The crew is directed to reduce power to 50% (Event 1). The SFM directs the RO to reduce power and borate as required.

RCS Boration batch integrator fails to register during boration (Event 2). Since the batch integrator doesn't count up, the boration will not auto stop. The RO should recognize the failure and manually stop boration. The SFM may refer to OP AP-19, Malfunction of Reactor Makeup Control. The RO may subsequently use manual makeup per OP B-1A:VII until it is determined that the loss of the batch integrator does not affect auto makeup.

Governor valve #1 fails closed due to a faulty LVDT signal (Event 3). The RO should diagnose and report to the SFM that governor valve #1 has failed closed. The SFM responds to a sudden decrease in load by entering OP AP-25. The SFM should direct the crew in stabilizing the plant and recovering from the transient.

CCP 1-2 trips on overcurrent ; causes 4kv bus G differential (Event 4). The crew will need to refer to annunciator response procedures PK17-16, PK17-17, and PK17-22 to start alternate equipment and restore power as necessary (i.e. PY-16 on backup, alternate charger lined up to Battery 1-2, restore charging and letdown).

RCS leak develops which ramps to 7000 gpm in five minutes (Event 5). The SFM enters OP AP-1 where the leak size is diagnosed greater than 50 gpm. The SFM directs the RO to do a manual Safety Injection and enters EOP E-0.

Upon entry into EOP E-0 and performance of immediate actions the crew should recognize that both Trains of Containment Isolation Phase A fail to auto activate (Event 6). The SFM should direct manual actuation of Phase A.

RHR Pp 1-2 trips when it tries to auto start following the Safety Injection (Event 7). The SFM should contact Maintenance Services to investigate the RHR pump motor status while continuing in EOP E-0. The crew will transition to EOP E-1 and then to EOP ECA-1.1 based on a failure of emergency coolant recirculation capability.

The scenario is terminated when the RCS cooldown is started (EOP ECA-1.1, step 5).

Facility: DCPP Units 1 & 2 Scenario No.: 10 Op-Test No.: 1

Examiners: Operators:

Objectives: Evaluate the crew's ability to diagnose and respond to a boric acid batch integrator failure.

Evaluate the crew's ability to diagnose and respond to a Governor valve failing closed.

Evaluate the crew's ability to diagnose and respond to a CCP trip causing a loss of a 4KV bus

Evaluate the crew in using EOPs during a small LOCA.

Evaluate the crew's ability to diagnose and respond to a failure to act of Contmt Iso Phase A.

Evaluate the crew's ability to diagnose and respond to a loss of the remaining RHR pump.

Initial Conditions: 75% power, equilibrium xenon, Middle of cycle (IC-26)

Turnover: Decrease power to 50%. 4 gpd leak on S/G 1-3. CCW pump 1-2 is OOS.

MFP 1-1 seal water system oscillations.

Time min	Event No.	Malf. No.	Event Type*	Event Description
3	1		N/R, RO, SFM	Commences power decrease to 50%.
10	2	ovr cc2003b	I, RO	RCS Boration batch integrator fails to register during boration.
15	3	xmt tur22	C, RO, SFM	Governor valve #1 fails closed due to a faulty LVDT signal..
20	4	pmp cvc2 mal eps4d	C, BOP, SFM	CCP 1-2 trips on OC; causes 4 KV bus differential.
30	5	mal	M, All	RCS leak develops (ramps to 7000 gpm in five minutes).

		rcs3b		
cond on phase A	6	mal ppl1a mal ppl1b	C, RO, SFM	Both trains of Containment Iso Phase A fail to auto activate.
cond on start	7	pmp rhr2	C, RO, SFM	Loss of remaining RHR pump.

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

Op-Test No.:__1 __ Scenario No.: ____10_____ Event No.: ____1____ Page __1__ of __8__

Event Description: _____Commences power decrease to 50% power _____ _____ _____

Time	Position	Applicant's Actions or Behavior
	BOP	Monitor primary and secondary parameters during ramp
	RO	Initiate boration for ramp to 75% 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 50% power
		Monitor T-avg and T-ref and borate as necessary
	SFM	Review precautions and limitations of OP L-4 and conduct tailboard briefing
		Direct RO to commence a ramp to 50% power at 3 - 5 MW/min

NRC SCENARIO 10 SETUP

SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 26	Initialize the simulator at 75% power, equilibrium xenon, MOL
Do before drill 6100	Start CCW Pp 1-3 and shut down CCW Pp 1-2
DRILL 6100	• Clears CCW Pp 1-2 • Gives 4 gpd tube leak in S/G 1-3
Control Boards	• Place CAUTION sticker on CCW Pp 1-2 control switch

