The SFM directs the BOP to increase Accumulator 1-1 level (Event 1) to normal band. The BOP uses OP B-3B:I step 6.5 to accomplish this evolution. While raising Accumulator 1-1 level, the high pressure alarm comes in. The SFM directs the BOP in lowering pressure.

Crew directed to reduce power to 70% (Event 2) in order to remove #2 Heater Drip Pump from service. The SFM directs the RO to reduce power and borate as required.

Pressurizer level channel, LT-459, fails low, (Event 3).PZR heaters are turned off and Letdown Isolation occurs. Charging flow increases and actual PZR level increases. The failed channel is identified and PZR level control is placed in manual. The SFM enters OP AP-5 due to the level channel failure. An alternate channel is selected. Letdown is reestablished and PZR level control is returned to auto.

RCS loop 2 NR T-cold, TE-420 B, fails high, (Event 4) 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.

4160 v bus G trips on overcurrent (Event 5). The SFM should refer to annunciator response procedures PK17-17, 21 and 22 to start alternate equipment and restore power as necessary (i.e. PY-16 on backup, alternate charger lined up to Battery 1-2, restore letdown).

A Main Steam Line break occurs downstream of MSIVs (Event 6). The crew recognizes symptoms of Steam Line Break and does a manual Reactor Trip or a manual Safety Injection followed by closing the MSIVs. The SFM goes to EOP E-0.

When 10% Steam Dump valve, PCV-20, opens it sticks open (Event 7). The BOP should recognize and report PCV-20 failure. The SFM directs the BOP to place controller in manual and close valve; this doesn’t work. The SFM should then direct the BOP to use the Backup Air controls to close the valve; this doesn’t work. The SFM directs local closing of manual isolation valve for PCV-20.

During the Safety Injection RHR Pump 1-2 fails to start in auto (Event 8) (If Safety Injection). The RO recognizes and reports the failure of RHR Pump 1-2 and the SFM directs the manual start of the pump.

The scenario should be terminated:

At step 19 of EOP E-0.1 (If NO Safety Injection), or
At step 11 of EOP E-1.1 (If Safety Injection)

Facility: DCPP Units 1 & 2 Scenario No.: 6 Op-Test No.: 1

Examiners: _____ Operators: _____

_____ _____

_____ _____

Objectives: Evaluate the crew's ability to diagnose and respond to a PZR level channel failing low.

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

Evaluate the crew's ability to diagnose and respond to a loss of 4160 v bus G.

Evaluate the crew in using EOPs during a Steam Line break downstream of MSIVs.

Evaluate the crew's ability to diagnose and respond to a stuck open 10% steam dump valve.

Evaluate the crew 's ability to diagnose and respond to a failure of RHR Pump 1-2 to start.

Initial Conditions: 100% power, equilibrium xenon, Middle of cycle (IC-25)

Turnover: Crew directed to reduce power to 70% to remove Heater 2 Drip Pump from service after

adjusting Accumulator 1-1 level into normal band. D/G 1-1 OOS for maintenance.

Time min	Event No.	Malf. No.	Event Type*	Event Description
var	1	set asisacw(1)	N, BOP	Increase Accumulator 1-1 level to normal band.
var	2		N/R, CO, SFM	Commence power decrease through boration.
2	3	xmt pzr40	I, CO, SFM	Selected PZR level channel, LT-459, fails low.
12	4	xmt rcs54	I, CO,	RCS loop 2 T-cold, TE-420B, fails high.

			SFM	
22	5	mal eps4d	C, BOP, SFM	Lockout of 4160 v bus G due to overcurrent condition on bus.
32	6	mal mss4	M, All	Steam Line break downstream of MSIVs.
cond on open	7	cnv mss23	C, BOP, SFM	S/G PORV, PCV-20, sticks open.
cond on start	8	pmp rhr2	C, RO, SFM	RHR Pp 1-2 fails to start in auto.

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

Op-Test No.:__1 __ Scenario No.: ____6_____ Event No.: ____1____ Page __1__ of __9__

Event Description: _____Increase Accumulator 1-1 level to normal band _____

Time	Position	Applicant's Actions or Behavior
	BOP	References OP B-3B:I, Accumulators - Fill and Pressurize
		Raises level to normal in Accumulator 1-1 per OP B-3B:I
		May get Accumulator 1-1 high pressure
		May lower pressure to normal in Accumulator 1-1 per SFM direction
	RO	Monitor Accumulator alarms and indications
		May get alarm PK02-05, Accumulator Pressure Hi-Lo
	SFM	Go to AR PK02-10, Accumulator Level Hi-Lo
		Refer to Tech Specs 3.5.1
		Review precautions and limitations of OP B-3B:I and conduct tailboard briefing
		Direct BOP to raise level in Accumulator 1-1 to normal level
		May get Accumulator 1-1 high pressure •

		Go to AR PK0-05 • Direct BOP to lower Accumulator 1-1 pressure
		Contact Chemistry to sample Accumulator 1-1

SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 25	Initialize the simulator at 100% power, equilibrium xenon, MOL
DRILL 6060	• Clears D/G 1-1 • Lowers Accumulator 1-1 level
Control Boards	• Place D/G 1-1 mode select switch in MAN • Place CAUTION stickers on D/G 1-1 mode select switch and breaker

NRC SCENARIO 06 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 06 SETUP

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

INITIATES:

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
	var -E1	set asisacw(1)=5.2e04	Increase accumulator level to normal band.
	var - E2	n/a	Commence power decrease through boration.
X	**0 min**	**DRILL 6061**	**After normal operations have been sufficiently observed, load session MALS, OVRs, etc. by FILE or MANUALLY (below)**
	2 min - E3	xmt pzr40 2,0,0,120,d,0	Selected PZR level channel LT-459 fails low.
	12 min - E4	xmt rcs54 3,670,0,720,d,0	RCS Loop 2 T-cold, TE-420B, fails high.
X	**When asked**	**to locally investigate protection set 2 racks for trouble LEDs**	**Investigation finds the only trouble LED is in rack 6.**
	22 min - E5	mal eps4d act 1,0,1320,d,0	Lockout of 4160V bus G due to overcurrent condition on bus.
X	**When requested**	**loa eps17 act,t**	**To place PY-16 on backup.**
X	**When requested**	**run drill 47**	**To place Battery Charger 1-21 on Battery 1-2.**
X	**When requested**	**loa cvc53 act,1 loa cvc54 act,0**	**To locally align BA Xfer Pp 1-1 to the blender.**
	32 min - E6	mal mss4 act 1e+07,120,1920,d,0	Steam Line break down stream of MSIVs.
X	**When asked**	**run drill 15**	**To locally break vacuum, etc.**
	Cond on - E7 open	cnv mss23 2,1,0,0,c,xv3o184g,0	S/G PORV, PCV-20, sticks open.
X	**When requested**	**loa mss14 act 0,20,0,d,0**	**To locally close manual isolation valve for PCV-20.**
	Cond on - E8 start	pmp rhr2 1,0,0,0,d,0	RHR Pp 1-2 fails to start in auto.

NRC SCENARIO 06
CREW TURNOVER SHEET

1. Unit 1 is at 100% power middle of cycle and has been there for the last 123 days.

2. Current reactivity management conditions are:
   Diluting RCS approximately 30 gal. every 2 hours.

3. RCS Boron concentration is 950 ppm.

4. Unit 2 is at 100% power and has been there 45 days.

5. D/G 1-1 OOS for lube oil change out 7 hours ago. RTS expected in 8 hrs.

6. STP I-1C completed for D/G 1-1, due again in 3 hours.

7. Following turnover, need to raise Accumulator 1-1 level to the normal band.

8. After the Accumulator operation then reduce power to 70% to remove Heater 2 Drip Pump from service.

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

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CREW TURNOVER SHEET

Op-Test No.:__1 __ Scenario No.: ____6_____ Event No.: ____2____ Page __2__ of __9__

Event Description :_____Commence power decrease through boration _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Monitor primary and secondary parameters during ramp
	RO	Initiate boration for ramp to 70% power • Operate the makeup system mode select switch • Operate the boric acid integrator
		Set up DEHC • Place MW feedback in service • Set MW reference • Set load rate
		Commence ramp to 75% power
		Monitor T-avg and T-ref and borate as necessary

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NRC SCENARIO 06

CREW TURNOVER SHEET

	SFM	Review precautions and limitations of OP L-4 and conduct tailboard briefing
		Notify UES of ramp down to 70% power
		Direct RO to commence a ramp to 70% power at 3 to 5 MW/min

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CREW TURNOVER SHEET

-Test No.:__1 __ Scenario No.: ____6_____ Event No.: ____3____ Page __3__ of __9__

Event Description :_____Selected PZR level channel, LT-459, fails low _____

_____ _____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize indications of a PZR level channel failing low and report to SFM • Letdown isolation • Alarms PK05-21, PZR Level Hi/Lo Control and PK05-22, PZR Level Hi/Lo Control • LT-459 indicating lower than other channels
		Restore letdown per SFM direction
	RO	Recognize indications of a PZR level channel failing low and report to the SFM • PZR level alarms, heaters off
		Place PZR level control in manual and restore PZR level
		Select an alternate channel for control and restore auto level control • Restore PZR heaters

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	SFM	Acknowledge reports from BOP / RO
		Go to AR PK05-21, PZR Level Hi/Lo Go to OP AP-5 and direct operator recovery actions • Direct RO to take manual control of charging • Direct RO to select an alternate channel • Direct BOP / RO to reestablish letdown and restore auto level control
		Contact maintenance Services to trouble shoot and repair LT-459
		Consult Tech Spec 3.3.1 • Trip inoperable channel within 6 hours

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NRC SCENARIO 06

CREW TURNOVER SHEET

Test No.:___1 ___ Scenario No.: _____6_____ Event No.: ____4____ Page __4__ of __9__

