The crew is directed to ramp to 100% power (Event 1). The RO will have to dilute to ramp turbine and reactor power to 100%.

RCS Loop 3 NR T-cold, TE-430B, fails high (Event 2), causing rods to automatically step in. After determining that the rod motion is due to the failed channel, the SFM should direct the RO to place rods in manual and restore T-avg. The SFM should enter OP AP-5 to determine the required actions.

One rod drops in Control bank D (Event 3), causes rods to step out. The BOP / RO should recognize the dropped rod and report it to the SFM. The SFM should enter OP AP-12C to recover from the dropped rod.

A second rod will drop (Event 4) when the Bank selector switch is taken to the Control Bank D position. The SFM should direct the RO to conduct a reactor trip and perform the immediate actions of EOP E-0.

The BOP / RO should recognize and report to the SFM that two rods stuck out (Event 5) on the reactor trip. The crew will transition from EOP E-0 to EOP E-0.1 since no Safety Injection has occurred or is required at this time. The SFM should direct the RO to emergency borate per OP AP-6.

Following the reactor trip, a PZR steam space break occurs (Event 6), ramping to 200 gpm over 2 minutes. The steam space break results in increasing PZR level accompanied by decreasing RCS pressure. The SFM should direct a manual Safety Injection prior to an automatic SI at 1850 psig. The SFM should reenter EOP E-0, then transition to EOP E-1, Loss of Reactor or Secondary Coolant.

Upon initiation of the SI, Train B of Safety Injection fails to actuate (Event 7). The BOP / RO should recognize the SI train failure and report the status to the SFM. The SFM will direct the BOP and RO to manually start the train B components and manually align the train B valves.

Approximately 10 to 15 minutes following the reactor trip, the Intermediate Range channels should be low enough to energize the Source Range detectors except that NI-36 is undercompensated (Event 8), resulting in only 1 of 2 IR channels below P-6. The RO should recognize the failure of SR detectors to energize and notify the SFM. The SFM should direct the RO to manually reset and energize both SR detectors.

The scenario should terminate when the crew transitions to EOP E-1.2, Post LOCA Cooldown and Depressurization.

Facility: DCPP Units 1 & 2 Scenario No.: 8 Op-Test No.: 2

Examiners: Operators:

Objectives: Evaluate the crew's ability to diagnose and respond to a NR T-cold failing high.

Evaluate the crew's ability to diagnose and respond to a dropped rod.

Evaluate the crew's ability to diagnose and respond to a second dropped rod.

Evaluate the crew's ability to diagnose and respond to two rods stuck withdrawn.

Evaluate the crew in using EOPs during a PZR Steam Space leak.

Evaluate the crew 's ability to diagnose and respond to a Train B SI fail to actuate.

Evaluate the crew 's ability to diagnose and respond to an undercompensated IR channel.

Initial Conditions: 50% power, equilibrium xenon, Middle of cycle (IC-27)

Turnover: 4 gpd leak on S/G 1-3. D/G 1-1 is OOS.

Time min	Event No.	Malf. No.	Event Type*	Event Description
var	1		N/R, RO, SFM	Commences power ramp to 100% following turnover.
2	2	xmt rcs93	I, RO, SFM	Loop 3 NR T-cold, TE-430B, fails high.
7	3	mal rod3a	C, RO	Dropped rod (B-6) in control bank D.
condon select	4	mal rod3b	C, All	Second dropped rod when bank D selected on the bank selector switch (rod K-2).

cond on trip	5	mal rod12a mal rod12b	C, RO	Two rods stuck withdrawn on reactor trip (rods D-12, E-9)
reactor trip + 10	6	mal pzr1	M, All	PZR Steam Space leak develops 10 minutes after reactor trip.
cond on SI	7	mal ppl3b	C, RO	Train B of Safety Injection fails to activate.
cond on trip	8	mal nis4b	C, RO	IR NI-36 is undercompensated.

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

Op-Test No.:__2 __ Scenario No.: ____8_____ Event No.: ____1____ Page __1__ of __9__

Event Description: _____Commences power ramp to 100% following turnover _____

Time	Position	Applicant's Actions or Behavior
	BOP	Monitor plant parameters
	RO	Initiate dilution for ramp to 100% power Set up makeup control system for dilution in batch mode (100 - 200 gals.)
		Set up DEHC • Place MW feedback in service • Set load reference • Set load rate • Raise VPL (Valve Position Limit)
		Commence ramp to 100% power
	SFM	Review precautions and limitations of OP L-4 and conduct tailboard briefing
		Direct RO to commence ramp to 100% power at 3 - 5 MW/min

p-Test No.:__2 __ Scenario No.: ____8_____ Event No.: ____2____ Page __2__ of __9__

Event Description :_____Loop 3 NR T-cold, TE-430B, fails high _____

_____ _____

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose and report Loop 3 NR T-cold channel failure
	RO	Recognize and report rod motion concurrent with T-cold channel failure
		Determine and report rod motion not required
		Place rod control in manual ** Critical Task
		Deselect Loop 3 for T-avg and Delta-T control
		Return T-avg to T-ref and then place rod control back in auto
	SFM	Go to OP A-5 and direct operator recovery actions
		Direct RO to place rod control in manual ** Critical Task
		Direct RO to deselect Loop 3 for T-avg and Delta-T control
		Consult Tech Spec 3.3.1