NRC SCENARIO 10 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 **SELECTED TO BUS 2F**
Bus F

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

[ ] 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 10 SETUP

TIMELINE AND INSTRUCTOR ACTIONS FOR SIMULATION

X = manual entry required

INITIATES:

	TIME LINE	CONSOLE ENTRY	SYMPTOMS/CUES/DESCRIPTION
X	**0 min**	**DRILL 6101** **NOTE: Run file in just before RO starts borating for load decrease.**	**After SFM reports the crew has taken the watch, load session MALS, OVRs, etc. by FILE or MANUALLY (below)**
	3 min - E1	n/a	Commence power decrease to 50% power.
	10 min - E2	ovr xc2o021c act,0,0,0,d,0	RCS boration batch integrator fails to register during boration.
	15 min - E3	xmt tur22 3,1.1,0,900,d,0	Governor valve #1 fails closed due to faulty LVDT signal.
	20 min - E4	pmp cvc2 4,0,0,1200,d,0 mal eps4d act 2,0,1,c,xv2o265b,0	CCP 1-2 trips on OC, causes 4 KV bus G differential.
X	**When asked**	**loa eps17 act,t**	**To place PY-16 on backup power.**
X	**When asked**	**run drill 47**	**To place Battery Charger 121 on Battery 1-2**
X	**When asked**	**loa cvc53 act,1** **loa cvc54 act,0**	**To line up BA Xfer Pp 1-1 to blender.**
	30 min - E5	mal rcs3b act 7000,300,1800,d,0	RCS leak develops (ramps to 7000 gpm in 5 min).
	Cond on - E6 phase A	mal ppl1a act 2,0,0,d,0 mal ppl1b act 2,0,0,d,0	Both trains of Containment Iso Phase A fail to auto activate.
X	**When asked**	**vlv ccw5, 2,1**	**to manually open FCV-431**
X	**When asked**	**vlv mfw2, 2,0**	**to manually close FCV-439**
	Cond on - E7 start	pmp rhr2 6,5,0,0,d,0	Loss of remaining RHR pump.

NRC SCENARIO 10
CREW TURNOVER SHEET

1. Unit 1 is at 75% middle of life and has been there for the last 24 hours. Delta I is going through swings.

2. Current reactivity management conditions are:
   Diluting RCS approximately 25 gal. every 2 hours.

3. RCS Boron concentration is 1000 ppm.

4. Unit 2 is at 100% power and has been there for the last 207 days.

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

6. CCW Pp 1-2 OOS for maintenance 16 hours ago. Estimated RTS in 4 hours.

7. Following turnover, need to ramp down to 50% power due to Main Feedwater Pump 1-1 seal water system oscillations.

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

NRC SCENARIO 10
CREW TURNOVER SHEET

Op-Test No.: __1 __ Scenario No.: ____10_____ Event No.: ____2____ Page __2__ of __8__

Event Description :_____RCS Boration batch integrator fails to register during boration _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Report conditions of reactor makeup pumps and valves as requested
	RO	Recognize and report failure of boration to stop automatically (batch integrator not counting up)
		Manually stops boration when auto stop doesn't work ** Critical Task
		Manually controls amount of boric acid addition for subsequent borations
		May use manual makeup to subsequently control VCT level
	SFM	Acknowledge report of boration malfunction
		May go to OP AP-19, Malfunction of Reactor Makeup Control System • Direct determination of cause of malfunction •

NRC SCENARIO 10

CREW TURNOVER SHEET

		Direct manual makeup operations as required per OP B-1A:VII
		Notify Maintenance Services to trouble shoot and repair BA batch integrator

NRC SCENARIO 10
CREW TURNOVER SHEET

Test No.:__1__ Scenario No.: ____10_____ Event No.: ____3____ Page __3__ of __8__

Event Description :_____Governor valve #1 fails closed due to a faulty LVDT signal _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report a C-7A
		Monitor primary and secondary parameters and take actions as directed by the SFM
	RO	Recognize and report symptoms of a turbine governor valve failing closed • MW decreased • Governor valve #1 position green light lit, red light out
		Recognize and report turbine problems • Turbine hits Valve Position Limit (VPL) • Turbine starts transfer to single valve mode
		Get off VPL and stabilize turbine at new load as directed by SFM
		Monitor primary and secondary plant parameters

NRC SCENARIO 10
CREW TURNOVER SHEET

	SFM	Acknowledge reports from BOP and RO of turbine load decrease
		May go to OP AP-25, Rapid Load Reduction
		Direct actions of RO and BOP to stabilize the plant
		Contact Maintenance Services to trouble shoot and repair Governor valve # 1 LVDT