Event Description: _____RCS Loop 2 T-cold, TE-420B, fails high _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Diagnose and report Loop 2 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 2 for T-avg and Delta-T control
		Return T-avg to T-ref (3 step pull and wait) and then place rod control back in auto
	SFM	Go to OP AP-5 and direct operator recovery actions
		Direct RO on rod control and failed channel input action ** Critical action

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		Consult Tech Spec 3.3.1 • 6 hour action to trip bistables for OPΔT and OTΔT trips

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NRC SCENARIO 06

CREW TURNOVER SHEET

t No.:__1 __

Scenario No.: ____6_____ Event No.: ____5 ____ Page __5__ of __9__

Event Description: _____Lockout of 4160v bus G due to overcurrent on bus _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of 4KV bus G trip on overcurrent • Blue OC light on Aux Feeder Breaker 52-HG-13 • 4KV bus G and 480V bus G de-energized
		Take actions as directed by SFM to: • Coordinate with RO to start CCP 1-1 • Start other redundant equipment (locally align BA Xfer Pp 1-1 to blender) • Restore letdown • Recognize RCP vibration alarm is due to loss of PY-16
	RO	Recognize and report symptoms of 4KV bus G trip on overcurrent • Alarm PK17-17, 4KV Bus G Bus or SU Fdr UV • Alarm PK17-21, 4KV Bus G Aux or SU Breakers

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CREW TURNOVER SHEET

		Coordinate with BOP to restore normal charging and letdown
	SFM	Acknowledge reports from BOP / RO
		Refer to OP AP-17 • Direct RO / BOP to start another CCP and restore letdown
		Refer to AR PK17-17, PK17-21, and PK17-22 and direct operator recovery actions • Start redundant equipment (locally align BA Xfer Pp 1-1 to blender) • Place Battery Charger 1-21 on Battery 1-2 • Place PY-16 on backup
		Contact Maintenance Services to trouble shoot and repair

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CREW TURNOVER SHEET

t No.:__1 __

Scenario No.: ____6_____ Event No.: ____6 ____ Page __6__ of __9__

Event Description: _____Steam Line break downstream of MSIVs _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of a steam line break
		Perform Immediate Actions of EOP E-0
		Perform early isolation of S/Gs by closing MSIVs
		Recognize and report failure of RHR Pump 1-2 to start (See Event 8) (If Safety Injection)
		Recognize and report failure of PCV-20 to close (See Event 7)
		Perform Appendix E
	RO	Recognize and report symptoms of a steam line break
		Perform manual Reactor Trip or manual Safety Injection as directed by SFM
		Perform Immediate Actions of EOP E-0
		Recognize and report failure of PCV-20 to close (See Event 7)

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CREW TURNOVER SHEET

		Perform recovery actions as directed by SFM

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CREW TURNOVER SHEET

t No.:__1 __

Scenario No.: ____6_____ Event No.: ____6 ____ Page __7__ of __9__

Event Description: _____Steam Line break downstream of MSIVs _(continued)

_____

_____

_____

Time	Position	Applicant's Actions or Behavior
	SFM	Acknowledge reports of symptoms of a steam line break
		Direct BOP to do a manual Reactor Trip or a manual Safety Injection
		Direct BOP to manually close MSIVs
		Go to EOP E-0 • Direct Immediate Actions • Acknowledge failure of RHR Pump 1-2 to start (See Event 8) (If Safety Injection)
		Acknowledge failure of PCV-20 to close (See Event 7)
		Direct actions of EOP E-0
		Transition to EOP E-0.1, Reactor Trip Response (If NO Safety Injection) • The scenario should be terminated at step 19 of EOP E-0.1
		Transition to EOP E-1.1, SI Termination (If Safety Injection)

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		• The scenario should be terminated at step 11 of EOP E-1.1

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CREW TURNOVER SHEET

est No.:__1__ Scenario No.: ____6_____ Event No.: ____7 ___ Page __8__ of __9__

Event Description: _____S/G 1-2 PORV, PCV-20, sticks open

_____

_____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report failure of PCV-20 to close
		Take manual control of PCV-20 and go to close • PCV-20 does not close
		Cut in backup air to PCV-20 and go to close • PCV-20 does not close
	RO	Recognize and report unwarranted increased steam flow from S/G 1-2
		Monitor primary and secondary parameters at Control Consoles
	SFM	Acknowledge reports from BOP / RO
		Direct BOP to take manual control of PCV-20 and close it • PCV-20 does not close

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CREW TURNOVER SHEET

		Direct BOP to cut in backup air to PCV-20 close it • PCV-20 does not close
		Direct local closing of manual isolation valve for PCV-20
		Contact Maintenance Services to trouble shoot and repair
		Consult Tech Spec 3.1.7.6

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CREW TURNOVER SHEET

Op-Test No.:__1__ Scenario No.: ____6_____ Event No.: ____8 ___ Page __9__ of __9__

Event Description: _____ RHR Pp 1-2 fails to start in auto _(If Safety Injection)_____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Monitor primary and secondary parameters
	RO	Recognize and inform SFM of RHR Pp 1-2 failure to start
		Start RHR Pp 1-2
	SFM	Direct RO to start RHR 1-2

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