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%.

S/G 1-3 pressure channel, PT-536A, fails high (Event 2) causing PCV-21 to open in automatic. The BOP will have to diagnose the failure, take manual control and close the steam dump valve as directed by the SFM. The SFM should address the Tech Spec for the 10% atmospheric dump valves.

Heater 2 Drain Pump trips on overcurrent (Event 3). The SFM should direct the RO to ramp the unit down to 770 MW at 40 MW/min per OP AP-15, Loss of Feedwater Flow. The BOP should ensure that MFP suction pressure is adequate.

Eagle-21 failure comes in, LCP Halt in Protection Set 1, Rack 1 (Event 4). The BOP and RO should identify the failure and report to the SFM. The SFM should refer to annunciator response procedure PK06-01 and enter OP AP-5. The crew should identify all instrumentation that is affected by the failure. LT-459 and PT-455 are failed as is and LT-459 and PT-455 should be deselected for control.

A Main Steam Line break outside Containment, downstream of MSIV's (Event 5) occurs. The crew recognizes symptoms of a 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.

Two minutes after the reactor is tripped , bus F trips on bus differential (Event 6), taking out AFW Pp 1-3 and CCP 1-1. AFW Pp 1-1 trips when it tries to start which requires a transition to EOP FR-H.1 since all AFW is now lost. CCP 1-2 trips on overcurrent along with the loss of CCP 1-1 on the bus F trip will require the crew to initiate feed and bleed even though S/G WR levels are above 23%. The crew should continue with its efforts to establish feed flow to the steam generators. In the process of establishing a bleed path, two PORVs are failed closed and therefore require that the reactor vessel head vents be opened.

The scenario is terminated after condensate flow is established to the S/Gs and the reactor head vents are closed

Facility: DCPP Units 1 & 2 Scenario No.: 11 Op-Test No.: 3

Examiners: Operators:

Objectives: Evaluate the crew's ability to diagnose and respond to a S/G pressure channel failing high.

Evaluate the crew's ability to diagnose and respond to a Heater Drain Pump tripping.

Evaluate the crew's ability to diagnose and respond to an Eagle-21 System failure.

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 loss of 4KV bus F.

Evaluate the crew in using EOPs during a loss of all feedwater.

Evaluate the crew's ability to diagnose and respond to two PORVs failed closed.

Evaluate the crew's ability to diagnose and respond to a loss of charging.

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

Turnover: Ramp to 100%. 3 gpd leak on S/G 1-1. AFW Pp 1-2 OOS.

Time min	Event No.	Malf. No.	Event Type*	Event Description
var	1		N/R, RO, SFM	Commences power increase to 100% power.
2	2	xmt mss60	I, BOP, SFM	S/G 1-3 pressure channel, PT-536A, fails high.
7	3	pmp cnd10	C, All	Heater 2 Drain Pump trips on overcurrent.
12	4	mal ppl6a	I, RO, SFM	LCP Halt in Protection Set 1, Rack 1.

22	5	mal mss4	M, All	Steam Line break outside Containment, downstream of MSIVs.
cond on Rx trip	6	mal eps4c	C, BOP, SFM	4kv bus F differential.
cond on start		mal afw1	M, All	TDAFWP trips when started, resulting in a loss of all feedwater.
cond on open		vlv pzr4 vlv pzr5	C, RO, SFM	Two PORVs fail in the closed position.
cond on start		pmp cvc2	C, RO, SFM	CCP 1-2 trips on overcurrent when started.

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

Op-Test No.:__3 __ Scenario No.: ____11_____ Event No.: ____1____ Page __1__ of __8__

Event Description: _____Commences power increase to 100% power _____ _____ _____

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 gal)
		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
		Notify UES of intention to ramp to 100% power.
		Direct RO to commence a ramp to 100% power at 3 - 5 MW/min

-Test No.:__3 __ Scenario No.: ____11_____ Event No.: ____2____ Page __2__ of __8__

Event Description :_____S/G 1-3 pressure channel, PT-536, fails high _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report opening of PCV-21 on S/G 1-3
		Identify and report PT-536 failing high as cause for PCV-21 opening • Take manual control of PCV-21 and close valve as directed by SFM
	RO	Recognize and report increased steam flow on S/G 1-3 • Monitor S/G parameters • Identify and report failure of PT-536 as cause for PCV-21 opening
		Take actions as directed by SFM
	SFM	Acknowledge reports from BOP and RO about PT-536 failing high
		Direct BOP to check S/G 1-3 pressure and manually close PCV-21 ** Critical Task
		Go to OP AP-5
		Contact Maintenance Services to trouble shoot and repair PT-536

