FINAL AS-ADMINISTERED SCENARIOS

FOR THE PALISADES EXAMINATION - DECEMBER 2001

Facility: **PALISADES** Scenario No.: **Spare** Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

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Initial Conditions: IC-19. Approx. 100% power EOL. Equipment OOS is Charging Pump P-55C with Caution Tag on handswitch.

Turnover: Power is at 100%. Charging Pump P-55C is ouot of service for maintenance and will not be available for approximately 12 hours. Boron concentration is 50 ppm. ASI is +0.02. Equilibrium Xenon. Off-gas flow is 2 scfm. S/G Blowdowns are at 20K each. Total PCS isotope is found on PPC 540.

Shift orders are to reduce power at 12% per hour for the Refueling Outage.

Event No.	Malf No.	Event Type*	Event Description
1	NA	SRO (N) RO (R) BOP (N)	Power Reduction (Requires BOP to setup turbine controls.)
2	OVRD	SRO (C) BOP (C)	Turbine Bypass Valve fails open
3	CV05	SRO (I) RO (I)	Loss of Letdown Pressure Control High
4	RX11A	SRO (I) BOP (I)	Erratic Feedwater Regulating Valve Operation
5	SG01A	SRO (M) RO (M) BOP (M)	'A' Steam Generator Tube Leak (0.1 gpm)
6	SG01A	SRO (M) RO (M) BOP (M)	'A' Steam Generator Tube Rupture (700 gpm)
7	ED13A ED13B	SRO (C) RO (C)	SIAS fails to auto actuate

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

Event No.	Simulator Operator Instructions
	* Reset to IC-19. Approx. 100% power EOL. * Equipment OOS is Charging Pump P-55C with Caution Tag on handswitch. * INSERT ED13A and ED13B. * Ensure S/G B/Ds at 20,000 on PPC 521
1	Power Reduction - Ensure DEH controls are "parked" on values other than what is required for this scenario.
2	TBV fails open - extensive setup (See below). Initiate AFTER downpower has started.
3	CV05 - Letdown Pressure Control fails high
4	RX11A - FRV should cycle ± 10% of current position (Ensure value modified to 0.04)
5	SG01A - Tube Leak (0.1 gpm) Use value = 0.01
6	SG01A - Ramp time = 3 minutes; Severity = 700 gpm. Use value = 70.
7	ED13A&B - SIAS fails to auto actuate ***Enter at time of setup.***

Setup for TBV Fails Open:

1. CV-0511 Man PB:
   * PIC-0511-MAN to ON
   * PIC-0511-M light to OFF
   * PIC-0511-A Auto lamp to ON

   * PIC-0511-MNC-2 to ON with REMOTE 2
   * PIC-0511-MAN [ZD13P(717)]

2. Trigger #?
   Go to Event _____
   * type in ZD13P(717)
   * Action is dor pic-0511-MNC-2

3. Trigger #?
   * zdi 3p(717)
   * dor pic-0511-m

4. Trigger #?
   * zdi 3p(717)
   * dor pic-0511-a

SHIFT TURNOVER - SCENARIO: SPARE

Power is at 100%. Charging Pump P-55C is ouot of service for maintenance and will not be available for approximately 12 hours. Boron concentration is 50 ppm. ASI is +0.02. Equilibrium Xenon. Off-gas flow is 2 scfm. S/G Blowdowns are at 20K each.

Shift orders are to reduce power at 12% per hour for the Refueling Outage.

Op-Test No.:	Scenario No.: **Spare**	Event No.: **1**	Page of
Event Description:	***Power Reduction***		

Time	Position	Applicant's Actions or Behavior
	SRO	Reviews Precautions and Limitations of GOP-8.
	RO	Reviews Precautions and Limitations of applicable SOPs.
	BOP	Selects DEH de-escalation rates for Main Turbine.
	RO	Borates to commence downpower
	BOP	Initiates turbine de-rate.

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

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

Time	Position	Applicant's Actions or Behavior
	SRO BOP RO	Diagnoses Turbine Bypass Valve has failed open: Various alarms including: * Nuclear Power / delta T, EK-0603, 4, 7, 8 Rack D
	BOP	Manually close the TBV. (Allowed to perform prior to ONP entry, but not required.)
	SRO	Enters and directs the actions of ONP-9.0, "Excessive Load Increase"
	SRO BOP	Reduce turbine load to restore reactor power to pre-event power level or less. *(Not required if TBV is manually closed.)*

Op-Test No.: | Scenario No.: **Spare** | Event No.: **3** | Page of

Event Description: ***Loss of Letdown Pressure Control High***

Time	Position	Applicant's Actions or Behavior
	RO	Diagnoses failure of the intermediate letdown pressure controller * Selected intermediate letdown pressure control valve opens. * Flashing in the Letdown Heat Exchanger, resulting in pressure and flow oscillations on the letdown line. * EK-0704, LETDOWN HT EX TUBE INLET HI-LO PRESS, alarms.
	SRO	Enters and directs the actions of EK-0704.
	RO	Determines charging and letdown flows NOT matched.
	RO	Determines Letdown Pressure Controller PIC-0202 NOT controlling at approximately 460 psig.
	RO	Selects manual on the pressure controller.
	RO	Manually respositions selected valve to control pressure at approximately 460 psig.
	SRO	Initiates troubleshooting and repairs.

Op-Test No.:	Scenario No.: **Spare**	Event No.: **4**	Page of
Event Description:	***Erratic Feedwater Regulating Valve Operation***		

Time	Position	Applicant's Actions or Behavior
	SRO BOP	Diagnoses erratic operation of FRV CV-0701 • Feed flow to 'A' S/G rising and falling • 'A' S/G level rising and falling ***Note: May get Main Turbine Hi Vibration alarm (EK-0105)***
	SRO	Enters and directs the actions of ONP-10, Excessive Feedwater Increase
	BOP	Takes manual control of FRV CV-0701 to restore S/G feed flow and actual level. ***CRITICAL TASK to take manual control and restore level prior to trip.***
	SRO	Initiates troubleshooting/repair.