		• 6 hour action to trip bistables for OPΔT and OTΔT trips

-Test No.:__2 __ Scenario No.: ____8_____ Event No.: ____3____ Page __3__ of __9__

Event Description :_____Dropped rod (B-6) in control bank D _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report dropped rod; indicated on DRPI
	RO	Recognize and report dropped rod; indicated on DRPI
		Take actions for a dropped rod: • Rods to manual if not already in manual • Stop load ramp if not already stopped (Hold on DEHC) • Adjust turbine load to match T-avg and T-ref (check PPC or TR-412) • Check Urgent Failure alarm not in (PK03-17 off) • Select Control Bank D • Verify AFD is within Tech Spec Limits (see limit curve on CC-1)
	SFM	Enter OP AP-12C, Dropped Control Rod
		Direct RO actions for a dropped rod
		Direct Maintenance Services and Operator to investigate dropped rod; check for blown fuses

		Contact Reactor Engineering
		Consult Tech Specs: 3.1.1.1 within 1 hr, determine SDM > 1.6% $\Delta k/k$ (STA) 3.1.3.1 within 1 hr, restore rods to within ± 12 steps from demand 3.2.1.1 within 4 hrs, reduce the high power trip setpoint (already below 50% power) 3.2.4 within 4 hrs, reduce the high power trip setpoint (already below 50% power)

Test No.:___2 ___ Scenario No.: _____8_____ Event No.: ____4____ Page __4__ of __9__

Event Description: _____Second dropped rod (K-2) when bank D selected on the bank selector switch__

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report second dropped rod; indicated on DRPI
		Perform immediate actions of EOP E-0
	RO	Recognize and report second dropped rod
		Initiate manual reactor trip as directed by SFM ** Critical Task
		Perform immediate actions of EOP E-0
	SFM	Acknowledge reports from BOP / RO of second dropped rod
		Direct RO to initiate a manual reactor trip ** Critical task
		Go to EOP E-0 and direct immediate actions
		Tailboard and transition to EOP E-0.1

t No.:__2 __ Scenario No.: ____8_____ Event No.: ____5 ____ Page __5__ of __9__

Event Description: _____Two rods (D-12 and E-9) stuck withdrawn on reactor trip _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report two stuck rods (Shutdown Bank) following the reactor trip
		Perform actions of EOP E-0 and EOP E-0.1 as directed by SFM
	RO	Recognize and report two stuck rods following the reactor trip
		Initiate Emergency Boration as directed by SFM • Borate 100 ppm (900 gallons, or calculated addition) per stuck rod.
	SFM	Acknowledge reports from BOP / RO of two stuck rods following reactor trip
		At step 3 of EOP E-0.1, direct RO to Implement OP AP-6, Emergency Boration

est No.:__2 __ Scenario No.: ____8_____ Event No.: ____6 ___ Page __6__ of __9__

Event Description: _____PZR Steam space leak develops _____

_____

___

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose and report steam space leak
		Perform immediate actions of EOP E-0
		Perform Appendix E, Secondary and Auxiliary Status
	RO	Diagnose and report steam space leak
		Perform manual Safety Injection as directed by SFM
		Perform immediate actions of EOP E-0
	RO / BOP	Recognize and inform SFM when RCP trip criteria met • Trip RCPs ** Critical Task
	SFM	Acknowledge reports from BOP / RO of steam space leak
		Direct RO to do a manual Safety Injection
		Reenter EOP E-0 and direct immediate actions

		Direct RO to trip RCPs

est No.:__2 __ Scenario No.: ____8_____ Event No.: ____7 ___ Page __7__ of __9__

Event Description: _____Train B of Safety Injection fails to activate _____

___

Time	Position	Applicant's Actions or Behavior
	BOP	Perform actions of EOP E-0 as directed by SFM
		Start D/G 1-2
	RO	Recognize and report SI Train B failure
		Perform a manual Phase A actuation Manually start Train B ECCS components and align Train B valves • Close LCV-112C, 8108 • Open 8801B, 8803B, 8805B • Start RHR Pp 1-1 and SIP 1-2 ** Critical Task

est No.:__2 __ Scenario No.: ____8_____ Event No.: ____7 ___ Page __8__ of __9__

Event Description: _____Train B of Safety Injection fails to activate _(continued)_____

Time	Position	Applicant's Actions or Behavior
	SFM	Acknowledge report of Train B SI failure to actuate • Direct manual alignment of Train B components
		Direct subsequent actions Of EOP E-0
		Transition to EOP E-1, Loss of Reactor or Secondary Coolant • Review major actions • Assign Foldout Page items
		Transition to EOP E-1.1, SI Termination • Review major actions • Assign Foldout Page Items
		Transition to EOP E-1.2, Post LOCA Cooldown and Depressurization • Review major actions • Assign Foldout Page Items