NRC SCENARIO 10
CREW TURNOVER SHEET

Op-Test No.:___1 ___ Scenario No.: ____10_____ Event No.: ____4____ Page __4__ of __8__

Event Description: _____CCP 1-2 trips on Overcurrent; causes 4KV bus G differential _____
_____
_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of the CCP trip and bus differential trip • Blue OC light on CCP 1-2 • Blue differential light on bus G, bus de-energized
		Take actions as directed by SFM to: • Coordinate with RO to start additional CCP • Start redundant equipment • Restore letdown
	RO	Recognize and report symptoms of the CCP trip and bus differential trip • Blue light on CCP 1-2 • Blue differential light on bus G, bus de-energized
		Coordinate with BOP to restore normal charging and letdown

	SFM	Acknowledge reports from BOP / RO and refer to OP AP-17
		Direct RO / BOP to start another CCP and restore letdown
		Refer to ARP PK17-16, PK17-17, and PK17-22 and direct recovery actions
		Contact Maintenance Services to trouble shoot and repair

NRC SCENARIO 10
CREW TURNOVER SHEET

t No.:__1 __ Scenario No.: ____10_____ Event No.: ____5 ___ Page __5__ of __8__

Event Description: _____RCS leak develops (ramps to 7000 gpm in five minutes) _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of a leak in containment • CFCU drain level alarms • Containment parameters increasing (sump level, pressure, temperature)
		Perform Immediate Actions of EOP E-0
		Perform Appendix E of EOP E-0
	RO	Recognize and report symptoms of an RCS leak in Containment • CFCU drain level alarms • PZR level and pressure decreasing
		Estimate leak at greater than 50 gpm
		Perform manual Safety Injection as directed by SFM **Critical Task

NRC SCENARIO 10

CREW TURNOVER SHEET

		Perform EOP E-0 Immediate Actions • Recognize and report Containment Isolation Phase A failure (See Event 6) • Recognize and report loss of RHR pumps (See Event 7)
		Recognize and inform SFM when RCP trip criteria are met • Trip RCPs ** Critical Task

NRC SCENARIO 10
CREW TURNOVER SHEET

t No.:__1 __ Scenario No.: ____10_____ Event No.: ____5 ___ Page __6__ of __8__

Event Description: _____ RCS leak develops (ramps to 7000 gpm in five minutes) _(continued) _____

_____

Time	Position	Applicant's Actions or Behavior
	SFM	Acknowledge reports from BOP / RO of RCS leak
		Go to OP AP-1 and direct operator recovery actions • Direct RO to estimate leak
		Direct RO to perform manual Safety Injection ** Critical Task
		Go to EOP E-0 and direct operator actions
		Direct RCPs be tripped at less than 1300 psig ** Critical Task
		Determine S/Gs are intact and transition to EOP E-1 based on high containment pressure • Direct second ASW / CCW HX be aligned
		May direct unloaded D/Gs be secured

NRC SCENARIO 10
CREW TURNOVER SHEET

		Transition to EOP ECA-1.1 based on no RHR pumps

NRC SCENARIO 10
CREW TURNOVER SHEET

t No.:__1 __ Scenario No.: ____10_____ Event No.: ____6 ___ Page __7__ of __8__

Event Description: _____Both trains of Containment Iso Phase A fail to auto activate _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Perform Immediate Actions of EOP E-0
		Monitor primary and secondary parameters
	RO	Recognize and inform SFM of Containment Isolation Phase A failure to activate • May perform manual Phase A which doesn't work
		Manually align Containment Isolation Phase A components ** Critical Task
	SFM	Acknowledge report of Containment Isolation Phase A failure
		Direct RO to manually align Containment Iso Phase A components

NRC SCENARIO 10
CREW TURNOVER SHEET

t No.:__1 __ Scenario No.: ____10_____ Event No.: ____7 ___ Page __8__ of __8__

Event Description: _____ Loss of remaining RHR pump _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Perform actions of ECA-1.1 as directed by SFM
	RO	Recognize and report both RHR pumps unavailable
		Perform actions of ECA-1.1 as directed by SFM
		Perform Appendix M to align makeup to the RWST from blender as directed by SFM • Place makeup mode selector (43/MU) in manual mode • Place FCV-110A and 111A in auto and close FCV-110B and 111B • Adjust HC-111 for 100 gpm and HC-110 for 40 gpm • Direct NO to perform local lineup per Appendix M
		Dump steam to condenser to initiate RCS cooldown
	SFM	Tailboard and transition to EOP ECA-1.1

NRC SCENARIO 10

CREW TURNOVER SHEET

	NOTE	The scenario is terminated when the tailboard is completed for the transition to EOP ECA-1.1