Op-Test No.:	Scenario No.: **Spare**	Event No.: **5**	Page of
Event Description:	***'A' Steam Generator Tube Leak (0.1 gpm)***		

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	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 Others, as required.
	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 ('B' S/G) * RIA-0707, Steam Generator Blowdown Monitor * RIA-2325/2326, Stack Gas Effluent Monitors * RIA-2327, High Range Noble Gas Monitor
	SRO	Uses ONP-23.2, Att.1 and/or Att.2 to estimated tube leak rate.
	SRO	After 'A' S/G tube leak is identified and quantified, determines that plant shutdown must occur (Mode 3 within 4 hours)

Op-Test No.:	Scenario No.: **Spare**	Event No.: **6**	Page of
Event Description:	***'A' Steam Generator Tube Rupture at 700 gpm***		

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	Diagnoses Steam Generator Tube Leak/Rupture on 'A' S/G • Rising radiation levels on secondary plant • Lowering PZR level • Lowering PCS pressure • Rising level in 'A' S/G • Lowering feed flow for 'A' S/G • EK-1364, GASEOUS WASTE MONITORING HI RADIATION alarms
	SRO	Directs a Reactor trip and enters and enters EOP-1.0. Based on rising S/G leakage confirmed AND CVCS charging rate rising to maintain PZR level. ***Note: Tube rupture ramps in over 3 minutes to 700 gpm.***
	RO	Trips the Reactor ***CRITICAL TASK to trip reactor when required.***

Op-Test No.:	Scenario No.: **Spare**	Event No.: **6**	Page of
Event Description:	***'A' Steam Generator Tube Rupture at 700 gpm***		

Time	Position	Applicants's Actions or Behaviors
	RO	Determines that Reactivity Control acceptance criteria is met.
	BOP	Control the Feedwater System • Places ALL operating MFPs to manual and ramp one to minimum speed • As Tave lowers toward 525°F ramps second MFP to minimum speed • Closes ALL MFRVs and Bypass FRVs ***CRITICAL TASK to prevent PCS overcooling.***
	BOP	Determines that Vital Auxiliaries - Electric acceptance criteria are met.
	RO	Determines that PCS Inventory Control acceptance criteria are NOT met due to lowering PZR level.
	RO	Determines that PCS Pressure Control acceptance criteria are NOT met due to lowering PZR pressure.
	RO	Verify EK-1342, SAFETY INJ INITIATED, alarms if PZR pressure is less than 1605 psia
	RO	Stop PCPs, as required: • If pressure less than 1300 psia, stop two PCPs (one in each loop) • If PCP operating limits not met, stop ALL PCPs. ***CRITICAL TASK to minimize inventory loss and to protect PCPs.***

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

Event Description: ***'A' Steam Generator Tube Rupture at 700 gpm***

Time	Position	Applicants's Actions or Behaviors
	RO	Determines that Core Heat Removal acceptance criteria are NOT met. • Possibly NO PCPs operating • Possible loss of subcooling
	BOP	Determines that PCS Heat Removal acceptance criteria are met.
	BOP	Determines that Containment Isolation acceptance criteria are NOT met, due to Condenser Off-Gas Monitor RIA-0631 alarm NOT clear.
	RO	Determines that Containment Atmosphere acceptance criteria are met.
	RO	Determines that Vital Auxiliaries - Water acceptance criteria are met.
	RO	Determines that Vital Auxiliaries - Air acceptance criteria are met.
	BOP	Verify at least one Condensate Pump and Cooling Tower Pump operating
	SRO	Assigns performance of SIAS Checklist, EOP Supplement 5

Op-Test No.:	Scenario No.: **Spare**	Event No.: **6**	Page of
Event Description:	***'A' Steam Generator Tube Rupture at 700 gpm***		

Time	Position	Applicants's Actions or Behaviors
	BOP	Commence Emergency Shutdown Checklist (GOP-10)
	SRO	Refers to EOP-1.0, Attachment 1, "Event Diagnostic Flow Chart" and diagnoses the event.
	SRO	Transitions to and directs the actions of EOP-5.0, "Steam Generator Tube Rupture" ***NOTE: Even though all PCPs may be off concurrent with the SGTR, entry should NOT be made to EOP-9.0 based on no PCPs with a SGTR. See note on Event Diagnostic Flow Chart.***

Op-Test No.:	Scenario No.: **Spare**	Event No.: **6**	Page of
Event Description:	***'A' Steam Generator Tube Rupture at 700 gpm***		

Time	Position	Applicant's Actions or Behavior
	SRO	Verifies acceptance criteria met at intervals of approximately every 15 minutes. ***Note: SRO can assign the STA/SE surrogate to perform this function.***
	SRO	Notify Health Physics to perform preliminary radiation surveys per EOP Supplement 14
	BOP/RO	Verify at least minimum SI flow per EOP Supplement 4
	RO	Commence emergency boration to establish PCS boron concentration greater than or equal to boron needed for Tave > 525°F
	BOP	Ensure at least one train of CR HVAC in Emergency Mode, per SOP-24. ***Note: Must be performed within 20 minutes of reactor trip.***
	BOP	Ensure S/G blowdown control valves are closed
	RO BOP	Cooldown the PCS to highest narrow range Thot less than 524°F (preferably 500°F to 515°F) using the Turbine Bypass Valve
	RO	Records each occurrence of PZR Spray operation with a ΔT (PZR vapor phase temp minus spray temp) greater than 200°F in the Reactor Logbook

Op-Test No.:	Scenario No.: **Spare**	Event No.: **6**	Page of
Event Description:	***'A' Steam Generator Tube Rupture at 700 gpm***		

Time	Position	Applicant's Actions or Behavior
	RO BOP	If less than BOTH Cooling Tower Pumps AND less than BOTH Condensate Pumps NOT operating, close BOTH MSIVs and Bypasses. ***Note: One or more Condensate Pumps may have been manually tripped due to a loss of cooling water upon SIAS actuation.***
	SRO RO BOP	Verify SI Pump throttling criteria are satisfied: • Based on the Average of Qualified CETs, PCS subcooling at least 25°F subcooled • Corrected PZR level is greater than 20% and controlled,.per EOP Supplements 9 and 10. • At least one S/G available for PCS heat removal with corrected level being maintained or being restored to between 60% and 70% per EOP Supplement 11. • Operable RVLMS channel indicates greater than 102 inches above the bottom of fuel alignment plate.
	RO BOP	Depressurize the PCS • Maintain PZR pressure within ALL of the following criteria: ■ Less than 940 psia ■ Within the limits of EOP Supplement 1 ■ Preferably within 50 psid of the isolated S/G pressure • Operate Main or Auxiliary Spray valves • If SI pump throttling criteria are met, throttle HPSI flow or control charging and letdown flow
		TERMINATE SCENARIO WHEN THE CREW HAS DEPRESSURIZED THE PCS BELOW 940 PSIA AND WITHIN 50 PSID OF 'A' S/G

Op-Test No.:	Scenario No.: **Spare**	Event No.: **7**	Page of
Event Description:	***Failure of Automatic Actuation of SIAS***		

Time	Position	Applicant's Actions or Behavior
	SRO RO	Determines that SIAS did NOT auto initiate when required (PZR pressure less than 1605 psia).
	RO	On panel C-13, pushes SIAS manual initiation pushbuttons: * PB1-1, "INJECTION INITIATE" * PB1-2, "INJECTION INITIATE" ***CRTICAL TASK to initiate Safety Injection when required.***
	SRO RO	Verifies EK-1342, SAFETY INJ INITIATED alarms

Facility: **PALISADES** Scenario No.: **2** Op-Test No.: _____

Examiners: _____ Operators: _____

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Initial Conditions: IC-19; Approximately 100% power EOL; Equipment OOS is Charging Pump P-55A with Caution Tag hung on handswitch; Charging System is aligned for Option 1 operation with P-55B in MANUAL and P-55C in AUTO.

