Facility: NMP1 Scenario No.: NRC 1 Op-Test No.: NRC

Initial Conditions: IC236 Reactor Power is 90% with MPR in service.
Turnover: MPR is in service. EPR is ready to be placed in service, following maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1	FW02C	C (TS SRO)	Feedwater Booster Pump 13 auto trips. The pump is a HPCI component and must be declared inoperable. SRO enters TS 3.1.8 and the pump must be restored within 15 days.
2		N	Transfer pressure control from MPR to EPR per N1-OP-31, F.3.0.
3	RP20B	I (TS SRO)	Drywell High Pressure Transmitter 201.2-476A fails downscale. Transmitter supplies input to RPS, Core Spray and Containment Spray Systems. SRO Tech Spec Entry into LCO 3.6.2 is required.
4	RR09C	C (BOP)	Recirc Pump 13 Motor Generator Slot temperatures rise. Removal of the pump from service is required, which also requires a power reduction. Actions are taken for the Recirc Pump Trip per SOP-1.3
5	MS05	C (RO)	Steam Seal Regulator Failure. Power reduction reveals a pre-existing failure in the Steam Seal Regulator and results in degraded steam seal header pressure and increased condenser air in-leakage. Regulator Bypass must be manually opened to restore seal pressure.
6	RR27	C (ALL) R (SRO RO)	Recirc Master Controller fails low resulting in Restricted Zone entry. Entry into SOP-1.5. Flow drops to 21Mlbm/hr and power is 45-50% on APRMs. Cram Rods must be inserted to exit the restricted zone. Power must be reduced to about 30% power to exit region.
7	Override	M	Loss of Condenser Vacuum due to Steam Seal Regulator Bypass Valve Failure. Enter SOP-25.1. A turbine trip is required when condenser backpressure exceeds 5 inches with generator load <190 MWe. Reactor scrams either manually or automatically.
8	MS04	C	Steam Leak in Drywell 20% ramp time 10:00 minutes. After the scram and initial actions are complete, the steam leak develops. Drywell pressure exceeds 3.5 psig and EOP entry is required. Drywell parameters will reach values that require use of Containment Spray.
9	RP26B	C	Drywell High Pressure Transmitter 201.2-476C fails downscale. With the "A" transmitter previously failed the high drywell pressure RPS scram signal, Core Spray and Containment Spray automatic initiation signals are prevented. Crew must take manual actions to initiate these functions.
10	RR99A RR87	I	RPV level instrument readings become erratic. Crew is required to perform RPV Flooding. Event is classified as SAE 2.1.2

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

[redacted]

Facility: **Nine Mile Point 1**	Scenario No.: **NRC-01**	Op-Test No.: **NRC**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 4,5,6,8,9,10**	6	**Total Malfunction Count:** Major not included in this count. Didn't count Event 1 and 3, because these only require SRO tech spec use.
2. Malfunctions after EOP entry (1-2) **Events 9 and 10**	2	
3. Abnormal events (2-4) **Event 6 SOP-1.5 and Event 7 SOP-25.1**	2	**Abnormal Events Count:** Does not include the SRO TS related events. These are considered separately.
4. Major transients (1-2) **Event 7 Loss of Vacuum**	1	
5. EOPs entered/requiring substantive actions (1-2) **Event 6 EOP-2 RPV; EOP-4 Pri Containment**	2	**SRO TS Events** Event 1 and 3 are SRO Tech Spec evaluation events.
6. EOP contingencies requiring substantive actions (0-2) **Event 9 EOP-7 RPV Flooding**	1	
7. Critical tasks (2-3)	2	

Operators

SRO		SRO 2 Driscoll	
ATC RO	R2 Hibbert	R4 Revelle	R5 DeGroot
BOP RO	R1 French	R3 O'Brien	SRO 1 Minnick

[redacted]

NMP SIMULATOR SCENARIO

NRC Scenario 1 **REV. 0** **No. of Pages: 32**

RPV FLOODING

PREPARER	G. Bobka	DATE 7/14/06
VALIDATED	M. Meier, L. Blum, J. Tsardakas	DATE 9/18/06
GEN SUPERVISOR OPS TRAINING		DATE 2/23/2007
OPERATIONS MANAGER	NA Exam Security	DATE
CONFIGURATION CONTROL	NA Exam Security	DATE

SCENARIO SUMMARY

Length: 90 minutes

Initial Power Level: 90%, above the 100% Rod Line

Mitigating Strategy Code: RL4 Loss of RPV Level Indicators RPV Flooding Required

The scenario begins at 90% reactor power, with the Mechanical Pressure Regulator (MPR) in service. The crew will shift pressure control to the Electronic Pressure regulator (EPR) per normal operating procedures. Shortly after assuming the shift, Feedwater Booster Pump 13 automatically trips and the standby booster pump automatically starts. The pump is a HPCI component and must be declared inoperable. SRO enters TS 3.1.8 and the pump must be restored within 15 days. While shifting regulators, one of the four drywell pressure transmitters fails downscale, preventing that channel from actuating protective functions. The transmitter inputs to RPS, Core Spray, Containment Spray and Automatic Depressurization Systems (ADS). Tech Spec 3.6.2 entry is required.

Recirc Pump 13 Motor Generator experiences an overheating condition and generator slot temperature rises. The crew will reduce power and remove Recirc Pump 13 from service. As turbine load is reduced, a pre-existing failure in the Turbine Steam Seal regulating system is revealed. The turbine seals are normally self-sealing at high power levels. The component failure is only evident as load is reduced from the Recirc Pump trip. Seal header pressure drops below normal values. The crew restores seal header pressure by manually opening the steam seal bypass valve.

A failure of the Recirc Master Flow Controller results in an unplanned power change, as Recirc Flow is reduced to minimum. Plant parameters are such that the Restricted Zone of the Power/Flow Map is entered. The crew implements N1-SOP-1.5 and must exit the Restricted Zone by raising Recirc Flow using individual RRP MA stations or by inserting cram rods. The transient is complicated by a failure of the Turbine Steam Seal Regulator Bypass valve which causes a degraded condenser vacuum, due to loss of steam seals. Vacuum lowers and now

[redacted]

results in a required turbine trip due to low load (<190 MWe) and high backpressure (>5 inches). The crew trips the turbine, but the reactor remains at power, since power is now within turbine bypass valve capability. The crew is expected to manually initiate a scram, due to the degrading conditions. If the crew does not initiate a manual scram, a spurious automatic scram will occur.

Several minutes after the reactor is scrammed, a steam leak inside the drywell develops along with a failure of an additional drywell pressure transmitter. The transmitter failure results in loss of function for actions occurring on high drywell pressure. These functions include loss of automatic scram, automatic start of Core Spray and Containment Spray systems and ADS. Following the scram, all RPV water level indicators will become erratic. The crew will be required to flood the RPV to the Main Steam Lines per N1-EOP-7, RPV Flooding. The crew will also control Primary Containment parameters by implementing N1-EOP-4, Primary Containment.

Major Procedures Exercised: N1-SOP-1.3, N1-SOP-1.5, N1-SOP-25.1, N1-EOP-2, N1-EOP-4, N1-EOP-7

EAL Classification:	SAE 2.1.2 RPV Flooding is required.
Termination Criteria:	RPV Flooding conditions are met. Containment Spray initiated and secured when DWP drops below 3.5 psig.

[redacted]

I. SIMULATOR SET UP

A. IC Number: IC-236 for NRC Exam. IC-20 or equivalent. Ensure EPR has been removed from service and control established on MPR per N1-OP-31. *Reactor power is 90%.*

B. Presets/Function Key Assignments

1. Malfunctions:

a. FW02C FEEDWATER BOOSTER PUMP TRIP 13	TRG 1
b. RP20B RPS 11 DW PT 201.2-476A FAILED LOW	TRG 2
c. RR09C RR PUMP 13 MG SLOT TEMP INCREASE 100% Ramp 10:00 min	TRG 3
d. MS05 TURBINE STEAM SEAL REG FAIL CLOSED	TRG 3
e. RR27 MASTER RECIRC FLOW CONTROL FAILS-LOW	TRG 4
f. RP26B RPS 11 DW PT 201.2-476C FAILED LOW (Event Trigger from Mode Switch to SHUTDOWN)	TRG 6
g. MS04 STEAM RUPTURE INSIDE PC, 20% Delay 4Min Ramp 10:00 Min (Event Trigger from Mode Switch to SHUTDOWN)	TRG 7
h. RP03 REACTOR SCRAM	TRG 8
i. RR99A ERRATIC LEVEL INDICATION ALL METERS (Event Trigger from DW Air Temp 240°F)	TRG 9
j. RR87 FUEL ZONE LEVEL INSTRUMENT FLASHING (Event Trigger from DW Air Temp 240°F)	TRG 9

2. Remotes:

a. FW24 REMOVAL OF HPCI FUSES FU8/FU9, PULL	TRG20

3. Overrides:

a. OVR-1A2S5DI171 POS_1 SSR BV 11 CLS POS A, ON STEAM SEAL BYPASS VALVE CONTROL SWITCH	TRG 5
b. OVR-1A2S5DI172 POS_2 SSR BV 11 OPN POS C, OFF STEAM SEAL BYPASS VALVE CONTROL SWITCH	TRG 5

4. Annunciators:

a. None

C. Equipment Out of Service

1. None

D. Support Documentation

1. None

E. Miscellaneous

[redacted]

1. None
2. EVENT TRIGGERS/COMPOSITES
   a. trgset 6 "zdrpstdn== 1" Mode Switch in Shutdown (RP26B)
   b. trgset 7 "zdrpstdn== 1" Mode Switch in Shutdown (MS04) (7 4:00) 20 10:00
   c. trgset 9 "pctdwair >240" DW air temperature >240°F (RR99A)
   d. trgset 10 "pctdwair >240" DW air temperature >240°F (RR87)

II. **SHIFT TURNOVER INFORMATION**

OFF GOING SHIFT: N D DATE:

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, CSO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Supervisor Log (SM, CRS, STA)
- CSO Log (CSO)
- Lit Control Room Annunciators (SM, CRS, STA, CSO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (CSO)

Evolutions/General Information/Equipment Status:

- Reactor Power = 90%
- Loadline = >100%
- MPR is in service.
- All requirements are met for operation without the EPR.
- EPR setpoint has been lowered from 1010 psig to 950 psig, with Shift Manager approval in preparation for placing the EPR back in service.

