
5	MS03A	ALL (C)	'A' S/G Main Steam Line Leak Inside Containment (small leak requiring a manual plant trip)
6	Override	RO(I) BOP(I)	C-02 Reactor Trip P/B fails (requires trip from C-06)
7	MS03A	ALL (M)	ESDE inside containment (ramped in at time of trip)
8	ED13A	SRO (I) RO (I)	Left Channel SI Initiate Signal Fails

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

Scenario 1 - Simulator Operator Instructions

- IC-70 (on tape drive)
- INSERT CC13B (PIDCC01), P-52B fails to start in AUTO
- INSERT CC13C (PIDCC01), P-52C fails to start in AUTO
- INSERT ED13A (PIDSI01), SI Auto Initiation Signal fails on left channel
- INSERT CH05A (PIDCH01), Left Channel Containment Spray Fails to actuate
- INSERT SI28 (PIDSI03), P-54A, Containment Spray Pump Breaker Racked Out
- INSERT OVERRIDE Reactor Trip Pushbutton on Panel C-02 to "OFF"
- Hang Caution Tag on P-54A Hand-switch stating that it is Tagged Out

Remote	Type	Instructions
1	MF	CC02A (PIDCC01) P-52A, CCW Pump trips
2	MF	FT01B (PIDFT01) Steam Gen FW Pump P-1B trip
3	MF	SI04D (PIDSI04) T-82D, Safety Injection Tank loss of pressure
4	MF	MS03A (PIDMS01) 'A' S/G Main Steam Line Break Inside Containment; Severity value = 2%, 5 minute ramp
	MF	MS03A (PIDMS01) 'A' S/G Main Steam Line Break Inside Containment; Severity value = 5% Create event trigger 5: Event: Reg Group 1 Rod 21 less than 110" Action: IMF_MS03A_5
6	RM	MS20 (PIDMS01) Main Steam Dump Manual Valve CA-0781 and MS21 (PIDMS01) Main Steam Dump Manual Valve CA-0782, Remote value = CLOSED SG09 (PIDMS01) Manual Throttle Vlv MS-101 for CV-0782 and SG11 (PIDMS01) Manual Throttle Vlv MS-103 for CV-0781, Remote value = 0
		Create Event trigger 7: Event: ZLO1P(882) Action: DMF CC13B This deletes the P-52B fail to start on standby malfunction to allow it to start on a safety injection signal.
		Create Event trigger 7: Event: ZLO1P(882) Action: DMF CC13C This deletes the P-52C fail to start on standby malfunction to allow it to start on a safety injection signal.

Special instructions:

- Provide a marked up copy of GCL 5.1 completed through Step 4.5.
- Provide Reactivity Sheets for Core Life.

Scenario 1 - Turnover Information

The plant is at 75% power. P-54A, Containment Spray Pump is tagged out for a seal cooler inspection and is currently 24 hours into the 72 hour LCO. A Heat Balance has just been completed. Shift orders are to start a power escalation at 6% per hour.

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Event Description: **Raise Power Following a hold at 75% Power**

Time	Position	Applicant's Actions or Behavior
	BOP	Operates turbine generator on the DEH panel for power escalation @ 3% per hour: ENTERS setter value SELECTS rate of 3% 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: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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% <u>OR</u> at the discretion of the Lead Examiner, <u>INSERT TRIGGER #1</u>		

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Event Description: ***P-52A, CCW Pump trips, Standby pumps fails to auto start***

Time	Position	Applicant's Actions or Behavior
	RO	Diagnose failure of P-52A, CCW Pump: Indications: P-52A tripped; P-52A amps read 0; CCW discharge pressure reads 0 psig Major alarms: EK-1155, West Rm Eng Safeguards Pps CLG Wtr LO Flow; EK-1156, East Rm Eng Safeguards Pps CLG Wtr LO Flow; EK-1167, Component CLG Pumps P-52A, P-52B, P-52C Trip; EK-1169, Component CLG Pump Discharge LO Press; EK-0703, Letdown HT EX Tube Outlet HI Temp; EK-0931, Pri Coolant Pump P-50A CLG Wtr LO Flow; EK-0932, Pri Coolant Pump P-50B CLG Wtr LO Flow; EK-0933, Pri Coolant Pump P-50C CLG Wtr LO Flow; EK-0934, Pri Coolant Pump P-50D CLG Wtr LO Flow
	BOP	May go to 'HOLD' on the turbine
	SRO	Enters ONP-6.2, Loss of Component Cooling Directs start of available CCW Pump, P-52B, CCW Pump or P-52C, CCW Pump
	RO	CHECKS CCW Surge Tank level for adequate inventory STARTS P-52B or P-52C
	RO	No Operator actions for alarms EK-1155, EK-1156, EK-1167, EK-1169, EK-0703, EK-0931, EK-0932, EK-0933, EK-0934 (check valves for proper alignment, refer to ONP-6.2)
	SRO/BOP	May dispatch AO to check Pump and Breaker status
Simulator Operator – When contacted by Control Room as AO to check pump and/or breaker status, wait 5 minutes and REPORT: the pump is hot to the touch and the breaker is tripped on time over current.		
	SRO	May direct 'matching targets' on P-52A handswitch to clear EK-1167
	SRO	Exits ONP-6.2