Turnover: Power is 100% at EOL. Charging Pump P-55A is out of service for repairs with the Charging System aligned for Option 1 operations and CV-2004 closed. PCS Boron concentration is 50 ppm; ASI is +0.02; S/G B/D @ 20K ea.; Off-gas is ~2 scfm; equilibrium Xenon. PCS Total isotope is per PPC 540.

Shift orders are to lower power to 60% load at 20% per hour to allow taking Main Feedwater Pump P-1B out-of-service due to elevated seal leakage conditions.

Event No.	Malf. No.	Event Type*	Event Description
1/2	N/A	RO (R) BOP (N) SRO (N)	Downpower Ramp (requires BOP to setup DEH controls)
3	RX12C RX12D	RO (I) SRO (I)	Pressurizer Heater Groups Fail OFF (Backup Gp. 1&2) (IPE)
4	RX07B		Pressurizer Level Control Channel B Upscale Demand
5	RX14A	BOP (I) SRO (I)	Feedwater Flow Transmitter FT-0701 Fail HIGH
6	TC04C TC04D	BOP (C) SRO (C)	Turbine Governor Valve GV 3 and GV4 Fail Shut
7	RP19	RO (C) SRO (C)	Failure of the Reactor to Automatically Trip
8	MS03A	RO (M) BOP (M) SRO (M)	Main Steamline Rupture Inside of the Containment
9	CH05A/B	RO (C) BOP (C) SRO (C)	Initiation Failure of Containment Isolation, Safety Injection, and Containment Spray

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

Simulator Operator Instructions for Scenario: 2

Event Number	Simulator Operator Actions
INITIAL CONDITIONS	IC-19; Approximately 100% power EOL Equipment OOS is Charging Pump P-55A with Caution Tag hung on hand switch; Charging System is aligned for Option 1 operation with P-55B in MANUAL and P-55C in AUTO. • P-55B Control Select to Manual • P-55C Control Select to Auto • Start P-55B with Control Switch • Stop P-55A with Control Switch • Place CV-2004 in Close • Remote CV32, P-55A, Rackout Malfunction for Event 6 ACTIVE AT SETUP • MALF RP19 • OVRD DI REACTOR_TRIP to OFF (must trip from C-06) Malfunction for Event 8 ACTIVE AT SETUP. • MALF CHO5A and CHO5B Power Reduction - Ensure DEH controls are "parked" on values other than what is required for this scenario.
3**	MALF RX07B ***Activate Event #3 and Event #4 simultaneously***
4**	MALF RX12C, RX12D ***Activate Event #3 and Event #4 simultaneously*** ***OVERRIDE GREEN lights OFF for Heater Groups #1 and #2*** (place on Remote 1)
5	MALF RX14A, Severity = 90%
6	MALF TC04C
7	Malfunction for Event 6 ACTIVE AT SETUP • MALF RP19 • OVRD DI REACTOR_TRIP to OFF
8	MALF MS03A, Severity = 15%, Ramp = 10 minutes. Enter right after CA acceptance criteria is met in EOP-1.0, or per NRC cue.
9	Malfunction for Event 8 ACTIVE AT SETUP. • MALF CHO5A and CHO5B

** ***Events #3 and #4 should be activated at the same time.***
If called as Elect. Maint. to provide KW reading on PZR htrs., tell NCO that the KW is 75 kW.

SHIFT TURNOVER - SCENARIO: 2

Power is 100% at EOL.

Charging Pump P-55A is out of service for repairs with the Charging System aligned for Option 1 operations and CV-2004 closed.

PCS Boron concentration is 50 ppm; ASI is +0.02; S/G B/D @ 20K ea.; Off-gas is ~2 scfm; equilibrium Xenon. PCS Total isotope is per PPC 540.

Shift orders are to lower power to 60% load at 20% per hour to allow taking Main Feedwater Pump P-1B out-of-service due to elevated seal leakage conditions

Op-Test No.:	Scenario No.: **2**	Event No.: **1 /2**	Page 4 of 19
Event Description:	***Downpower Ramp***		

Time	Position	Applicant's Actions or Behavior
	SRO	Enters and directs the actions of GOP-8.
	SRO	Reviews Precautions and Limitations with crew.
	SRO	Notifies Area Power Control and Chemistry of impending shutdown.
	SRO	Evaluate PCS leak rate surveillance interval.
	SRO	Establish "Power Operation Degas Lineup" (SOP-2A, Section 7.13, "Degas Of PCS") ***NOTE: Not required since plant is not being taken off line.***

Op-Test No.:	Scenario No.: **2**	Event No.: **1 / 2**	Page 5 of 19
Event Description:	***Downpower Ramp (includes BOP Turbine Control setup)***		

Time	Position	Applicant's Actions or Behavior
	SRO	Evaluate ASI guidelines (EM-04-17, "Axial Shape Index (ASI) Control") • For an unplanned rapid power reduction, the operator need not worry about maintaining ASI within Target ASI ± 0.05 during the power reduction • Initiate trending of ASI • Power reduction should be initiated by boration
	RO	Commence boration of PCS (SOP-2A, Section 7.5.1, "Boration") • Determine required amount of boron • Establish boration flow • Maintain boron concentration to ensure regulating rods above the PPDIL
	SRO	If Reactor power changes by 15% or more in one hour or less, then notify Chemistry to perform an isotopic analysis for iodine
	BOP	Commence load reduction at 20%/hour (SOP-8, Section 7.1, "Turbine Generator K-1") • Operate DEH controls to setup for turbine load reduction. • Lower turbine load at 15%/hour • Adjust Valve Position Limiter to maintain Limiter just above valve control signal
		NOTE: Next event should be entered once power has been lowered by approximately 3-5%.

Op-Test No.:	Scenario No.: **2**	Event No.: **3**	Page 6 of 19
Event Description:	***Pressurizer Backup Heater Groups #1 and #2 Fail OFF (IPE)***		

Time	Position	Applicant's Actions or Behavior
		NOTE: This malfunction should be activated at the same time that EVENT 1 is activated.
	RO	Diagnoses tripped supply breaker for Backup heater Group #1 and #2 • Indication on Group #1 and #2 heaters • Lower than normal current on heater current indication • Slower pressure recovery following depressurization on previous event
	SRO	Consults Tech Spec 3.4.9 to determine required current = 110 amps (375 KW) and determines a 72 hour completion time.
	SRO	Initiates troubleshooting and repair.