PART III: Remarks/Planned Evolutions:

- Transfer control to the EPR per N1-OP-31 F.3.0.
- EPR power has been on for 25 hours.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

[redacted]

Scenario ID#

INSTRUCTOR COMMENTS (Strengths, Areas for Improvement, Open Items etc.)

What Happened?	What we did?	Why? (Goals)	Other Options?

[redacted]

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CT-1.0 Given a primary system leak into the containment, when torus pressure exceeds 13 psig or before drywell air temperature exceeds 300°F, the crew will initiate Containment Sprays, while in the safe region of the Containment Spray Initiation Limit and prior to exceeding the Pressure Suppression Pressure limit IAW N1-EOP-4.

CT-2.0 Given the plant with RPV water level unknown due to erratic instrument indication, the crew will flood the RPV to the Main Steam Lines per EOP-7 and establish RPV pressure at least 72 psig above torus pressure.

B. Performance Objectives:

PO-1.0 Given a trip of Feedwater Booster Pump 13 the SRO will declare the HPCI component inoperable and enter Tech Spec 3.1.8.

PO-2.0 Given the plant at power with the MPR in service the crew will transfer control to the EPR per N1-OP-31.

PO-3.0 Given downscale failure of a Drywell Pressure transmitter the SRO will declare the instrument inoperable and take the actions required by Tech Spec 3.6.2.

PO-4.0 Given the plant at power and a rising Recirc Pump Motor Generator slot temperature the crew will remove the pump from service.

PO-5.0 Given the plant at power and a failure of the turbine Steam Seal system, the crew will respond per procedures and stabilize condenser vacuum to preclude a turbine trip.

PO-6.0 Given the plant at power and a Recirc master flow controller failure resulting in Restricted Zone entry, the crew will enter and execute N1-SOP-1.5 to exit the Restricted Zone.

PO-7.0 Given the plant at power and a failure of the turbine Steam Seal system resulting in low turbine load (<190 MWe) and high condenser backpressure (>5 inches), the crew will trip the turbine as required by N1-SOP-25.1.

[redacted]

PO-8.0 Given erratic indication on RPV water level instruments, the crew will recognize water level is unknown and execute EOP-7 RPV Flooding and flood to the Main Steam Lines.

PO-9.0 Given the plant with LOCA conditions, the crew will initiate Containment Sprays when torus pressure exceeds 13 psig.

PO-10.0 Given the plant with LOCA conditions and Containment Sprays is service, the crew will secure Containment Spray when drywell pressure drops below 3.5 psig

PO-11.0 Given events that meet the criteria for emergency classification, the SRO will classify the event per EPP-EPIP-01 EAL Matrix.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	Crew ☐ Crew conducts a pre-brief, walks down the panels, and tests annunciators.
	SRO ☐ Directs performance of transferring control to EPR.
EVENT1 FWBP13 Trip	
CONSOLE OPERATOR INSTRUCTION: When directed activate malfunction by activating TRG 1: **FW02C FEEDWATER BOOSTER PUMP TRIP 13**	BOP ☐ Report alarm and respond per H3-3-6 ☐ Confirm alarm on computer (E076 RX FW BOOST PMP 13 TRIP) ☐ Confirm start of standby pump ☐ FWBP 13 control switch should be placed in PTL. ☐ Dispatch operators to shift Hydrogen Water Chemistry injection from FWBP13 to FWBP 12.
FWBP 13 trip and FWBP 12 starts. *H3-3-6 REACTOR FW BOOSTER P 13 TRIP OL SUCTION alarms*	
The following annunciators alarm, but clear after the transient: *H3-1-7 REACTOR FW PUMP 11 TRIP OVERLOAD SUCTION HI- LEVEL* *H3-2-7 REACTOR FW PUMP 12 TRIP OVERLOAD SUCTION HI- LEVEL* *H3-3-7 REACTOR FW SHAFT P 13 DISCH*	SRO ☐ Acknowledges report. ☐ Enters Tech Spec 3.1.8 specification b. Determines redundant component inoperability and 15 days to restore. ☐ Initiates surveillance requirement 4.1.8 c for redundant component

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
PRESS SUCTION .	operability verification. □ Notifies WEC □ Notifies Ops Management □ Performs crew brie/update.
NOTE: Event 3 should be entered while Event 2 is in progress. There are no audible alarms associated with the transmitter failure.	
EVENT 2 Transfer Control to EPR Note: All actions to place the EPR in service will be conducted from E Console.	BOP □ Verify EPR power is on for minimum of 24 hours. □ Verify EPR setpoint 1010 psig or EPR Control Light off, as directed by SM. □ Record Reactor Pressure
EPR setpoint is lowered from 950 psig to about 920 psig before the servo begins to move in the upscale direction. The setpoint was lowered to 950 psig from 1010 psig before crew assumed the shift.	□ Slowly lower EPR setpoint in "move and wait" manner while monitoring servo position. □ WHEN EPR Servo position starts to move upscale THEN raise EPR setpoint until servo stops moving upscale to demonstrate control of EPR servo.
As the EPR setpoint meter moves in the upscale direction, the EPR will assume control when the servo indication is about the same as the MPR servo setting.	□ Lower EPR setpoint again in "move and wait" manner UNTIL EPR servo begins to move slowly upscale. □ WHEN EPR servo position approaches MPR servo positon, observe the following responses: □ Steam Pressure □ EPR Control light lit

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ A2-4-4 TURBINE MECHANICAL PRESS REG IN CONTROL clears ☐ Assure EPR has taken control by slowly lowering EPR setpoint in move-and-wait manner until reactor pressure lowers by 1 or 2 psig. ☐ Verify EPR performance as follows: ☐ Slowly raise MPR setpoint UNTIL MPR control light goes off. ☐ Raise MPR setpoint to obtain MPR servo position 8% to 14% lower than EPR Servo position (MPR setpoint is 4-6 psi above EPR setpoint). ☐ Adjust EPR setpoint to return reactor pressure to pre-transfer setting recorder in step F.3.2
Adjusting the EPR setpoint to re-establish pressure will change the magnitude of the difference between the MPR and EPR setpoint. *The MPR setpoint may require adjustment to establish the required difference in servo position.*	☐ Adjust MPR setpoint as necessary to obtain MPR servo position 8% to 12% lower than EPR servo position. 0.15" to 0.25" MPR paddle gap. ☐ Report s EPR in service to SRO.
ROLE PLAY: If dispatched to verify proper paddle gap, wait one minute, then report paddle gap is 0.20 inches.	
NOTE: There are no alarms associated with the transmitter failure (downscale). At the Lead Examiners discretion a role play as RB operator may be used. Report the downscale condition and gross failure, while on RB rounds.	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
EVENT 3 Drywell High Pressure Transmitter 201.2-476A fails downscale **PO-2.0** **CONSOLE OPERATOR** When directed by Lead Evaluator, **activate malfunction** by activating TRG 2: **RP20B RPS 11 DW PT 201.2-476A FAILED LOW** *ANALOG TRIP SYSTEM CHANNEL 11 TROUBLE red light illuminates. Red light is located on upper left side of F Panel.*	CREW □ Identifies and reports ANALOG TRIP SYSTEM CHANNEL 11 TROUBLE red light illuminated. □ Dispatches operator to Reactor Building 281 to check RPS cabinets □ May refer to drawing C-18014-C sheet 1 and table to determine functions of affected instrument.
ROLE PLAY: WHEN dispatched to RPS Cabinets, report Drywell Pressure transmitter 201.2-476A is downscale with gross failure lit. All other DW pressure transmitters are reading correctly for current DW pressure. NOTE: Tech Specs 3.6.2.a, b, d, e, f and I all apply. 3.6.2.a Scram Note (o) "With one channel required by Table 3.6.2.a inoperable in one or more parameters, place the inoperable channel and/or that trip system in the tripped condition within 12 hours. 3.6.2.b Note (f) also requires tripping channel within 12 hours, since channel is common with RPS. 3.6.2.d Note (f) requires placing channel in tripped condition within 24 hours or take the action required by Specification 3.6.2.a for that parameter. This requires tripping the channel in 12 hours. 3.6.2.e Note (c) also applies the same way. 3.6.2.I is 7 day LCO for CREVS. 3.4.5 must also be	SRO □ Declares DWP transmitter inoperable. □ Enter Tech Spec 3.6.2 for instruments that initiate scram, primary coolant or containment isolation, core spray initiation, containment spray initiation and ADS initiation. □ Determines transmitter must be placed in the tripped condition within 12 hours. □ Notifies the WEC. □ Notifies Ops Management. □ Conducts crew brief/update.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
entered for CREVS system. **EVENT 4 RECIRC PUMP MOTOR GENERATOR SLOT TEMPERATURE RISES WITH STEAM SEAL REGULATOR FAILED CLOSED** **PO-3.0 and 4.0** When plant conditions have stabilized, ACTIVATE malfunctions using TRG3: **RR09C, Recirculation MG Set #13 Generator Overheating (100% over 10 min.)** **MS05 TURBINE STEAM SEAL REGULATOR FAILS LOW** After about 3 minutes Annunciator *F2 (2-3), REACT RECIRC MG SET 13 alarms* **ROLE PLAY:** As AO sent to the MG set, report that ventilation system is operating properly and the motor end of #13 RRMG set is extremely hot to the touch.	BOP Responds to annunciator F2-(2-3) □ Observes Process Computer point A094 and B331, RRMG 13 GEN SLOT TEMP in high alarm. □ Dispatches AO to verify proper ventilation and inspect 13 RRMG. □ Inform SRO of high temperature on 13 RRMG. □ May also reference N1-OP-40, F.1.0 for additional response. **These actions for N1-OP-1 F.4.0** □ Verify proper operation of Recirc MG Area Ventilation □ Verify proper positioning of TB Truck Bay doors □ Verify proper operation of Recirc MG Set Area Coolers □ Verify RRP parameters are within limits □ Verify total recirculation flow is even balanced between operating RRP's □ IF generator slot temperatures continue to rise and approach 120°C,