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Event Description: ***P-52A, CCW Pump trips, Standby pumps fails to auto start***

Time	Position	Applicant's Actions or Behavior
	SRO	The following T.S. LCO applies: ▪ 3.7.7, Action: A.1, CCW Train (P-52A), 72 hours
After CRS has briefed loss of P-52A <u>OR</u> at the discretion of the Lead Examiner, <u>INSERT TRIGGER #2</u>		

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Event Description: **'B' MFW Pump trips**

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose failure of K7B/P-1B, 'B' Main Feedwater Pump trip: Indications: P-1B discharge pressure lowering; Turbine driver K-7B high and low pressure trip and throttle valves closed; 'A' S/G level lowering Major alarms: EK-0149, FW Pump P1B Turbine K7B Trip; EK-0154, FW Pump P1B LO Suction Flow or LO Disch Press; EK-0159, FW Turbine K7B Oil System Trouble; EK-0962, Steam Gen E-50A LO Level
	BOP	Immediate Action from ONP-3: TAKE manual control of Feedwater System to stabilize S/G levels: <ul style="list-style-type: none"> ▪ HIC-0526, K-7A Speed Controller, 'MANUAL' pushbutton DEPRESSED ▪ Slide Bar TAKEN to the 'FASTER' direction, raising MFW Pump speed
	SRO	Enter ONP-3, Loss of Main Feedwater Directs taking manual control of running MFW Pump and raising speed
	BOP	Operator actions from alarms: Enter ONP-3, may send AO to 'B' MFW Pump to: <ul style="list-style-type: none"> ▪ Investigate tripping and check oil system normal ▪ Place 'B' MFW Pump on the turning gear
	SRO	May enter ONP-26, Rapid Power Reduction, to reduce power Directs: <ul style="list-style-type: none"> ▪ RO to INSERT Control Rods Group 4 approximately 10 inches ▪ BOP to initiate a Turbine Runback at $\leq 300\%/hour$ ▪ RO to insert Control Rods as necessary to maintain T_{AVE} to T_{REF} within $3^{\circ}F$
	SRO	May exit ONP-3, once S/G levels are stable with level 60% - 70%

After CRS has briefed loss of 'B' MFW Pump OR at the discretion of the Lead Examiner, INSERT TRIGGER #3

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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: <ul style="list-style-type: none"> ▪ EK-1334, Safety Inj Tank HI-LO Pressure ▪ EK-1336, Safety Inj Tank LO pressure
	RO	Operator actions for EK-1134: <ul style="list-style-type: none"> ▪ CHECK tank level normal ▪ CHECK CLOSED CV-3051, T-82D Vent Valve ▪ ADJUST tank pressure per SOP-3 to clear alarm (Follow Up Action)
	RO	Operator actions for EK-1136: <ul style="list-style-type: none"> ▪ CHECK tank level normal ▪ CHECK CLOSED CV-3051, T-82D Vent Valve ▪ CHECK tank pressure on PPC ▪ ADJUST tank pressure per SOP-3 to clear alarm (Follow Up Action)
	SRO	Declares Tank inoperable while the pressure switch is actuated The following T.S. LCO applies: <ul style="list-style-type: none"> ▪ 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 TRIGGER #4

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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 (Reactor does not trip)
	BOP	DEPRESSES CO-6 Panel Reactor Trip Pushbutton (CRITICAL TASK PL-000 447 05 01)

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Event Description: ***EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure***