Op-Test No.:	Scenario No.: **2**	Event No.: **4**	Page 7 of 19
Event Description:	***Pressurizer Level Control Channel B Upscale Demand***		

Time	Position	Applicant's Actions or Behavior
	RO	Diagnose low failure of Pressurizer Level Transmitter LT-0101B • Pressurizer Level Control 'B' output demand high • Pressurizer Level Indication LI-0101B failed low • EK-07-61, PRESSURIZER LEVEL HI-LO, alarm • EK-07-63, PRESSURIZER LEVEL CH "A" LO-LO, alarm • Various other alarms • Letdown Orifice Stop Valves closed • Pressurizer Heaters off • Actual Pressurizer level rising
	SRO	Enters and directs the actions of ARP-4 (EK-07)
	RO	Takes manual control of Pressurizer Level controller OR selects Channel 'A' as controlling channel
	RO	Restores Pressurizer level to program value and regains heater control by selecting 'Channel A' on LIC-0101, Heater Control Select
	SRO	Contact maintenance to initiate troubleshooting and repairs.

Op-Test No.:	Scenario No.: **2**	Event No.: **5**	Page 8 of 19
Event Description:	***Feedwater Flow Transmitter FT-0701 Failure High***		

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose high failure of Feedwater Flow Transmitter FT-0701 • LIC-0701 demand goes low • Recorder FI-0701 feed flow goes high • SG 'A' level lowers • EK-09-62, STEAM GEN E-50A LO LEVEL, alarm may annunciate
	SRO	Enters and directs the actions of ARP-5 (EK-00) and ONP-3.0.
	BOP	Takes manual control of FRV-0701 using LIC-0701
	BOP	Slowly raise S/G level using manual control of FRV-0701 to restore level.
	SRO	Contact maintenance to initiate troubleshooting and repairs.

Op-Test No.:	Scenario No.: 2	Event No.: 6	Page 9 of 19
Event Description:	***Turbine Governor Valve GV 3 and GV 4 Fail Shut***		

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnoses turbine control valve GV-3 and GV 4 failing shut • EK-0318, TURBINE PANEL TROUBLE, alarms • Indication on DEH panel • Load lowering • Steam pressure rising • PCS temperature rising • Reactor power lowering
	SRO	If time permits, enter and direct the actions of ONP-1, Loss of Load.
	RO	Insert control rods to match Tave to Tref as time permits (Immediate Action of ONP-1).
	BOP	Ensures Turbine Controls in MANUAL
	BOP	Ensures at least one EHC pump running.
	SRO	Orders reactor trip due to being above 15% power

Op-Test No.:	Scenario No.: **2**	Event No.: **6**	Page 10 of 19
Event Description:	***Turbine Governor Valve GV 3 and GV 4 Fail Shut***		

Time	Position	Applicant's Actions or Behavior
	RO	Trips the reactor as directed.
	SRO	Enters and directs the actions of EOP-1.0.
	RO	Determines that Reactivity Control acceptance criteria are met.
	BOP	Control the Feedwater System • Places ALL operating MFPs to manual and ramp one to minimum speed • As Tave lowers toward 525°F ramps second MFP to minimum speed • Closes ALL MFRVs and Bypass FRVs ***CRITICAL TASK to prevent PCS overcooling.***
	BOP	Determines that Vital Auxiliaries - Electric acceptance criteria are met.
	RO	Determines that PCS Inventory Control acceptance criteria are met.
	RO	Determines that PCS Pressure Control acceptance criteria are met.

Op-Test No.:	Scenario No.: **2**	Event No.: **6**	Page 11 of 19
Event Description:	***Turbine Governor Valve GV 3 and GV 4 Fail Shut***		

Time	Position	Applicant's Actions or Behavior
	RO	Determines that Core Heat Removal acceptance criteria are met.
	BOP	Determines that PCS Heat Removal acceptance criteria are met.
	RO	Determines that Containment Isolation acceptance criteria are met.
	RO	Determines that Containment Atmosphere acceptance criteria are met.
		Note from Simulator Operator: Main Steam line break will be entered here.
	RO	Determines that Vital Auxiliaries - Water acceptance criteria are met.
	RO	Determines that Vital Auxiliaries - Air acceptance criteria are met.

Op-Test No.:	Scenario No.: **2**	Event No.: **6**	Page 12 of 19
Event Description:	***Turbine Governor Valve GV 3 and GV 4 Fail Shut***		

Time	Position	Applicant's Actions or Behavior
	BOP	Verify at least one Condensate Pump and at least one Cooling Tower Pump operating.
	BOP	Commence Emergency Shutdown Checklist (GOP-10)
	SRO	Refers to Attachment 1, "Event Diagnostic Flow Chart" and diagnoses the event.

Op-Test No.:	Scenario No.: **2**	Event No.: **7**	Page 13 of 19
Event Description:	***Failure of the Reactor to Automatically Trip, including from C-02***		

Time	Position	Applicant's Actions or Behavior
		NOTE: This malfunction may not apply if the crew elects to manually trip the reactor prior to conditions warranting an automatic trip.
	RO	Determines that the Reactor has failed to trip automatically and when Reactor Trip pushbutton depressed on panel C-02. ***NOTE: This is actually performed as part of Event 5.***
	RO BOP	Trip Reactor from panel C-06. ***CRITICAL TASK to cause reactor trip following ATWS condition.***
	RO	Informs SRO of failure of reactor to trip from panel C-02.