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Note: Emergency Power Reduction actions are contained in N1-SOP-1.1. These actions are also identified in N1-OP-43B	THEN reduce loading on affected RRMG by lowering power per N1-OP-43B (Emergency Power Reduction section), as directed by SRO.
Note: *The SRO should direct one of the following actions to reduce the load on 13 RRMG:* • *Emergency Power Reduction, using N1-SOP-1.1 or N1-OP-43B* • *13 RRP Shutdown, using N1-OP-1, Section H.1.0.* • *Trip of 13 RRP* *Expected result is that 13 RRMG and RRP will be shutdown due to inability to clear the high temperature condition on RRMG 13.*	SRO □ Direct Emergency Power Reduction per N1-SOP-1.1 OR □ Direct RO to remove RRMG 13 from service □ Checks T.S. 3.1.7 for 4 loop operation, .98 APLHGR applies. □ Verifies 4 loop thermal limits □ Verifies P/F Map updated □ When Recirc Pump 13 Discharge Valve is re-opened, declares APRM's inop, due to reverse flow. (Only applicable if pump was tripped and APRMs are declared inop, while discharge valve is open). □ Notifies Operations Management □ Notifies Chemistry □ Notifies Reactor Analyst □ Provides Reactivity Brief per GAP-OPS-05.
ROLE PLAY: As AO sent to the MG set, after the power reduction report that the RRMG appears to be getting hotter, even though the load has been reduced.	RO □ **If directed**, reduces power per N1-SOP-1.1, using all Recirc Master Flow Controller.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
The turbine is self-sealing at high power levels, so a failure of the regulator is not apparent until load is reduced. Steam Seal header pressure drops below normal. Alarm A2-2-5 TURBINE STEAM SEAL HDR PRESS HIGH-LOW alarms.	BOP □ **If directed** to shutdown 13 RRP per N1-OP-1 H.1.0 performs the following: □ Place RRECIRC PUMP 13 SPEED CONTROL in BAL and null out Deviation Meter (top meter) □ Place RRECIRC PUMP 13 SPEED CONTROL AUTO/BAL/MAN switch to MAN □ Verify open REACTOR R PUMP 13 BYPASS VALVE. □ Slowly reduce recirculation Pump 13 flow to 6 to $8x10^6$ lb/hr □ Close REACTOR R PUMP 13 DISCHARGE VALVE. □ WHEN Discharge Valve is closed, place REACTOR RP MOTOR 13 MG SET switch to STOP. □ Hold in OPEN position for 2 to 3 seconds REACTOR R PUMP 13 DISCHARGE VALVE. □ Align system for 4 Loop operation per section H. □ **If directed to trip** RRMG set: □ Trip 13 RRMG set □ Monitor P/F map (4 loop) □ Inop APRM's due to reverse flow in idle loop.
When RRP 13 pump is removed from service delete the Malfunction for REACT RECIRC MG SET 13 GENERATOR OVERHEATING. It will slowly cool down and the alarm will clear.	

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	These action are from SOP-1.3 BOP □ **If directed,** executes SOP-1.3 □ IF Recirc Pump trip results in less than three operating loops THEN SCRAM the reactor per SOP-1 (Not Expected) □ Verify proximity to restricted zone using Power/Flow Map (Four Loop) □ Notify SRO that APRMs are inoperable. □ Close RECIRC PUMP 13 DISCHARGE VALVE. □ IF RECIRC PUMP 13 DISCHARGE VALVE is closed, THEN hold open for 2-3 seconds RECIRC PUMP 13 DISCHARGE VALVE. □ Notify SRO that APRMs are operable. □ During valve stem warmup, restore F Panel controls to normal as follows: □ Green flag RECIRC PUMP 13 SB switch. □ Place RECIRC PUMP 13 SPEED CONTROL AUTO/BAL/MAN switch to MAN.
Scenario events will proceed prior to completing the 30 minute warmup period for the discharge valve.	□ WHEN 30 minute warmup period has elapsed for discharge valve, THEN Close Recirc Pump 13 discharge valve. (Not expected)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Event 5 Steam Seal Regulator Failure **Event is automatically initiated during the power reduction. BOP actions are taken concurrently with actions taken by RO for RRP 13 high slot temperature and the power reduction.** Malfunction initiated with Event 4 using TRG 3: **MS05 TURBINE STEAM SEAL REGULATOR FAILS LOW**	
The turbine is self-sealing at high power levels, so a failure of the regulator is not apparent until load is reduced. Steam Seal header pressure drops below normal. Alarm A2-2-5 TURBINE STEAM SEAL HDR PRESS HIGH-LOW alarms.	RO ☐ Report and respond to annunciator A2-2-5 TURBINE STEAM SEAL HDR PRESS HIGH-LOW **These actions are from A2-2-5** ☐ Confirm alarm comp point ☐ Maintain Steam Seal Reg pressure 2-5 psig ☐ Verify open STEAM SEAL REG BLOCK 11 ☐ Verify open STEAM SEAL REG BLOCK 13 ☐ Verify closed STEAM SEAL UNLOAD ☐ Thottle open STEAM SEAL REG BY-PASS. ☐ Report header pressure restored to normal value.
When STEAM SEAL REG BY-PASS is throttled open, Steam Seal Header pressure will rise.	
ROLE PLAY: If required direct crew as Ops management, with reactor engineering concurrence, to reduce power below 80%. Provide RMR, if needed. This must be done prior to inserting next malfunction. If started from too high a power level, a high level trip may occur due to	

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
FWLC and FWP valve response times.	
EVENT 6 **MASTER RECIRC FLOW CONTROLLER FAILS LOW** **PO-5.0**	
CONSOLE OPERATOR When directed by Lead Evaluator, **activate malfunctions** by activating TRG 4: **RR27 MASTER RECIRCULATION FLOW CONTROLLER FAILS-LOW** *Recirc flow signal rapidly reduces to minimum. Recirc flow, reactor power and generator MWe begin to lower. Reactor power will lower to about 50% and core flow will be about 21 Mlbm/hr. Entry into the Power/Flow map "Restricted Zone" occurs. An RPV HIGH WATER LEVEL alarm may occur due to the rapid power change and response of the Feedwater System.*	SRO □ Direct entry into SOP-1.5 for unplanned reactor power change. □ May direct FWLC placed in manual, due to transient rising level. □ Directs exit from Restricted Zone by raising Recirc flow or by Cram Rod Insertion
NOTE: The RECIRC MASTER controller is failed low, but flow can be raised by placing the individual RRPs to manual and raising flow from F Panel. Cram rod insertion may still be required to exit the restricted zone. Raising flow will also raise power, so exiting the restricted zone by raising flow alone,	RO **These actions are from SOP-1.5** □ Continuously monitor LPRMs and APRMs for thermal hydraulic instabilities (NONE expected). □ IF RESRICTED ZONE is entered, THEN…Exit by performing one of the following (as directed):