		Consult Tech Specs • 3.7.1.6 Availability of 10% steam dump valves • 3.3.3.6 Accident monitoring instrumentation

Test No.:__3__ Scenario No.: ____11_____ Event No.: ____3____ Page __3__ of __8__

Event Description :_____Heater 2 Drain Pump trips on overcurrent _____

_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report Heater 2 Drain Pump trip on overcurrent
		Provide verbal feedback to RO regarding main feed pump suction pressure (> 260 psig continuous action)
	RO	Recognize and report Heater 2 Drain pump trip
		Set up DEHC for ramp to 770 MW • Place MW and IMP feedbacks in service • Set load reference to 770 MW • Set load rate as directed by SFM
		Commence ramp
		Initiate boration for ramp to 770 MW
	SFM	Acknowledge reports from BOP / RO of Heater 2 Drip pump failure
		Go to OP AP-15 and direct operator recovery actions •

		Direct RO to commence a ramp to 770 MW at 40 MW/min or per SFM discretion • Direct BOP to provide feedback regarding main feed pump suction pressure
		Direct RO to borate rods out to bring ΔI back into the target band NOTE: May be outside of AFD band and require some boration

NRC SCENARIO 11 SETUP

SIMULATOR SET-UP

CONSOLE ENTRY	DESCRIPTION
INIT 26	Initialize the simulator at 75% power, equilibrium xenon, MOL
DRILL 6110	• 3 gpd tube leak on S/G 1-1 • Clears AFW Pp 1-2
Control Boards	• Start CCP 1-1 and shut down CCP 1-2 • Place CAUTION sticker on AFW Pp 1-2 control switch

NRC SCENARIO 11 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 11 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 6111**	**After normal operations have been sufficiently observed, load session MALS, OVRs, etc. by FILE or MANUALLY (below)**
	2 min - E2	xmt mss60 3,1215,5,120,d,0	S/G 1-3 pressure channel, PT-536A, fails high.
	7 min - E3	pmp cnd10 6,5,10,420,d,0	Heater 2 Drip Pp trips on OC.
	12 min - E4	mal ppl6a act,0,0,720,d,0	LCP Halt in Protection Set 1, Rack 1.
X	**When asked**	**to investigate Protection Set 1 racks**	**Investigation finds an LED is lit in Protection Set 1 Rack 1 only.**
	22 min - E5	mal mss4 act 1e+07,180,1320,d,0	Steam Line Break outside Containment, downstream of MSIV.
	cond on - E6 Rx trip	mal eps4c act 2,0,120,c,fnispr(1).lt.5,0	4KV bus F differential.
	cond on start	mal afw1 act 0,0,2,c,xv3o219r,0	TDAFP trips when started, resulting in loss of all feedwater.
	cond on open	vlv pzr4 1,0,0,0,d,0 vlv pzr5 1,0,0,0,d,0	Two PORVs fail in the closed position.
	cond on start	pmp cvc2 6,8,0,0,d,0	CCP 1-2 trips on overcurrent when started.
X	**When asked**	**to investigate TDAFP**	**Investigation finds the linkage prevents FCV-152 from being relatched.**

NRC SCENARIO 11
CREW TURNOVER SHEET

1. Unit 1 is at 75% power and has been there for the last 3 days.

2. Unit 2 is at 100% power and has been there for 79 days.

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

4. RCS Boron concentration is 1002 ppm.

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

6. AFW Pp 1-2 OOS for maintenance 6 hours ago. Estimated RTS in 8 hours.

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

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

NRC SCENARIO 11

CREW TURNOVER SHEET

Op-Test No.:__3 __ Scenario No.: _____11_____ Event No.: ____4____ Page __4__ of __8__

Event Description: _____LCP Halt in Protection Set 1, Rack 1 _____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of an LCP Halt • Annunciators for channel set failure
		Take actions as directed by SFM
	RO	Recognize and report symptoms of an LCP Halt on Protection Set 1 • Annunciators for channel set failure • Protection set 1 alarm on annunciator typewriter
		Place ramp on hold Check controlling systems controlling in auto • LT-459 failed as is, PT-455 failed as is • May take manual control of charging •