Op-Test No.:	Scenario No.: 2	Event No.: 8	Page 14 of 19
Event Description:	***Main Steam Line Rupture Inside of the Containment***		

Time	Position	Applicant's Actions or Behavior
	SRO RO BOP	Diagnose Main Steam line rupture inside containment: • Excessive steam flow from 'A' S/G • S/G isolation actuation • S/G pressures and PCS temperatures and pressures lowering • Containment humidity, temperature, and pressure rising • PCS subcooling rising • Numerous Control Room alarms (CAC DRY PAN Hi-LEVEL
	SRO	Enters and directs the actions of EOP-6.0. ***NOTE: May return to EOP-1.0, but acceptable to enter EOP-6.0 directly. If EOP-1.0 is re-entered, it will be to perform re-diagnosis or to re-assess Safety Functions.***
	RO BOP	Determine that Containment Isolation acceptance criteria NOT met.
	RO BOP SRO	Determine Containment Isolation did NOT occur: • EK-1126, "CIS INITIATED", NOT in alarm. • Containment isolation valves NOT properly aligned

Op-Test No.:	Scenario No.: **2**	Event No.: **8**	Page 15 of 19
Event Description:	***Main Steam Line Rupture Inside of the Containment***		

Time	Position	Applicant's Actions or Behavior
	RO BOP	Determines CHR has not initiated. Initiates CHR signal to isolate containment • Depresses CHRL-CS, HIGH RADIATION INITIATE, and/or • Depresses CHRR-CS, HIGH RADIATION INITIATE
	SRO RO BOP	***Note: Crew may opt to secure PCPs at this time due to no CCW to containment. Depending on timing of crew, conditions will probably NOT be met to restore CCW to containment.***
	BOP	Perform EOP Supplement 6, "Checklist for Containment Isolation"
	RO BOP	Close both MSIVs and CCW Containment Isolation Valves
	RO BOP	Manually initiates SIAS. ***CRITICAL TASK to initiate Safety Injection on Containment High Pressure.***
	SRO	Verify Attachment 1, "Safety Function Status Check Sheet", acceptance criteria are satisfied at intervals of approximately every fifteen minutes.

Op-Test No.:	Scenario No.: **2**	Event No.: **8**	Page 16 of 19
Event Description:	***Main Steam Line Rupture Inside of the Containment***		

Time	Position	Applicant's Actions or Behavior
	RO	Verifies EK-1342, "SAFETY INJ INITIATED" is alarmed due to PZR pressure less than or equal to 1605 psia OR containment pressure greater than or equal to 4.0 psig.
	BOP	Ensure MISVs and MSIV Bypass Valves are closed
	RO	Stop one PCP in each loop in pressure drops below 1300 psia ***NOTE: May have already stopped PCPs due to lack of CCW flow to containment.*** ***CRITICAL TASK to secure PCPs when determined that CCW flow cannot be restored to containment.***
	RO	Commence emergency boration to establish PCS boron concentration greater than or equal to boron needed for Tave >525°F as verified by sample or hand calculation per EOP Supplement 35.
	RO	Verify PCP operating limits are satisfied per EOP Supplement 1. ***Note: May have already stopped PCPs due to lack of CCW flow to containment.***

Op-Test No.:	Scenario No.: **2**	Event No.: **8**	Page 17 of 19
Event Description:	***Main Steam Line Rupture Inside of the Containment***		

Time	Position	Applicant's Actions or Behavior
	BOP	Place LTOP in service.
	SRO BOP	Ensure at least one train of CR HVAC in Emergency Mode within 20 minutes of the time of the Reactor trip per SOP-24.
	SRO RO BOP	Determine the most affected S/G by considering ALL of the following: • High steam flow from S/G • Lowering S/G pressure • Lowering S/G level • Lowering Loop Tc temperature
	BOP	Isolate 'A' S/G per EOP Supplement 17
	RO BOP	Stabilize PCS temperature by maintaining 'B' S/G level between 60% and 70%.
	RO	Verify SI pump throttling criteria are satisfied.
		Terminate scenario when 'A' S/G has been isolated, PCS temperature has been stabilized, and SI Pump throttling criteria are satisfied.

Op-Test No.:	Scenario No.: 2	Event No.: 9	Page 18 of 19
Event Description:	***Initiation Failure of Containment Isolation, Safety Injection, and Containment Spray***		

Time	Position	Applicant's Actions or Behavior
	RO BOP	Determines Containment Isolation did NOT occur • EK-1126, CIS INITIATED, NOT in alarm • Valve NOT properly aligned ***Note: This is actually performed as part of EVENT 7.***
	RO BOP	Initiates CHR signal to isolate containment and determines CIS does NOT occur • Depresses CHRL-CS, HIGH RADIATION INITIATE, and/or • Depresses CHRR-CS, HIGH RADIATION INITIATE
	BOP	Manually aligns for Containment Isolation per EOP Supplement 6
	RO BOP	Manually closes both MSIVs • CV-0510 ('A' S/G) • CV-0501 ('B' S/G)

Op-Test No.:	Scenario No.: 2	Event No.: 9	Page 19 of 19
Event Description:	***Initiation Failure of Containment Isolation, Safety Injection, and Containment Spray***		

Time	Position	Applicant's Actions or Behavior
	RO BOP	Manually closes CCW Containment Isolation Valves • CV-0910, (KEY # 337) • CV-0911, (KEY # 338) • CV-0940, (KEY # 336) ***Note: SRO may direct leaving CCW valves open to maintain cooling to PCPs (as long as Containment pressure remains less than 35 psia).***
	RO BOP	Initiates SIAS • Depresses PB-1, INJECTION INITIATE • Depresses PB-2, INJECTION INITIATE ***CRITICAL TASK to initiate Safety Injection when required. (previously identified)***
	RO	Manually aligns for Containment Spray • Opens both Containment Spray Valves (CV-3001, CV-3002) • Starts ALL Containment Spray Pumps (P-54A, B, C)

Facility: **PALISADES** Scenario No.: 1 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

Initial Conditions: Approx. 63-64% power MOL; equipment OOS is AFW Pump P-8C with Caution Tag hung on handswitch; two MFW pumps in operation.

Turnover: Approx. 63-64% power MOL; AFW Pump P-8C is out of service. Main Feedwater System is in operation with both MFW Pps in service. Boron concentration is 837 ppm. ASI is -0.01. Shift orders are to continue a power escalation at 6% per hour to full power. All GOP-5 steps up to and including GOP-5, Section 4.2 have been completed (including Heat Balance). MFW controls are to be placed in AUTO, as required by GOP-5, step 4.3. PCS Total Isotope is per PPC 540. "B" Evap is in service. S/G B/D @20K ea.