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
will probably not result in exiting the zone. Based on the Power/Flow Map, power must be reduced from about 50% to about 30% with flow at 21 Mlbm/hr to exit.	☐ Raise Recirc Flow by placing individual MA stations to MANUAL and raining individual RRP pump flows OR ☐ Lower reactor power by inserting cram rods to 00. WHEN directed by SRO, inserts cram rods to 00. ☐ Inform Reactor Engineering Supervisor.
Reactor power lowers as cram rods are inserted. If generator MWe <190 MWe and B499 computer point indicates backpressure is >5" hg, a turbine trip is required, per SOP-25.1	
As power lowers Alarm A2-2-5 TURBINE STEAM SEAL HDR PRESS HIGH-LOW alarms again. Steam seal pressure must be manually adjusted as power lowers.	RO/BOP ☐ If necessary, adjusts STEAM SEAL REG BY-PASS to maintain 2 to 5 psig
Event 7 STEAM SEAL BYPASS FAILURE DEGRADES CONDENSER VACUUM. **PO-6.0** WHEN power is about 30% to 35%, activate overrides to fail STEAM SEAL REG BY-PASS valve closed using TRG 5: **ior 2s5di171 (5 0) on** **ior 2s5di172 (5 0) off** *STEAM SEAL REG BY-PASS closes and Steam*	RO/BOP ☐ Recognize and report alarm ☐ Report STEAM SEAL REG BY-PASS is closed and cannot be opened. ☐ Report condenser vacuum lowering. ☐ Executes SOP-25.1 for loss of vacuum.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Seal header pressure drops to 0 psig. Alarm A2-2-5 TURBINE STEAM SEAL HDR PRESS HIGH-LOW alarms. Condenser vacuum begins to lower. WHEN vacuum lowers to 24 inches, annunciator A1-3-4 CONDENSER VACUUM BELOW 24" HG alarms. Per N1-SOP-25.1, If generator MWe <190 MWe and B499 computer point indicates backpressure is >5" hg, a turbine trip is required, per SOP-25.1	□ Recognize requirement to trip the turbine and enter N1-SOP-31.1 □ Trips the turbine □ Verifies turbine is tripped and bypass valves are controlling reactor pressure. □ Verifies generator tripped □ Reports FW shifted to HPCI mode due to turbine trip.
NOTE: Lowering power in this case will actually make condenser vacuum worse because lowering power makes the steam seal loss more severe. Increased air in-leakage past seals will occur the more power is lowered.	□ As required, lower power per SOP-1.1 to stabilize vacuum. □ Verify proper operation of the following: □ Circ Water □ SJAE □ Off Gas System □ Condensate System □ Turbine Gland Seal System □ System Leaks □ If appropriate, place standby SJAE in service (NOT expected)
F3-4-6 First Stage Bowl Press Low is expected to alarm during power reduction to exit the Restricted Zone.	□ F3-4-6 First Stage Bowl Press in alarm (Yes/No) Should Be YES □ IF YES....Verify power below 45%
NOTE: Vacuum Trip 1. Trips turbine at 22.1" Vacuum Trip 2. Closes BPV at 10" Other actions that may be directed are removing 13 FWP from service and starting a second motor driven feed pump. After the HPCI initiation,	□ BEFORE Condenser Vacuum reaches 22.1" Hgv TRIP the turbine and enter SOP-31.1 concurrently. □ BEFORE Condenser Vacuum reaches 10" Hgv SCRAM the reactor and enter SOP-1 concurrently. □ If directed, manually scram the reactor

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
resetting HPCI may be directed. The scenario will proceed prior to any of these actions being performed. Due to degraded condition, the crew may initiate a manual scram after tripping the turbine. If a manual scram is directed, the steam leak will occur after 4:00 minute time delay and MS to shutdown. IF a manual scram IS NOT initiated by the crew after tripping the turbine CONSOLE OPERATOR initiates an automatic scram by activating malfunction using TRG 8: **RP03 REACTOR SCRAM**	and enters SOP-1 SRO □ Directs a manual scram based on degraded plant OR IF automatic scram occurs directs scram actions to be implemented. SRO □ Repeats back Scram Report □ Enters EOP-2 RPV Control on on RPV water level < 53inches **These actions from EOP-2** □ Directs entry into SOP-1 (SCRAM) □ IF water level is unknown exit this procedure and enter EOP-7 to flood the RPV (L-2) (Expected to occur later, when level indications become

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	erratic.) ☐ Directs level restored and maintained between 53 inches and 95 inches using one or more of the following systems (L-3): ☐ Condenstate/FW ☐ CRD ☐ Core Spray (EOP-1 Att 4) ☐ Bypass Core Spray IV interlocks ☐ Directs RPV pressure stabilized 800 to 1000 psig using Turbine bypass valves. ☐ If needed, directs use of Alternate Pressure Control Systems (P-5) ☐ EC ☐ ERV ☐ Others (Not expected) ☐ May direct closing MSIVs prior to automatic closure on lowering vacuum
NOTE When the reactor is scrammed and the Mode Switch is in SHUTDOWN, **malfunctions** are activating by TRG 6 and TRG 7: The steam leak will not become apparent until about four minutes after the scram. **RP26B RPS 11 DW PT 201.2-476C FAILED LOW MS04 STEAM LINE RUPTURE INSIDE PRIMARY CONTAIMENT 20% 10:00 MINUTE RAMP AFTER 4:00 minute time delay...ms04 (7 4:00) 20 10:00**	RO ☐ When directed, initiates a manual scram by pacing Mode Switch to SHUTDOWN or using Manual Scram pushbuttons and implements SOP-1 Reactor Scram. ☐ Provides Scram Report ☐ Perform SOP-1 Scram Verification steps ☐ Confirm all rods inserted to position 04 or beyond using Full Core Display. ☐ Observe power decreasing

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Place IRMs on Range 9 ☐ Insert IRM and SRM detectors ☐ Downrange IRMs as necessary ☐ Verify turbine and generator tripped. ☐ Maintain RPV pressure in the directed band, below 1080 psig using one or more of the following (unless given other direction from EOP-2): ☐ Turbine Bypass Valves ☐ Emergency Condensers ☐ ERVs ☐ Others (Not expected)
	BOP ☐ Performs RPV Level Control at F Panel. ☐ Restore level 53 to 95 inches as directed. ☐ IF 13 FWP is running and level is recovering: ☐ Verify at least one motor FWP running.
NOTE: Failure to give 29-01 a close signal, will cause FWP13 FCV to swing and results in pressure and flow swings when NR level instruments begin to swing. This is because FWP 13 FCV receives its setpoint setdown control signals, even with MA controller in MANUAL.	☐ Terminate 13FWP injection: ☐ Place 13 FWP Valve Controller in MAN and dial to 0 output. ☐ Verify >53 inches. ☐ Disengage clutch. ☐ Give 29-01 BV close signal.
	☐ Control Motor FWP Injection: ☐ Verify >53 inches and rising ☐ Verify 11 and 12 FWP valve controllers in MAN and dial to 0

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	output. ☐ At E Panel, reset HPCI 11 and 12 using pushbuttons. ☐ Place one FWP BYPASS valve in AUTO set at 65 to 70 inches. ☐ Verify level stable and secure 2nd FWP, if running. ☐ If required, close running FWP discharge BV. ☐ If directed, closes MSIVs
NOTE: Placing a FWP BYPASS valve in AUTO set at 65 to 70 inches, will cause FWP pressure and flow swings when NR level instruments begin to swing.	
Event 8 Steam Leak inside Drywell. DWP Transmitter 201.2-476C failed downscale. After 4 minutes, malfunction MS04 begins to ramp.	
Steam leakage into the drywell begins with temperature and pressure rise. The DWP downscale transmitter failure results in failure of one RPS Channel (11) to trip when DWP exceeds 3.2 psig. Other automatic system responses are failure of Core Spray System to start on High DWP. The Containment Spray System auto start is also affected by the transmitter failures.	CREW ☐ Recognize and report rising DWP
ACTIONS FOR HIGH DRYWELL PRESSURE N1-EOP-4 Primary Containment Control. Executes all legs concurrently. Major actions and legs executed during EOP-4.	SRO ☐ May direct manual containment isolation to be initiated. ☐ Enters EOP-4 on high DWP above 3.5 psig ☐ Containment Spray Initiated? (Step 1 NO) ☐ Directs lockout of all Containment

	Spray Pumps (Step 2)
PO-10.0 and PO-11.0 *Drywell and Torus pressure and temperature rise due to steam leakage.*	Executes PCP Leg □ If Cont Sprays are running, THEN stop sprays when DWP drops below 3.5 psig. (PCP-1 Override) Action is expected to occur after spray is initiated). □ Maintain PC pressure below 3.5 psig (EOP 1 Att 10) (PCP-2)
Torus pressure exceeds 13 psig.	□ If Torus Pressure exceeds 13 psig, THEN Go to 17 (which is PCP-3)...(PCP-2, Expected) □ Inside Containment Spray Initiation Limit Fig K? (PCP-3 YES) □ Directs All Recirc Pumps tripped. □ Directs all drywell cooling fans tripped.
CT-1.0	□ **Operate Cont Spray (EOP 1 Att 17)** □ Keep trying to lower PC pressure below 3.5 psig. (PCP-5) □ If cannot stay Inside PSP Fig L curve, THEN Go to 18 (which is PCP-8) (Perform a Blowdown per EOP-8 Not expected).
	These actions are expected by SRO when level indicators become erratic: □ Determines and announces RPV water level is unknown □ WHEN RPV level indicators become erratic and water level can no longer be determined, Exits EOP-2 and enters EOP-7 RPV Flooding (from L-2

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	and L-4) SRO Executes TT Leg □ Maintain Torus temperature below 85°F using Torus Cooling (EOP 1 Att 16) (TT-2)
BOP Actions to start torus cooling per EOP-1 Attachment 16	BOP □ If directed, starts Torus Cooling per Attachment 16 □ Torus Cooling shall be placed in service within 15 minutes of Torus temperature ≥ 85°F □ Close CONT SPRAY BYPASS BV for selected loop: □ 111; 80-45 □ 112 or 121; 80-40 and 80-45 □ 122; 80-40 □ Verify closed 80-115, CONT SPRAY TO RAD WASTE IV 12 □ Verify closed 80-114, CONT SPRAY TO RAD WASTE IV 11 □ Verify closed Cont Spray Discharge IV using keylock switch for selected loop: □ 111; 80-16 □ 112; 80-36 □ 121;80-15 □ 122; 80-35 □ Verify open CONT SPRAY BYPASS BV for selected loop: □ 111; 80-40 □ 112; 80-44 □ 121;80-41

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	◻ 122; 80-45 ◻ Fully open 80-118, CONT SPRAY TEST TO TORUS FCV ◻ Start CONTAINMENT SPRAY RAW WATER PUMP in selected loop. ◻ Start CONTAINMENT SPRAY PUMP in selected loop. ◻ WHEN torus water reaches desired temperature stop Containment Spray pump. ◻ Stop all operating Raw Water Pumps ◻ If desired, return system to standby per N1-OP-14. ◻ Report status to SRO.
PO-10.0, CT-1.0 BOP Actions for containment spray per EOP-1 Attachment 17 *When Containment Spray is initiated, Drywell pressure lowers below 3.5 psig.* **CONSOLE OPERATOR** WHEN Drywell temperature drops below 200°F and the crew is injecting to establish flooding pressure, THEN delete malfunctions RR99A and RR87: *This stops the erratic indication on all level meters.*	BOP ◻ When directed, trips all Recirc Pumps. ◻ When directed, trips drywell cooling fans. ◻ **Verify started Containment Spray Pump 111 or 122.** ◻ **Verify started at least one of the other three Containment Spray Pumps.** ◻ IF 80-118 is open for Torus Cooling, THEN ◻ Open Containment Spray Discharge IV for Containment Spray Loop in Torus Cooling Mode. ◻ Close 80-118 ◻ Verify open 80-40 and 80-45 ◻ IF EDG loading permits, THEN start Containment Spray Raw

Water Pump for associated loop.