Time	Position	Applicant's Actions or Behavior
	RO	<p>Informs SRO that Left Channel SI Initiate pushbutton PUSHED OR STARTED Left Train HPSI and LPSI Pumps and OPENED all Loop Injection Valves, CONTINGENCY ACTION:</p> <ul style="list-style-type: none"> ▪ Containment pressure > .85 psig ▪ ENSURE ALL available HPSI and LPSI Pumps operating with associated Loop Isolation Valves open (CRITICAL TASK PL-000 433 05 01)
	RO	<p>Informs SRO that CV-3001 OPENED and P-54B and P-54C STARTED: CONTINGENCY ACTION:</p> <ul style="list-style-type: none"> ▪ 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	<p>Reactivity Control: YES</p> <ul style="list-style-type: none"> ▪ Reactor power lowering ▪ negative SUR ▪ maximum of one control rod not inserted
	BOP	<p>Main Turbine Generator criteria: YES</p> <ul style="list-style-type: none"> ▪ Main Turbine tripped ▪ Generator disconnected from grid
	BOP	<p>Feedwater criteria: YES:</p> <ul style="list-style-type: none"> ▪ PLACES Main FWP Controller to 'MANUAL' RAMPS to minimum speed: YES/NO: (A NO answer may be given due to MSIVs being closed (no steam to MFWPs)) ▪ Main FRV and B/Ps CLOSED

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Event Description: ***EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure***

Time	Position	Applicant's Actions or Behavior
	BOP	Vital Auxiliaries-Electric: <ul style="list-style-type: none"> ▪ Buses 1C and 1D energized: YES ▪ Bus 1E energized: NO ▪ Bus 1A and 1B energized: YES ▪ Y-01 energized: YES ▪ Six DC Buses energized: YES ▪ 3 of 4 Preferred AC Buses energized: YES
	RO	PSC Inventory Control: <ul style="list-style-type: none"> ▪ PZR level 20% - 80% YES OR NO (Depends on timing) ▪ PZR level trending 42% - 57% NO ▪ PCS 25°F subcooled YES
	RO	PCS Pressure Control: <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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

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Event Description: **EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>If directed to isolates AFW to 'A' S/G:</p> <ul style="list-style-type: none"> ▪ 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	<p>Containment Isolation: NO</p> <ul style="list-style-type: none"> ▪ Containment pressure > 0.85 psig <p>Contingency Actions:</p> <p>If/When Containment pressure > 4.0 psig perform all of the following:</p> <ul style="list-style-type: none"> ▪ 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 MFRV 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 <p>RO will have to either PUSH the left channel SI Initiate Pushbutton OR START Left Train HPSI and LPSI Pumps as well as OPEN all Loop Injection Valves – if not already done</p> <p>(CRITICAL TASK PL-000 433 05 01, if not previously done)</p>
	BOP	<p>Containment Isolation:</p> <ul style="list-style-type: none"> ▪ Verify Containment Area Monitor alarms clear: NO (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

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Event Description: **EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure**

Time	Position	Applicant's Actions or Behavior
	RO	Containment Atmosphere: NO <ul style="list-style-type: none"> ▪ Containment temperature > 125°F ▪ Containment Pressure > 0.85 psig Containment Pressure ≥ 4.0 psig, perform the following: <ul style="list-style-type: none"> ▪ 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, Left Channel Containment Spray Valve, and START P-54B and P-54C, Containment Spray Pumps –if not already done (CRITICAL TASK PL-000 433 05 01, If not previously done))
	RO	Vital Auxiliaries – Water: YES <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ Instrument Air Pressure > 85 psig
	BOP	PLACES left train CRHVAC in emergency mode: <ul style="list-style-type: none"> ▪ 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 <ul style="list-style-type: none"> ▪ At least one Condensate Pump operating ▪ At least one Cooling Tower Pump operating
	SRO	MAY direct isolating AFW to 'A' S/G

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Event Description: **EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure**

Time	Position	Applicant's Actions or Behavior
	BOP	<p>If directed to isolates AFW to 'A' S/G:</p> <ul style="list-style-type: none"> ▪ 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) ▪ CLOSSES 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	<ul style="list-style-type: none"> ▪ 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
	SRO	May direct steaming unaffected S/G (B) to within 50 psia of affected S/G (A)

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Event Description: **EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure**

Time	Position	Applicant's Actions or Behavior
	RO	Begins steaming 'B' S/G: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ▪ 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) <ul style="list-style-type: none"> ▪ 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

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Event Description: ***EOP-1.0 actions/EOP-6 (larger ESDE)/Left Channel SI Failure***

Time	Position	Applicant's Actions or Behavior
<p>Simulator Operator: When instructed by BOP to isolate 'A' S/G outside the Control Room per Supplement 13, <u>INSERT TRIGGER # 6</u>, isolating air and manual valves (MV-MS-103 and MV-MS-101) to CV-0781 and CV-0872, 'A' S/G Atmospheric Steam Dump Valves.</p>		
<p>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)</p>		
<p>TERMINATE Scenario when 'A' S/G has been isolated per EOP Supplement 17 <u>OR</u> at the discretion of the Lead Examiner.</p>		