Event No.	Malf No.	Event Type*	Event Description
1	NA	SRO (N) BOP (N)	Placed Main Feedwater controls to AUTO.
2	NA	SRO (N) RO (R)	Power Escalation
3	OVRD	SRO (I) BOP (I)	Dilution Water Pp. P-40A trip.
4	CC02B	SRO (C) RO (C)	CCW Pp. Trip (Standby Does Not Start)
5	CV04	SRO (C) RO (C)	Charging Pump P-55A Fluid Drive Failure High (IPE)
6	RX15B	SRO (I) BOP (I)	Main Steam Flow Transmitter FT-0704 Failure on "B" S/G (lower than current - use value = 26. No trip)
7	RC03	SRO (C) RO (C) BOP (C)	Primary Coolant System Leak into Containment at approx. 5 gpm. (IPE) (Use value = 5.0)
8	RC04	SRO (M) RO (M) BOP (M)	Primary Coolant System Leak into Containment at 500 gpm (Use value = 50.0)
9	ED04A ED11A	SRO (C) RO (C) BOP (C)	Loss of Bus 1C; D/G 1-1 starts but output breaker fails to auto close.
10	RD16	SRO (C) RO (C)	Three Stuck Control Rods (Rods, 12, 17, and 18)

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

SIMULATOR OPERATOR INSTRUCTIONS

Event No.	Simulator Operator Instructions
SETUP	* Ensure adequate copies of AP 4.00, Attachment 1, pages 1-5, "Control Room/Reactor Log" are available. * Reset to IC-15 * Approx. 60% power MOL; equipment OOS is AFW Pump P-8C with Caution Tag hung on handswitch; two MFW pumps in operation. * P-8C-4 - OFF; P-8C-R - OFF; P-8C-G-OFF. Also INSERT FW16C. * Ensure EOOS indicates that P-8C is OOS. * Ensure CCW Pumps P-52B AND P-52C are running, with P-52A in Standby. * Raise power to approximately 63-64% power, stabilize, and SNAP. * INSERT RD16-12, RD16-17, RD16-18 malfunctions for three stuck control rods. * INSERT CC13A (prevents standby CCW pump from starting) * INSERT ED11A to prevent 152-107 from closing (NOTE: Must be triggered to be removed when attempting to manually close the breaker.) * OVERRIDE ANN-K-05-32 Bus 1C or 1D Overcurrent Lockout to OFF. * Ensure DEH selected values for power level, limiter, and rate of power maneuver are set for values OTHER THAN what is required for this evolution. * ***Need a grease pencil for EOP-9.0 decision points.***
1	Place MFW controls in AUTO - No actions required.
2	Power Escalation - No actions required.
3	P-40A-1 (DWS P-40A Selector Stop to ON) - Overrides HS for P-40A to OFF.
4	CC02B - Trips one running CCW Pp. (P-52B) ***SPECIAL NOTE: DO NOT ENTER WHILE A DILUTION IS IN PROGRESS.***
5	CV04 - Charging Pump P-55A Fluid Drive Failure High
6	RX15B - FT-0704 Failure; Set value at 26. Ramp in slowly. ***After 5 minutes fail to 0.***
7	RC03 - Severity = use value of 5.0 (5 gpm)
8	RC04 - Severity = use value of 50.0 (500 gpm); Ramp time = 1 minute
9	ED04A - Overcurrent trip of Bus 1C. DELETE as soon as 1C de-energizes.
10	RD16-12, RD16-17, RD16-18 ***INSERT at beginning of scenario.***

Special Notes:

1. If sent as the AO to check CCW Hx dp PRIOR to manually starting the standby CCW Pp, report as 10.1, 10.2. If sent to adjust dP, report there is no further adjustment available.
2. If sent as the AO to check CCW Hx dp AFTER manually starting the standby CCW Pp, report as 13.1, 13.2
3. If sent as the AO to investigate P-55A, report: "Appears to be a problem with the fluid drive. Oil

is leaking out of the fluid drive. **If NCO does NOT request a report, THEN trip P-55A.**

SHIFT TURNOVER - SCENARIO: ONE

Approx. 63% power MOL; AFW Pump P-8C is out of service. Main Feedwater System is in operation with both MFW Pps in service. Boron concentration is 837 ppm. ASI is -0.01. Shift orders are to continue a power escalation at 6% per hour to full power. All GOP-5 steps up to and including GOP-5, Section 4.2 have been completed (including Heat Balance). MFW controls are to be placed in AUTO, as required by GOP-5, step 4.3. PCS Total Isotope is per PPC 540. "B" Evap is in service. S/G B/D @20K ea. Charging Pp. leakage is 10 ml/min. CRDM leakage at 0.

Op-Test No.:	Scenario No.: 1	Event No.: 1	Page 1 of 1
Event Description:	***Place Main Feedwater Control in AUTO.***		

Time	Position	Applicant's Actions or Behavior
	SRO BOP	Enters SOP-12, section 7.5.4.b. May first refer to the information section of 7.5.4.a.
	BOP	Verifies HIC-0525 (Combined Speed Controller) in Manual.
	BOP	Adjust manual output of HIC-0525 to match existing turbine speed for each Feed Pump speed controller (HIC-0526 and HIC-0529).
	BOP	When setpoint on each speed controller matches actual speed, place in CASCADE mode by pushing AUTO pushbutton on controller.
	BOP	Monitor differential pressure between feed pump discharge pressure and S/G pressure to ensure adequate driving head for maintaining S/G levels.
	BOP	Match setpoint and process signal on HIC-0525 (Combined Speed Controller) to obtain PF light flashing.
	BOP	Place HIC-0525 in CASCADE mode by pushing AUTO pushbutton.

Op-Test No.:	Scenario No.: 1	Event No.: 2	Page 1 of 1
Event Description:	***Power Escalation***		

Time	Position	Applicant's Actions or Behavior
	SRO	Enters and directs the actions of GOP-5.
	SRO	Reviews GOP-5 Precaution and Limitations with crew.
	SRO	May discuss ASI control strategy.
	BOP RO	Continue power escalation as directed by CRS.
		Note to Examiner: Various techniques may be used for the power ascension (e.g., start with a 50 gal dilution, follow with a 100 gal dilution)
	BOP	Selects DEH rate at 6% per hour.
	RO BOP	Monitor Tave and Tref.
	BOP	Initiates GO on the DEH control for Main Turbine load increase.
		Note to Examiner: Please see next page for procedure used for dilution. Flow limit used during validation was 40 gpm.

Proc No SOP-2A
Attachment 12
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Page 6 of 1

DILUTION

STEP		COMPLETED
1.	**CHECK** Charging and Letdown Flows normal	
2.	**DETERMINE** difference between desired and existing boron concentration AND quantity and flowrate of concentrated boric acid to be injected	
3.	**ENSURE** CLOSED CV-2155	
4.	**ENSURE** RESET and in AUTO FIC-0210A	
5.	**ENSURE** ZERO output signal on FIC-0210A	
6.	**SET** batch quantity and flow limit on FIC-0210A	
7.	**ENSURE** in MANUAL P-90A OR P-90B AND the other in OFF	
8.	**OPEN** CV-2155	
9.	**PUSH** START button on FIC-0210A	
10.	**MONITOR** reactor power and T_{AVE}	
11.	WHEN dilution complete, THEN **ENSURE** ZERO output signal on FIC-0210A	
12.	**CLOSE** CV-2155	
13.	**RECORD** total gallons added from FIC-0210A	

Op-Test No.: | Scenario No.: **1** | Event No.: **3** | 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: * EK-3518, Dilution Wtr Pump P-40A Trip * Notes "A" Cooling Tower level lowering.
	BOP	Throttle open MOV-5305 (Cooling Tower Pp. P-39A discharge) to maintain cooling tower basin level.
	BOP SRO	May go to HOLD on Main Turbine.
	SRO	Call Chemistry or RMC for notification of degrading of dilution capability.