PO-11.0

Drywell pressure lowers with Containment Spray in operation until DWP drops to 3.5 psig

BOP

- ☐ Reports DWP below 3.5 psig
- ☐ Stops Containment Spray by placing all Containment Spray Pumps in Pull To Lock.

When Drywell temperature exceeds 240°F, RPV water level instrument readings become erratic and RPV water level can no longer be determined.

Event 8 RPV Level Instrument Readings Become Erratic

PO-9.0

When Drywell Air Temperature PCTDWAIR exceeds 240°F trigger 9 and 10 activate malfunctions:

RR99A ERRATIC LEVEL INDICATION, ALL METERS AND RECORDERS

RR87 FUEL ZONE LEVEL INSTRUMENT FLASHING

Fuel Zone digital display indications begin flashing. All water level indications become erratic.

CREW

- ☐ Recognize and report erratic level indication and fuel zone indications of flashing

SRO

These actions are expected by SRO when water level indicators become erratic

- ☐ Determines and announces RPV water level is unknown
- ☐ Exits EOP-2 and enters EOP-7 RPV Flooding (from L-2 and L-4)

These actions are directed from EOP-7 RPV Flooding

- ☐ Are all rods inserted to at least position 04? (Step 1 YES)
- ☐ IF RPV water level can be determined....RETURN TO RPV

NOTE: The following actions may lead to fluctuating FWP flow and pressure as NR level indications swing:

Placing FWP Bypass Controller to AUTO. Leaving

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
any FWP MA CONTROL in AUTO (with HPCI fuses pulled) will result in valve swings as sensed level swing. *Failure to close FWP 13 Blocking Valve will result in swings from FWP13. Setpoint Setdown will still control FWP 13 valve, even with controller in manual.*	CONTROL (Step 12 Not expected) □ Torus water level? (Step 13 Above 8 feet) □ Directs Open 3 ERVs (Step 14) and OK to exceed 100°F/hr cooldown □ Can 3 ERVs be opened? (Step 15 YES) □ Directs Close MSIVs and EC Steam Isolation Valves (Step 16)
CT-2.0	□ **Control injection to establish and maintain 3 ERVs open AND RPV pressure at least 72 psi above torus pressure using (Step 17):** □ **Condensate/FW, OK to bypass high level trips** □ **CRD** □ **Core Spray, Bypass IV Interlocks** □ **Alternate Injection Systems (Detail E)**
Detail E Systems are: Containment Spray Raw Water to Core Spray (EOP1 Att 5) Fire Water (EOP 1 Att 19) Liquid Poison Test Tank (EOP 1 Att 12) Liquid Poison Boron Tank (EOP 1 Att 13)	□ If you cannot restore and maintain RPV pressure at least 72 psi above torus pressure with 3 ERVs open...THEN FLOOD THE DRYWELL, exit all EOPs and enter all SAPs (Step 17)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Record time of RPV pressure at least 72 psi above torus pressure with 3 ERVs open (Step18). ☐ WAIT for RPV water level instruments to be available AND DWT at 319 ft <212 AND Flooding conditions met for at least 101 minutes (Step 19)...to proceed. **NOT expected to proceed past this WAIT block in the scenario**
CONSOLE OPERATOR If dispatched to pull HPCI Fuses, activate remote using TRG 20: **FW24 PULL HPCI FUSES, PULL, 3:00 min delay.** After the 3:00 minute time delay, remote becomes active. As operator dispatched, REPORT HPCI fuses are pulled.	RO ☐ If directed, initiates manual containment isolation at E Console. ☐ If directed, injects with Condensate/FW system. ☐ If directed, pulls HPCI fuses. ☐ If directed, starts second CRD Pump. ☐ If directed establish injection with Core Spray systems. ☐ Starts Core Spray Pumps ☐ Install Core Spray Jumpers ☐ Throttles open injection valves
CT-2.0	☐ **Using any injection systems directed, establishes injection to maintain 3 ERVs open and RPV pressure at least 72 psig above torus pressure.**

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
TERMINATION CRITERIA RPV Flooding conditions are met. Containment Spray initiated and secured when DWP drops below 3.5 psig.	
EVENT 9 SRO Classification **PO-11.0**	SRO Classify the event as SAE 2.1.2, RPV Flooding is required.

V. POST SCENARIO CRITIQUE

A. NA, NRC Exam

VI. REFERENCE EVENTS AND COMMITMENTS

A. Reference Events

Unit 2 Loss of Steam Seals March 2006

B. Commitments

1. None

VII. LESSONS LEARNED

Facility: NMP1 Scenario No.: NRC 2 Op-Test No.: NRC

Initial Conditions: IC20 100% Reactor Power
Turnover: Complete N1-ST-Q4 Section 8.2. 39-13R, 39-14R, 05-04R, and 05-12 testing is done. Test Steam IVs 39-10R and 39-08R. LP Pump 12 is out of service since 0600 today. TS LCO 3.1.2 specification b was entered and those requirements are currently met. Cont. Spray 122 is inoperable.

Event No.	Malf. No.	Event Type*	Event Description
1		N	Crew performs N1-ST-Q4, Reactor Coolant System Isolation Valve Operability Test for EC Loop 12 IV's per Section 8.2.
2	EC09B	C (TS SRO)	Steam IV 39-08R fails to fully close during testing. Valve must be declared inoperable and isolated per Tech Spec 3.2.7. EC Loop 12 now remains inop and unavailable when the steam line is isolated (TS 3.1.3.b, 7 day)
3	AD05	C (BOP) (TS SRO)	ERV111 inadvertently opens. The crew enters SOP-1.4. An emergency power reduction to 85% is performed. The ERV will close after the fuses are pulled. Tech Spec 3.1.5 must be entered because the valve is now inoperable. TS 3.2.9 may also require entry.
4	RR28	C/R (RO)	Recirc Flow Master Controller fails as-is, preventing the power reduction by normal methods. The crew will operate individual Recirc Flow controls at F panel or insert cram rods to complete the emergency power reduction.
5	EC06A	C (BOP)	EC 11 tube leak (50% with 5 minute ramp time). EC 11 isolation is required. Both EC loops are now inoperable. Tech Spec 3.1.3 specification e now applies and an orderly shutdown is required.
6	MS12 TU02	M (ALL)	A steam leak develops in the turbine building condenser area with severity at 15%. Turbine Vibration rises following the load reduction. The crew will initiate a manual scram due to degraded plant conditions or when turbine bearing vibration exceeds 12 mils.
7	RD33 MS01 LP01A	C (ALL)	ATWS. Following the scram control rods will not fully insert and power will remain within turbine bypass valve capability, at about 25%. The MSIV's will close on high temperature and heat will be rejected to the torus. Liquid Poison Pump 11 trips. Alternate Boron Injection is directed.
8	RD35B	C (RO)	Control Rod Drive Pump 12 trips during the scram transient. Starting CRD Pump 11 is necessary for driving control rods.
9	CT01A	C (BOP)	Containment Spray Pump 111 trips, after control rods are fully inserted. Pump is initially running in the Torus Cooling mode. Since Torus temperature is still high due to heat added during the event, the system must be realigned to start an alternate Containment Spray Pump.
10			Event is classified as SAE 2.2.2

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

[redacted]

Facility: **Nine Mile Point 1**	Scenario No.: **NRC-02**	Op-Test No.: **NRC**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 3,4,5,7,8,9**	6	**Total Malfunction Count:** Major is not included in this count.
2. Malfunctions after EOP entry (1-2) **Event 8 CRD Pump Trip Event 9 Containment Spray Pump Trip**	2	**Abnormal Events Count:** Does not include the SRO TS related events. These are considered separately.
3. Abnormal events (2-4) **Event 3 SOP-1.4 Event 5 EC Tube Leak**	2	
4. Major transients (1-2) **Event 6 Turbine High Vibration and Steam Leak into the Turbine building**	1	**SRO TS Events** Event 2, 3 and 5 are SRO Tech Spec evaluation events.
5. EOPs entered/requiring substantive actions (1-2) **EOP-4 Primary Containment**	1	
6. EOP contingencies requiring substantive actions (0-2) **EOP-3 Failure To Scram**	1	
7. Critical tasks (2-3)	3	

Operators

SRO	SRO 1 Minnick		
ATC RO	R1 French	R3 O'Brien	SRO 2 Driscoll
BOP RO	R2 Hibbert	R4 Revelle	R5 DeGroot

[redacted]

NMP SIMULATOR SCENARIO

NRC Scenario 2 **REV. 0** **No. of Pages: 38**

FAILURE TO SCRAM

PREPARER	G. Bobka	DATE 7/18/06
VALIDATED	M. Meier, L. Blum, J. Tsardakas	DATE 9/18/06
GEN SUPERVISOR OPS TRAINING		DATE 2/23/2007
OPERATIONS MANAGER	NA Exam Security	DATE
CONFIGURATION CONTROL	NA Exam Security	DATE

SCENARIO SUMMARY

Length: 90 minutes

Initial Power Level: 100%, above the 100% Rod Line

Mitigating Strategy Code: AT1 ATWS Level Controlled below -41 inches. No RPV Blowdown

The crew assumes the shift with the plant operating at rated conditions and Containment Spray Pump 122 removed from service for maintenance. The crew will perform N1-ST-Q4, Reactor Coolant System Isolation Valves Operability Test, on the Emergency Condenser (EC) Loop 12 Isolation Valves (IVs) per Section 8.2. This test consists of stoke time tests for EC Steam Isolation Valves. A valve failure will result in entry into Tech Specs for the failed coolant and containment isolation valve

When the surveillance on the EC Loop 12 IVs is addressed, the crew will respond to an inadvertent opening of an ERV. The crew will perform an emergency power reduction to about 85%. A failure of the Master Recirc Flow Controller will require the crew to either take manual control of the pump MA stations or insert the cram rods to complete the power reduction. The ERV will be closed when the crew pulls the control power fuses. The SRO must also assess the Tech Spec impact of the inoperable ERV.