Op-Test No.:__2 __ Scenario No.: ____8_____ Event No.: ____8 ___ Page __9__ of __9__

Event Description: _____IR NI-36 is undercompensated _____ _____ _____

Time	Position	Applicant's Actions or Behavior
	BOP	Perform actions of EOP E-1.2 as directed by SFM
	RO	Recognize and report failure of both Source Range detectors to energize
		Manually reset and energize both Source Range detectors as directed by SFM
	SFM	Check if Source Range detectors should be energized
		Direct RO to manually reset and energize both Source Range detectors

NRC SCENARIO 08 SETUP

SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 27	Initialize the simulator at 50% power, equilibrium xenon, MOL
DRILL 6080	• Clears D/G 1-1 • Gives 4 gpd tube leak on S/G 1-3 • Removes power from SPDS screens Trains A and B
Control Boards	• Place D/G 1-1 mode selector switch in manual • Place CAUTION stickers on D/G 1-1 mode selector switch and breaker control switch • Place CAUTION stickers on SPDS screens Trains A and B

NRC SCENARIO 08 SETUP

CONTROL BOARD SETUP

[ ] Copies of all commonly used forms and procedures

[ ] Any tags placed/removed as necessary

[ ] Plant Abnormal Status Board updated as necessary

[ ] Circuit Breaker Flags taken to correct position

[ ] Equipment status lamicoids placed correctly

BA Pp 1-2 **B.A. XFER PP SUPPLYING BLENDER**

CWP 1-1 **SUPPLYING IN-SERVICE SCW HX**

CWP 1-1 **AUTO RECLOSE FEATURE CUTIN ON THIS CWP**

CR Vent Trn 1 Bus F **SELECTED TO BUS 2F**

CR Vent Trn 1 Bus H **SELECTED TO BUS 1H**

[ ] Proper Delta-I curve for Simulator INIT on CC1

[ ] Rod Step Counters indicate correct position

[ ] PPC Setup:

- CC2: QP TAVG, ALM/MODE-1, QP CHARGING.
- Others: BIG U1169, MODE-1.
- RBU is updated.
- DELTAI is updated
- PENS running.
- R2B blowdown flows at 80 gpm.

[ ] SPDS (screens and time updating), A screen "RM", B screen "SPDS".

[ ] Chart Recorders in operation

[ ] Ensure Annunciator Horn is on (BELL ON) and Sound Effects are on (SOUND ON)

[ ] ALL typewriters ON with adequate paper/ribbons/etc. and are in the "ON LINE" status

[ ] Video and audio recording systems disabled.

[ ] Communications systems turned on and functional

[ ] CREDIT/TEAM setup complete, if applicable

[ ] Print out copy of RISK ASSESSMENT

NRC SCENARIO 08 SETUP

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

INITIATES:

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
	var - E1	n/a	Commences power increase to 100% power
X	**0 min**	**DRILL 6081**	**After normal operations have ben sufficiently observed, load session MALS, OVRs, etc. by FILE or MANUALLY (below)**
	2 min - E2	xmt rcs93 3,697,10,120,d,0	Loop NR T-cold, TE-430B, fails high.
X	**When asked**	**to investigate Protection Set 3 trouble**	**Investigation finds Racks 11 and 13 both have trouble LEDs lit.**
	7 min - E3	mal rod3a act 2,b6,420,d,0	Dropped rod (B-6).
X	**When asked**	**to investigate cause of dropped rod**	**Investigation finds rod B-6 stationary gripper fuse blown. Replaced fuse.**
X	**When asked**	**to evaluate dropped rod recovery**	**Engineering has no restrictions on recovering dropped rod.**
	cond on - E4 select	mal rod3b act 2,k2,0,c,xcli085a,0	Second dropped rod (k2) when bank D selected.
	cond on - E5 trip	mal rod12a act 225,d12,0,d,0 mal rod12b act 225,e9,0,d,0	Two rods (D-12 and E-9) stuck withdrawn on reactor trip.
	cond on - E6 trip + 10	mal pzr1 act 200,120,600,c,jpplp4(1),0	PZR Steam Space leak 10 min after trip.
	cond on - E7 SI	mal ppl3b act 3,0,0,d,0	Train B of Safety Injection fails to activate.
	cond on - E8 trip	mal nis4b act 1e-08,0,0,c,jpplp4(1),0	IR N-36 is undercompensated.

NRC SCENARIO 08
CREW TURNOVER SHEET

1. Unit 1 is at 50% power and has been there for the last 7 days.

2. Unit 2 is at 100% and has been there for the last 60 days.

3. Current reactivity management conditions are:
   Diluting RCS approximately 10 gal. every 2 hours.

4. RCS boron concentration is 1069 ppm.

5. 4 gpd leak on S/G 1-3, monitoring per OP O-4.

6. D/G 1-1 OOS for maintenance 2 hours ago. Estimated RTS in 8 hours.
   STP I-1C performed 2 hours ago.

7. SPDS Trains A and B both became inoperable 1 hour ago. Entered ECG 52.1 action B.1.
   Estimated RTS in 4 hours.

8. Following turnover need to ramp to 100% power.

9. No one is in containment, no entries are expected.