Op-Test No.:	Scenario No.: 1	Event No.: 4	Page 1 of 1
Event Description:	***P-52B CCW Pump Trip (Standby Fail to Start)***		

Time	Position	Applicant's Actions or Behavior
	SRO RO	Diagnose trip of CCW Pump P-52B • P-52B breaker indicates OPEN • EK-1167, COMPONENT CLG PUMPS P-52A/B/C TRIP alarms • EK-1168, COMPONENT CLG PUMPS STANDBY PUMP RUNNING does NOT alarm. • Standby CCW Pump FAILS to start
	SRO	Enters and directs the actions of ARP-7 and ONP-6.2. Makes PA announcement of entering ONP-6.2.
	RO	Starts available CCW Pump P-52A.
	RO SRO	Auxiliary Operator actions directed, as appropriate. (May dispatch AO to check CCW Hx dP.)
	RO	Monitors CRDM and PCP parameters, as appropriate.
	SRO	Refers to Tech Spec 3.7.7. A.1 is required action. Determines one train inoperable and must restore within 72 hours.
	SRO	Initiates troubleshooting and repair.

Op-Test No.: | Scenario No.: 1 | Event No.: 5 | Page 1 of 2

Event Description: ***Charging Pump P-55A Fluid Drive Failure High***

Time	Position	Applicant's Actions or Behavior
	SRO RO	Diagnoses high failure of Charging Pump P-55A speed • Charging/letdown mismatch • Pressurizer level rising • VCT level lowering • May also get EK-0704, Letdown Ht Ex Tube Inlet Hi-Lo Pressure alarm
	SRO	Enters and directs the actions of EK-0704, as appropriate. NOTE: Actions directed by EK-0704 do NOT address this condition.
	SRO	Directs RO to take manual control of P-55A speed or place Charging Pump P-55B or P-55C in service and secure Charging Pump P-55A per SOP-2A
	RO	If directed, place in MANUAL either P-55B (preferred) or P-55C Charging Pumps Control Select Switch
	RO	May direct AO to ensure throttled OPEN P-55B Seal Coolant Flow Control Vlv.
	RO	Ensure in AUTO charging pump control select switch for the second fixed capacity charging pump
	RO	Start pump selected for manual operation.

Op-Test No.:	Scenario No.: 1	Event No.: 5	Page 2 of 2
Event Description:	***Charging Pump P-55A Fluid Drive Failure High***		

Time	Position	Applicant's Actions or Behavior
	SRO RO	Refer to Attachment 2 and check that the charging pump selected for AUTO (P-55C preferred), and possibly additional Letdown Orifice Stop Valves cycle according to controller output to maintain PZR level setpoint
	RO	IF desired to minimize Letdown Orifice Valve cycling, THEN CLOSE CV-2004, Orifice Stop Valve
	RO	When charging flow increases, stop P-55A.
	SRO	Initiate troubleshooting and repair of P-55A drive
	SRO	Consults Operating Requirements Manual (ORM 3.2). Determines no compensatory action or LCO entry required, since two charging pumps remain operable.

Op-Test No.:	Scenario No.: 1	Event No.: 6	Page 1 of 1
Event Description:	***Main Steam Flow Transmitter (FT-0704) Fail to Lower than Normal***		

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnoses failure of steam flow transmitter FT-0704 on 'B' S/G • Steam flow lower than feed flow • CV-0703 closing to lower feed flow • Feed pump speed lowering • SG 'B' level lowering • SG 'A' level lowering, then restoring to normal as CV-0701 opens
	SRO	Enters and directs the actions of ONP-3, Loss of Feedwater
	BOP	Takes manual control of CV-0703 and feed pumps, if needed, to maintain SG levels at program
	SRO	Initiates troubleshooting and repairs

Op-Test No.:	Scenario No.: 1	Event No.: 7	Page 1 of 2
Event Description:	***PCS Leak Inside Containment (5 gpm)***		

Time	Position	Applicant's Actions or Behavior
	RO BOP SRO	Diagnoses leakage from PCS into containment • Containment humidity rising • Pressurizer level lowering until recovered by PLCS • Pressurizer pressure lowering until recovered by PPCS • Charging requirements rising • Charging/letdown mismatch greater than normal • VCT level lowering • Containment sump level rising • EK-1364, GASEOUS WASTE, alarms due to Containment Air alarm
	SRO	Refers to and directs the actions of ONP-23.1
	RO	Ensures additional Charging Pumps start (if needed)
	RO	Ensure that the increase in average makeup rate has not been caused by a large generator load change or by a change in Tave
	RO SRO	At SRO discretion, close CV-2001 and CV-2009 to isolate letdown NOTE: May elect to NOT isolate letdown. This is acceptable.
	RO SRO	Perform GOP-13, Attachment 1, PCS Inventory Form".
	RO SRO	Perform SOP-17B, 7.13.1.d to estimate PCS leakrate (alternate method, but not required).

Op-Test No.:	Scenario No.: 1	Event No.: 7	Page 2 of 2
Event Description:	***PCS Leak Inside Containment (5 gpm)***		

Time	Position	Applicant's Actions or Behavior
	RO BOP SRO	Determine PCS leakrate NOTE: Full leak rate calculation is not expected to be performed. Leak rate determination may be somewhat masked by previous events which may still have PCS temperature changing slightly
	RO BOP	Attempt to locate the leak • Containment Sump level recorders • Containment humidity indicators • Area radiation monitors
	SRO	Refers to and enters Tech Spec 3.4.13 for PCS Leakage limits
	SRO	Enters GOP-8 to perform an orderly shutdown. ***NOTE: Crew may elect to trip the Reactor. This is acceptable.***
		NOTE: Initiate next event when SRO has addressed plant conditions and Tech Specs

Op-Test No.:	Scenario No.: 1	Event No.: 8	Page 1 of 5
Event Description:	***PCS Leak Inside Containment Raises to 500 gpm***		