EC11 vent radiation monitor alarms and the crew determines that a tube leak exists, based on confirmed alarms and rising shell water level. The crew will isolate EC11 to stop the release. The SRO reviews Tech Specs and determines with EC11 inoperable Tech Spec 3.1.3.b applies. However, with a confirmed EC Tube Leak a plant shutdown is required. Additionally both EC are now inoperable and unavailable for pressure control.

Following the power reduction, turbine vibration will rise and steam leak in the turbine building develops. These reach a severity level that requires a turbine trip and a reactor scram.

[redacted]

When the crew inserts a reactor scram, many control rods fail to insert and power remains at 20 to 30% power. Because of the steam leak into the turbine building, the main condenser will only be available as a heat sink for a short period of time after the scram before the MSIVs are closed, on high steam tunnel temperature. The crew will terminate and prevent injection to lower reactor water level and suppress reactor power. When the main condenser is lost as a heat sink, the crew will maintain reactor pressure using the ERVs and will place torus cooling in service. Because of the rising torus water temperature the crew will inject Liquid Poison (LP). Liquid poison injection fails and the crew will direct use of alternate boron injection. The SRO will direct the actions of EOP-3 and EOP-4 including alternate control rod insertion per EOP-3.1. The crew will be able to insert control rods, after starting a CRD pump, using the Reactor Manual Control System (RMCS) and manual reactor scrams will be successful in inserting the control rods. The SRO will be required to reduce the pressure control band to remain within the heat capacity temperature limit. The loss of both Emergency Condensers adds additional heat to the torus due to more frequent operation of the ERVs to control reactor pressure. After all rods are inserted, the Containment Spray Pump operating in Torus Cooling mode trips. The system must be realigned and an alternate pump started to continue Torus Cooling.

Major Procedures: N1-SOP-1.4, N1-OP-13, N1-EOP-3, N1-EOP-4

EAL Classification: **SITE AREA EMERGENCY** 2.2.2

Termination Criteria: All control rods inserted, EOP-3 exited, EOP-2 entered and crew directed to restore reactor water level restored to 53-95 inches.

[redacted]

SIMULATOR SET UP

A. IC Number: IC-242; IC-20 or equivalent LP Pump 12 and Containment Spray 122 are out of service.

B. Presets/Function Key Assignments

1. Malfunctions:

a.	LP01A LIQUID POISON PUMP TRIP 11, TRUE	INSERTED
b.	LP01B LIQUID POISON PUMP TRIP 12, TRUE	INSERTED
c.	EC09B EC LOOP 12 STM IV FAIL TO CLOSE 122, 50%	INSERTED
d.	RD33A ROD BANK 1 INSERT FAIL POSITION, 20	INSERTED
e.	RD33B ROD BANK 2 INSERT FAIL POSITION, 12	INSERTED
f.	RD33C ROD BANK 3 INSERT FAIL POSITION, 20	INSERTED
g.	RD33D ROD BANK 4 INSERT FAIL POSITION, 10	INSERTED
h.	RD33E ROD BANK 5 INSERT FAIL POSITION, 14	INSERTED
i.	AD05 ERV 111 FAILURE OPENS INADVERTENTLY	TRG 3
j.	RR28 MASTER RECIRC FLOW CONTROLLER FAIL AS IS	TRG 3
k.	EC06A EC TUBE LEAK 111, 50% Ramp 5:00 min	TRG 5
l.	MS12 STEAM RUPTURE TB COND AREA, 15% Ramp 4:00 min	TRG 6
m.	TU02 TURBINE HIGH VIBRATION, 75% Ramp 8:00 min	TRG 6
n.	MS01 STEAM RUPTURE OUTSIDE PC, 2% Delay 3 min Ramp 1:00 min. (Event Trigger from Mode Sw to SHUTDOWN)	TRG 7
o.	RD35B CRD PUMP TRIP 12, TRUE Delay 1:00 min (Event Trigger from Mode Sw to SHUTDOWN)	TRG 8
p.	CT01A CONT SPRAY PUMP TRIP 111	TRG 9

2. Remotes:

a.	AD01 ERV 111 FUSES, PULL	TRG 20
b.	AD07 ACCOUSTIC MONITOR ALM, RESET	TRG 21
c.	FW24 REMOVAL OF HPCI FUSES FU8/FU9, PULL	TRG 22
d.	LP04 ALT BORON INJ VIA HYD PMP, RUN DELAY 12:00	TRG 23

3. Overrides:

a.	OVR-9DS93LO5154 ON NP02B G, OFF LP 12 GREEN LT	INSERTED
b.	OVR-9S44DI5215 POS_1 1K5/41-16 POS 1 OFF LP SW	INSERTED

4. Annunciators:

a. None

[redacted]

C. Equipment Out of Service

1. Liquid Poison Pump 12 (reference tag taped near keylock switch)
2. Containment Spray Pump 122 (red clearance applied to pump cs, in PTL)

D. Support Documentation

1. Working copy of N1-ST-Q4, Reactor Coolant System Isolation Valves Operability Test, for EC Loop 12 IVs per Section 8.2. Initial complete so that 39-10R is next valve to be tested.

E. Miscellaneous

1. Update Divisional Status Board (LP 12 and Cnt Sp 122)
2. Protected Equipment
   a. Containment Spray Pumps 111 112
   b. Core Spray Pumps 111 112
   c. EDG102

   d. EVENT TRIGGERS/COMPOSITES
      a. trgset 7 "zdrpstdn== 1" Mode Switch in Shutdown (MS01)
      b. trgset 8 "zdrpstdn== 1" Mode Switch in Shutdown (RD35B)

[redacted]

II. **SHIFT TURNOVER INFORMATION**

OFF GOING SHIFT: ☐ N ■ D DATE: _____

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, CSO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Supervisor Log (SM, CRS, STA)
- CSO Log (CSO)
- Lit Control Room Annunciators (SM, CRS, STA, CSO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (CSO)

Evolutions/General Information/Equipment Status:

- Reactor Power = 100%
- Loadline = 103%
- 122 Containment Spray Pump OOS for repair. TS 3.3.7.b (day 1 of 15 day LCO).
- Complete N1-ST-Q4, Reactor Coolant System Isolation Valves Operability Test, for EC Loop 12 IVs per Section 8.2, starting at 8.2.5 for 39-10R.
- Liquid Poison Pump 12 is out of service for motor repairs. TS 3.1.2.b (day 1 of 7 day LCO).

PART III: Remarks/Planned Evolutions:

- Maintenance continues to work on Containment Spray Pump 122.
-

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

[redacted]

Scenario ID#

INSTRUCTOR COMMENTS (Strengths, Areas for Improvement, Open Items etc.)

What Happened?	What we did?	Why? (Goals)	Other Options?

[redacted]

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CT-1.0 Given a failure of the reactor to scram with power generation and Torus water temperature approaching 110°F, the crew will utilize Torus cooling, control rod insertion and RPV pressure control to preclude violation of the HCTL in accordance with EOP-3.

CT-2.0 Given a failure of the reactor to scram with power above 6% or unknown and RPV water level above -41 inches, terminate and prevent all injection except Boron and CRD in accordance with EOP-1, Att. 24.

CT-3.0 Given a failure of the reactor to scram with control rods NOT inserted to at least position 04 and the reactor will not stay shutdown without boron, the crew will insert all control rods to at least position 04 per EOP-3.1, Alternate Control Rod Insertion.

B. Performance Objectives:

PO-1.0 Given a quarterly surveillance for Reactor Coolant Isolation Valves, the crew will recognize the failure of a valve to operate correctly in accordance withN1-ST-Q4.

PO-2.0 Given a valid EC vent radiation monitor alarm, the crew will respond in accordance with the ARPs, N1-OP-13.

PO-3.0 Given the plant with a stuck open ERV, the crew will implement SOP-1.4 and close the ERV before torus temperature reaches 110°F.

PO-4.0 Given the plant requiring an emergency power reduction and the master flow controller failed as-is, the crew will perform the power reduction by operating individual pump MA stations in manual in accordance with N1-SOP-1.4

PO-5.0 Given the plant with indications of an Emergency Condenser Tube Leak, the crew will isolate the affected Emergency Condenser in accordance with ARP and normal operating procedures.

PO-6.0 Given the plant with a steam leak in the Turbine Building the crew will initiate a manual scram in accordance with N1-SOP-1.