NRC SCENARIO 11

CREW TURNOVER SHEET

		Deselect LT-459 and PT-455 as controlling channels
	SFM	Acknowledge reports from BOP / RO (PK06-01 and PK06-04)
		Go to OP AP-5 and direct operator recovery actions • Direct RO to deselect LT-459 and PT-455 as pressurizer controlling channels
		Contact Maintenance Services to trouble shoot and repair
		Consult Tech Specs 3.3.1 and 3.3.2 • 6 hour action to trip affected bistables for PZR pressure, PZR level, and RCS flow

NRC SCENARIO 11

CREW TURNOVER SHEET

t No.:__3 __ Scenario No.: ____11_____ Event No.: ____5 ___ Page __5__ of __8__

Event Description: _____Steam Line break outside Containment, 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 • Recognize and report loss of 4 KV bus F (See Event 6)
		Recognize and report CCP 1-2 trip on overcurrent (See Event 6)
		Perform early isolation of S/Gs by closing MSIVs
		Perform Appendix E of EOP E-0 as directed by SFM
	RO	Recognize and report symptoms of a steam line break
		Perform manual Reactor trip or manual Safety Injection as directed by SFM ** Critical Task
		Perform immediate actions of EOP E-0
		Perform recovery actions as directed by SFM

NRC SCENARIO 11

CREW TURNOVER SHEET

NRC SCENARIO 11

CREW TURNOVER SHEET

t No.:__3 __ Scenario No.: ____11_____ Event No.: ____5 ___ Page __6__ of __8__

nt Description: _____Steam Line break outside Containment, downstream of MSIVs _(continued)
_____

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_____

Time	Position	Applicant's Actions or Behavior
	SFM	Acknowledge reports of symptoms of a steam line break
		Direct RO to manually trip the Reactor or manually Safety Inject ** Critical Task
		Direct BOP to manually close MSIVs
		Go to EOP E-0 • Direct Immediate Actions • Acknowledge loss of 4 KV bus F (See Event 6) • Acknowledge failure of CCP 1-2 (See Event 6)
		Direct actions of EOP E-0

NRC SCENARIO 11

CREW TURNOVER SHEET

t No.:__3 __ Scenario No.: ____11_____ Event No.: ____6 ___ Page __7__ of __8__

escription: _____Loss of Heat Sink _____

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_____

Time	Position	Applicant's Actions or Behavior
	BOP	Recognize and report symptoms of 4 KV bus F trip on differential • Blue differential light for 4 KV bus F, 4KV bus F de-energized
		Recognize and report loss of **all** AFW flow • AFW Pp 1-2 OOS at turnover • AFW Pp 1-3 supplied by dead bus F • AFW Pp 1-1 tripped when started
		Open reactor head vent valves (8078A-D on PAM1 panel)
		Perform Steps 1-12 of EOP E-0
		Reset Feedwater Isolation and open the MFW isolation and bypass valves
		Depressurize S/Gs to establish feed flow using 10% steam dump valves ** Critical Task
	RO	Report loss of charging flow

NRC SCENARIO 11

CREW TURNOVER SHEET

		• CCP 1-1 de-energized due to loss of 4 KV bus F • CCP 1-2 trips on overcurrent when started
		Stop all RCPs
		Coordinate with BOP to depressurize the S/Gs • Block PZR Lo Press SI and Lo Steamline Pressure SI signals • Cycle Rx trip breakers • Reset SI

NRC SCENARIO 11

CREW TURNOVER SHEET

t No.:__3 __ Scenario No.: ____11_____ Event No.: ____6 ___ Page __8__ of __8__

Event Description: _____ Loss of Heat Sink _(continued)

_____

_____

_____

Time	Position	Applicant's Actions or Behavior
	SFM	Go to EOP FR-H.1 and perform tailboard
		Direct actions to stop all RCPs
		Direct actions for feed and bleed • Actuate SI • Check at least one SI pump running • Reset SI, reset containment isolation phase A • Direct opening Rx vessel head vents since only 1 PORV is open ** Critical Task
		Direct NOs to line up to feed S/Gs with a low pressure water source
		Direct BOP to perform steps 1 through 12 of EOP E-0
		Direct actions to establish feed flow from condensate booster set

NRC SCENARIO 11

CREW TURNOVER SHEET

		• Block and then reset SI • Cycle RTBs • Reset FW isolation • Open FW isolation valves and bypass valves • Depressurize two S/Gs to less than 490 psig
		Direct actions to close the reactor vessel head vents