Time	Position	Applicant's Actions or Behavior
	RO BOP SRO	Diagnoses large break LOCA • SIAS actuated • PCS pressure lowering rapidly • Containment pressure rising rapidly • Containment humidity and temperature rising • EK-1363, CONT HI RAD and numerous alarms annunciating
	SRO	Orders reactor trip and enters and directs actions of EOP-1.0
	RO	Determines Reactivity Control NOT met due to three stuck rods and commences Emergency Boration ***CRITICAL TASK for reactivity control.***
	BOP	Control the Feedwater System • Places ALL operating MFPs to manual and ramp one to minimum speed • As Tave lowers toward 525°F ramps second MFP to minimum speed • Closes ALL MFRVs and Bypass FRVs ***CRITICAL TASK to prevent PCS overcooling.***
	BOP	Determines Vital Auxiliaries - Electric acceptance criteria met * Main Turbine tripped * Main Gen disconnected from grid * Bus 1C, 1D energized * Bus 1E energized * Bus 1A and 1B energized * Instrument Bus Y-01 energized * Required DC Busses energized * At least 3 of 4 Preferred AC Buses energized

Op-Test No.:	Scenario No.: 1	Event No.: 8	Page 2 of 5
Event Description:	***PCS Leak Inside Containment Raises to 500 gpm***		

Time	Position	Applicant's Actions or Behavior
	RO	Determine that PCS Inventory Control acceptance criteria are NOT met due to low Pressurizer level (*Manually operates PLCS to restore)*
	RO	Determines PCS Pressure Control acceptance criteria NOT met (if SIAS has actuated) (*Verifies SAFETY INJ INITIATED EK-1342 in alarm.)*
	RO	Determines Core Heat Removal acceptance criteria are met: * At least one PCP operating * Loop ΔT < 10 degrees * PCS at least 25 degrees subcooled
	RO BOP	Determines that PCS Heat Removal acceptance criteria are met • Ensure Turbine Bypass Valve closed • Ensure Atmospheric Steam Dump Valves closed • Ensure both MSIVs closed • Ensure Main Feed Reg Valves and Bypass Feed Reg Valves closed
	RO BOP	Determine that Containment Isolation acceptance criteria are met: * Cont. pressure < 0.85 psig * Cont. temperature < 125°F * RIA-0631 clear / no unexplained rise * Main Steam line monitors clear / no unexplained rise
	RO BOP	Determine that Containment Atmosphere acceptance criteria are NOT met: (*Ensure all CAC high capacity outlet valves are open, as SWS conditions permit.*) ***(By this time, containment temp and press will probably be out of spec.)***

Op-Test No.:	Scenario No.: 1	Event No.: 8	Page 3 of 5
Event Description:	***PCS Leak Inside Containment Raises to 500 gpm***		

Time	Position	Applicant's Actions or Behavior
	RO	Determine Vital Auxiliaries - Water acceptance criteria are met: * At least 2 SW Pps. operating * BOTH Critical SW headers > 42 psig. * At least 1 CCW Pp. operating
	RO	Determine Vital Auxiliaries - Air acceptance criteria are met: * Instrument Air pressure > 85 psig.
	BOP	Perform EOP Supplement 5, "Checklist for Safeguards Equipment Following SIAS"
	BOP	Perform EOP Supplement 6, "Checklist for Containment Isolation"
	BOP RO	Turns panels over to RO and commences Emergency Shutdown Checklist (GOP-10)
	SRO	Refers to Attachment 1, "Event Diagnostic Flow Chart" and diagnoses the event.
	SRO	Transitions to EOP-9.0 due to indications of a PCS LOCA, concurrent with MORE THAN one full length control rod stuck out.

Op-Test No.:	Scenario No.: 1	Event No.: 8	Page 4 of 5
Event Description:	***PCS Leak Inside Containment Raises to 500 gpm***		

Time	Position	Applicant's Actions or Behavior
	RO	Stop PCPs, as required. • If pressure less than 1300 psia, stop one PCP in each loop • If subcooling less than 25°F, stop remaining 2 PCPs. ***CRITICAL TASK to minimize inventory loss and to protect PCPs.***
	SRO	Direct that all PCPs be stopped if PCP operating limits of EOP Supplement 1 are NOT satisfied.
	SRO	Ensure emergency boration in progress. (already in progress due to three stuck control rods)
	SRO	Direct BOP to place one train of CR HVAC in Emergency Mode within 20 minutes of reactor trip.
	SRO	Direct BOP to place a Hydrogen Monitor in service.

Op-Test No.:	Scenario No.: 1	Event No.: 8	Page 5 of 5
Event Description:	***PCS Leak Inside Containment Raises to 500 gpm***		

Time	Position	Applicant's Actions or Behavior
	SRO	Select appropriate success paths per Resource Assessment Trees A thru I. • RC - 2/3 • MVAE DC - 1 • MVAE AC - 1 • IC - 2 • PC - 1 • HR - 2 • CI - 1 • CA - 2 • MVAW - 1 • MVAA - 1
	SRO	Direct SE to perform Safety Function Status Checks every 15 minutes.
	RO	Verify "SAFETY INJ INITIATED" (EK-1342) is alarmed.
	SRO/RO	When proper boron is verified for cooldown, commence a controlled PCS cooldown.
		Terminate scenario when PCS cooldown commenced.

Op-Test No.:	Scenario No.: **1**	Event No.: **9**	Page 1 of 1
Event Description:	***Loss of Safety Bus 1C and Failure of D/G 1-1 Output Brkr to AUTO close.***		

Time	Position	Applicant's Actions or Behavior
	BOP SRO RO	Diagnoses loss of Bus 1C and load shed: * Normal lighting in Control Room goes off. * Numerous alarms, including: - EK-0515, 2400V BUS 1C AND/OR 1D UNDERVOLTAGE - EK-0551, DIESEL GEN NO 1-1 TROUBLE (*due to D/G 1-1 start)* * D/G 1-1 starts, but does not load.
	SRO BOP	Verifies D/G 1-1 has started. May use any of the following: * Audible feedback (floor vibration) * D/G 1-1 Trouble alarm (as noted above) * D/G panel indications (voltage, etc.)
	BOP	Verifies alarm EK-0532, BUS 1C OR 1D OVERCURRENT LOCKOUT is NOT annunciating.
	BOP	Ensure Bus 1C feeder breakers are OPEN: * 152-105 * 152-106
	BOP	Checks D/G 1-1 voltage at least 2000 volts.
	BOP	Verifies load shed has occurred for Bus 1C by noting breaker 52-1103 OPEN.
	BOP	Inserts synch switch into breaker 152-107 slot and scopes and closes breaker 152-107.
	SRO BOP	Notes sequencer is energized and loads are restoring to Bus 1C.

Op-Test No.:	Scenario No.: 1	Event No.: 10	Page 1 of 1
Event Description:	***Three Stuck Control Rods (Rods, 12, 17, and 18)***		

Time	Position	Applicant's Actions or Behavior
	RO	Determines Reactivity Control NOT met due to three stuck rods and commences Emergency Boration ***CRITICAL TASK for reactivity control. (previously identified)***