[redacted]

PO-7.0 Given a failure of the reactor to scram with power generation the crew will insert control rods using the RMCS and repetitive scrams in accordance with N1-EOP-3 and N1-EOP-3.1.

PO-8.0 Given an ATWS condition accompanied by a loss of the Main Condenser and liquid poison pump failures, the crew will recognize the challenge to HCTL and inject liquid poison using alternate boron injection methods in accordance with N1-EOP-3.2.

PO-9.0 Given the plant with elevated torus water temperature AND a trip of the operating Containment Spray Pump, the crew will start an alternate pump in torus cooling per EOP-4 and EOP-1 Attachment 16.

PO-10.0 Given events that meet the criteria for emergency classification, the SRO will classify the event per EPP-EPIP-01 EAL Matrix.

PO-11.0 Given the plant or plant system in a condition requiring Technical Specification action, identify the deviation and any required actions/notifications.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	Crew ☐ Crew conducts a pre-brief, walks down the panels, and tests annunciators.
Event 1 Perform Surveillance **Surveillance test continues** **PO-1.0**	SRO
Per N1-ST-Q4, 4.4.e, the valve must be declared inoperable immediately. No retest is allowed.	☐ Direct BOP to complete N1-ST-Q4, Section 8.2. ☐ Acknowledge 39-08R has dual indication when performing close to open stroke test and contact FIN Team or maintenance. ☐ Determine isolation valve is inoperable and enter tech Spec 3.2.7 and requirement to isolate the penetration using 39-10R ☐ Determine TS 3.1.3.b remains effective, since EC Loop 12 will be isolated.
Perform the test, starting at step 8.2.5	BOP ☐ Obtain SRO permission to continue N1-ST-Q4, Section 8.2.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Annunciators F1-3-2 RPS CH 11 MAIN STEAM ISOLATION and F4-3-7 RPS CH 12 MAIN STEAM ISOLATION are expected to actuate when EC valves 39-10R and 39-08R are stroked closed.	☐ Cycle 39-10R, EC STEAM ISOLATION VALVE 121, AND:
Test 39-10R	☐ Record open to close stroke time for 39-10R. (≥24.3 and ≤32.8 sec). [≤38 sec for TS] . {≥21.5 and ≤35.8 sec for LST}
	☐ Record close to open stroke time for 39-10R. (≥25.4 and ≤34.3 sec) . {≥22.4 and ≤37.4 sec for LST}
Independent verification may be obtained later, due to crew resources.	☐ Obtains Independent verification in valve open position.
Test 39-08R, step 8.2.6	☐ Record open to close stroke time for 39-08R. (≥17.0 and ≤23.0 sec). [≤38 sec for TS] . {≥15.0 and ≤25.0 sec for LST}
EVENT 2 39-08R valve Fails to Fully Close **PO-11.0** **Preset malfunction EC09B**	☐ Recognize dual indication for 39-08R and valve appears to have not fully closed.
When 39-08R is cycled in the closed direction, the red light remains on. The valve must be declared inoperable and no retesting is allowed.	☐ Stops the test to notify SRO of failed component.
	☐ May dispatch operator to determine condition of valve locally.
Role Play: If sent to determine condition of 39-08R, report valve appears to be about half open.	☐ If directed, remove EC12 from service

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	per N1-OP-13, H.8.2
Report EC Keepfull secured.	☐ Directs operator to secure EC Keepfull
	☐ Verify closed the following valves:
	☐ 05-04R, EMERG COND VENT ISOLATION VALVE 121
	☐ 05-12, EMERG COND VENT ISOLATION VALVE 122
	☐ 39-13R, EMERG CONDSR STM SUPPLY DRAIN IV 121
	☐ 39-14R, EMERG CONDSR STM SUPPLY DRAIN IV 122
	☐ 39-08R, EC STM ISOLATION VALVE 122
	☐ 39-10R, EC STM ISOLATION VALVE 121
	☐ 39-06, EMERG CNDSR COND RET ISOLATION VALVE 12
	☐ If directed, closes 39-10R to isolate the line to comply with Tech Specs.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO
39-08R is identified as a coolant system isolation valve in NIP-DES-04 List of Controlled Lists, Attachment 6 Nine Mile Point Unit 1 Reactor Coolant System Isolation Valves. These are also Primary Containment Isolation Valves, per the attachment table Note 9.	☐ Acknowledges report of 39-08R failure to indicate full closed. ☐ Recognize EC Loop 12 must now remain inoperable (3.1.3.b) ☐ Recognize valve is a "Reactor Coolant System Isolation Valve". ☐ Enter Tech Spec 3.2.7 specification b. A valve in the line must be closed to comply with b. If not closed, then specification c requires a normal orderly shutdown initiated within one hour.
Tech Spec 3.2.7 and per specification b, "in the event that any isolation valve becomes inoperable the system shall be considered operable provided at least one valve in each line having an inoperable valve is in the mode corresponding to the isolated condition".	☐ Direct EC removed from service per N1-OP-13 H.8.2 ☐ May directs line isolated by closing 39-10R or initiates a normal orderly shutdown. ☐ Refer to Tech Spec 3.3.4, since these valves are identified as PC Isolation Valves, in NIP-DES-04 note. ☐ Tech Spec 3.3.4 requires that one valve in the line be closed within 4 hours.

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Event 3 ERV111 opens **PO-3.0** **Event 4 RECIRC MASTER CONTROLLER FAILS AS-IS During Emergency Power Reduction** **PO-4.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by the lead evaluator activate malfunction using TRG 3 **AD05 ERV111 INADVERTENTLY OPENS** **RR28 RECIRC MASTER CONTROLLER FAILS AS-IS** *Electromatic Relief Valve ERV111 opens. ERV111 red pilot and red ERV111 accoustic monitor light are lit. Blue continuity light extinguishes. Generator MWe lowers as MHC regulating system responds to the drop in RPV pressure.* *F2-4-1 MAIN STM LINE ELECTROMATIC RELIEF VALVE OPEN* *F1-4-8 STEAM LINE DETECTION SYS FLOW OFF NORM* *H3-4-5 PRESS/SAFETY/RELIEF VALVES FLOW* *When lowering power with the Master Recirc Flow Controller, no change in core flow or reactor power occurs because the controller is failed "as-is". Power can be reduced by either taking control of*	SRO □ Directs entry into SOP-1.4 □ IF average torus temperature approaches 110°F, THEN prior to reaching 110°F, directs a reactor scram □ Directs emergency power reduction to approximately 85% per SOP-1.1 □ Declares ERV inoperable and enters TS 3.1.5. Specification a states that all six solenoid actuated pressure relief valves shall be operable. Specification b states that if a is not met be 110 psig or less within ten hours. □ IF ERV fuses are pulled at JB Panel 11 and 12 on RB 237 then Tech Spec 3.2.9 should be referenced. The pressure relief function is lost for the effected valve. The spec is still met with the other five ERVs able to perform the pressure relief function. □ If Torus water temperature exceeds 85°F, enters EOP-4

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
the pump individual MA stations at F Panel or by inserting cram rods.	☐ Directs Containment Spray locked out ☐ Directs Torus Cooling placed in service EOP-1 Attachment 16.
Torus water temperature rises and exceeds 80°F. F1-2-8 (F4-2-1) CORE LEVEL TORUS TEMP MONITOR SYS 11 (12) TROUBLE annunciators alarm.	
ROLE PLAYS: When dispatched to Aux Control Room as NAO, report ERV111 acoustic monitoring indicates flow through ERV111. As NAO in Aux Control Room if asked to report status of ERV AFTER FUSES ARE PULLED, report ERV is closed based on Acoustic Monitoring.	**These actions are from SOP-1.4** RO ☐ Monitors Reactor power, level, pressure and torus water temperature ☐ When directed, performs emergency power reduction per SOP1.1 ☐ Reports failure of MASTER RECIRC FLOW CONTROLLER to reduce flow ☐ Takes manual control of Recirc Pumps at F Panel to individually lower Recirc Flow, if directed. (N1-OP-1 F.1.0) ☐ Inserts cram rods, if directed. BOP ☐ Recognize and report ERV open ☐ Enter and execute SOP-1.4 ☐ IF average torus temperature approaches 110°F, THEN prior to reaching 110°F, scrams the reactor, as directed by SRO

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS

CONSOLE OPERATOR INSTRUCTIONS:
 	
If dispatched and directed to pull ERV fuses on RB237 activate REMOTE using TRG 20:
 	
AD01 ERV 111 FUSES, Pull 2:00 minute time delay.
After time delay and remote is active, report fuses pulled for ERV111 in the reactor building.
Pulling fuses on RB 237 will also close the ERV.
 	
If directed to reset the Acoustic monitor channels in the Aux Control Room activate REMOTE using TRG 21:
 	
AD07 ACOUSTIC MONITOR ALM RESET
Report acoustic monitor reset, when appropriate.
 	
When fuses are pulled the ERV closes. Fuses are located inside F Panel. Electrical Safety PPE is needed to enter panel and pull the fuses. F15 6A POS F30 6A NEG are the correct fuses for ERV111. Pulling these fuses will close the ERV.
 	
When fuses are pulled, the normal control room light indication is lost. When the ERV closes, generator MWe rises. The ERV position is confirmed to be closed from the Aux Control Room using Acoustic Monitoring.
	☐ Determines which ERV is open
	☐ Informs SRO of required emergency power reduction
	☐ Perform one or all of the following to attempt to close the stuck open ERV:
	  ☐ Depress ADS Timer Reset pushbuttons.
	  ☐ Cycle control switch for ERV 111.
	  ☐ Pull control power fuses in F Panel for ERV111 (Detail 1.4-1)
	  ☐ Dispatch an operator to JB Panel 11 and 12 on RB 237 to pull appropriate control power fuses at local cabinet (Detail 1.4-2).
	
	☐ IF ERV closes THEN reset the Accoustic Monitor.
	☐ IF ERV remains open THEN scram per SOP-1 (Not expected to scram)
	
	☐ When ERV closes, report condition to SRO.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
NOTE: These actions are directed and performed concurrently with above actions to close the ERV, per the SOP.	☐ Dispatches operator to Aux Control Room Panel 1S49 to perform the following: ☐ Check for Red Hi-Alarm light lit. ☐ Compare meter reading for alarming channel to other channels. ☐ Select channel to audio monitor. ☐ Monitor and maintain Torus water temperature as follows: ☐ Initiate Torus Cooling per Attachment 2 (this procedure). ☐ Record Torus water temperature every five minutes per N1-ST-V5 BOP ☐ If directed, lockout Containment Spray Pumps by placing pump switches in PTL ☐ If directed, starts Torus Cooling per Attachment 16 ☐ Torus Cooling shall be placed in service within 15 minutes of Torus temperature ≥ 85°F ☐ Close CONT SPRAY BYPASS BV for selected loop: ☐ 111; 80-45 ☐ 112 or 121; 80-40 and 80-45 ☐ 122; 80-40 ☐ Verify closed 80-115, CONT SPRAY TO RAD WASTE IV 12 ☐ Verify closed 80-114, CONT SPRAY TO RAD WASTE IV 11

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Verify closed Cont Spray Discharge IV using keylock switch for selected loop: ☐ 111; 80-16 ☐ 112; 80-36 ☐ 121;80-15 ☐ 122; 80-35 ☐ Verify open CONT SPRAY BYPASS BV for selected loop: ☐ 111; 80-40 ☐ 112; 80-44 ☐ 121;80-41 ☐ 122; 80-45 ☐ Fully open 80-118, CONT SPRAY TEST TO TORUS FCV ☐ Start CONTAINMENT SPRAY RAW WATER PUMP in selected loop. ☐ Start CONTAINMENT SPRAY PUMP in selected loop. ☐ WHEN torus water reaches desired temperature stop Containment Spray pump. ☐ Stop all operating Raw Water Pumps ☐ If desired, return system to standby per N1-OP-14. ☐ Report status to SRO.
Event 5 EC 11 Tube Leak **PO-5.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by the lead evaluator, insert malfunction by activating TRG 5:	SRO ☐ Acknowledge report K1-1-2, EMER COND VENT 11 RAD MONITOR, in

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
EC06A, Emergency Condenser Tube Leak 111 (50%; ramp 5:00 minutes)	alarm. □ Direct actions of K1-1-2, EMER COND VENT 11 RAD MONITOR.
K1-1-2, EMER COND VENT 11 RAD MONITOR, alarms. *EMERG COND RMON 111 and EMERG COND RMON 112 on J panel in alarm and radiation levels rising.*	□ Diagnose EC11 tube leak (rising EC vent radiation levels and rising EC water level). □ Direct EC 11 be isolated.
NOTE: If EC11 is not isolated based on confirmed radiation levels and rising shell water level, then EMER COND 111-112 LEVEL HIGH-LOW, will alarm on high level in approximately five (5) minutes.	□ Assess EPIP-EPP-01, Attachment 1, EAL Matrix and determine the effluent monitoring threshold has NOT been reached by referencing Category 5.1.1, 5.1.2, and Table 3. (May evaluate later, due to crew resource limitations).
ROLE PLAYS: If asked as Chemistry to perform sampling and/or EC Effluent Dose Assessment, acknowledge the request.	□ Determine that with EC11 isolated (inoperable) Tech Spec 3.1.3.b applies.
If informed of the EC tube leak, acknowledge the report.	□ With EC 12 already isolated, then Tech Spec 3.1.3 specification e applies. A normal orderly shutdown must be initiated within one hour.
IF asked as RP to evaluate dose rates on 340' el RB, acknowledge the report.	□ Request Chemistry to perform sampling AND EC Effluent Dose Assessment

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ IF an EC tube leak is confirmed perform shutdown actions in accordance N1-OP-13 H.10.0
	☐ Brief crew on event impact.
	☐ Notifies Ops Management of required plant shutdown.
	BOP
	☐ Recognize/report K1-1-2, EMER COND VENT 11 RAD MONITOR, in alarm.
	☐ Recognize/report rising water level in EC11.
	☐ Diagnose EC11 tube leak (rising EC vent radiation levels and rising EC water level).
	☐ Acknowledge direction to perform actions of K1-1-2.
	These actions are from K1-1-2
	☐ Confirm computer points E478 and E 480 in alarm
	☐ Recognize/report EMERG COND RMON 111 and EMERG COND

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	RMON 112 on J panel in alarm and radiation levels rising. □ Inform SRO to assess effluent dose. □ With SRO concurrence, isolate EC11, as follows □ Close 39-07R, EC STM ISOLATION VALVE 112 □ Close 39-09R, EC STM ISOLATION VALVE 111 □ Close 39-05, EMERG CNDSR COND RET ISOLATION VALVE 11 □ Close 39-11R, EMERG CNDSR STM SUPPLY DRAIN IV 111 □ Close 39-12R, EMERG CNDSR STM SUPPLY DRAIN IV 112 □ Close 05-01R, EMERG COND VENT ISOLATION VALVE 111 □ Close 05-11, EMERG COND VENT ISOLATION VALVE 112 □ Reference N1-OP-13, H.10.0 □ IF an EC Tube Leak is confirmed, THEN initiate normal shutdown in accordance with N1-OP-43C.
NOTE: WHEN the next event is initiated (Turbine Building Steam Leak), the crew is likely to direct a	

manual scram due to degraded plant conditions. IF the crew does not manually scram, the high turbine vibration conditions will result in procedure required trip of turbine and scram.

Event 6 Steam Leakage Into the Turbine Building and Turbine Vibration Rises
PO-6.0

CONSOLE OPERATOR INSTRUCTION:

When directed by the lead evaluator, insert malfunction by activating TRG 6:

MS12 Steam line Rupture In TB Condenser Area (15% 4:00 minute ramp time)

TU02, Main Turbine High Vibration Bearing #5 and #6 (75% 8:00 minute ramp time).

Steam leakage into Turbine Building causes MAIN FIRE PANEL 2-1 TURB BLDG 261 LOCAL PANEL N01 FIRE alarm to actuate.

H1-4-8 AREA RADIATION MONITORS (E495 TB261 CP AREA) alarms.

L1-3-3 CONTINUOUS AIR RAD MONITOR (F329 TB NG AIR) alarms.

IF the reactor is not tripped and vibration continues to rise, then:

A2-3-5, TURBINE SUPERVISORY SYSTEM, in alarm.

SRO

- ☐ Acknowledges reports and directs action for steam leak.
- ☐ If warranted, acknowledge report vibration is rising; 12 mils require immediate removal of the turbine from service.
- ☐ Direct Turbine Building local area evacuation per EPP-5.
- ☐ Direct a reactor scram and entry into SOP-1, Reactor Scram. Due to steam leak or turbine vibration.
- ☐ Direct a turbine trip and entry into SOP-31.1, Turbine Trip, if vibration reaches 12 mils.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Computer points B444 (BRG #5) and B445 (BRG #6) in alarm	
ROLE PLAYS: If asked as maintenance or WEC to investigate, acknowledge the request. If reports to management personnel are received, acknowledge the reports.	
EVENT 7 FAILURE TO SCRAM **PO-7.0** **CONSOLE OPERATOR INSTRUCTION:** Verify TRG 7 actuates the following malfunction AFTER 3:00 minute delay, when Mode Switch is placed in SHUTDOWN: **MS01 STEAM LINE RUPTURE OUTSIDE PRIMARY CONTAINMENT (7 3:00) 2 1:00** (2% with 1:00 ramp, 3 minutes after MS to SD) Other malfunctions activated NOW by Mode Switch: **Verify TRG 8, RD35B CRD Pump 12 trip after 1:00 minute delay**.	RO □ When directed, initiates a manual scram and implements SOP-1 Reactor Scram. □ Provides Scram Report □ Reduce RECIRC MASTER flow 25 to 43 Mlbm/hr □ Perform SOP-1 Scram Verification steps □ Confirm all rods inserted to position 04 or beyond using Full Core Display. □ Report ALL RODS ARE NOT FULL IN □ If ALL RODS IN cannot be confirmed THEN continue and confirm when scram is reset.
When the reactor is scrammed all rods DO NOT fully insert due to hydraulic lock of the Scram Discharge Volume (SDV). Power remains about 20%-30%, but is within Bypass Valve (BPV) capability (of 45%). Pressure is controlled by the BPVs, until the MSIVs eventually close due to high	□ Verify turbine and generator tripped. □ Maintain RPV pressure below 1080 psig using one or more of the following (unless given other direction from EOP-2): □ Turbine Bypass Valves

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
steam tunnel temperature from the steam leak.	☐ Emergency Condensers (Not available) ☐ ERVs ☐ Others (Not expected) BOP ☐ Respond to Fire alarms and radiation alarms ☐ At Fire Panel, closes Turbine Building Roof Vents. ☐ If directed, evacuates the Turbine Building. ☐ Recognize/report vibration is rising; 12 mils require immediate removal of the turbine from service.
SRO ACTIONS WITH FAILURE TO SCRAM	SRO ☐ Acknowledge report control rods failed to insert (ATWS). ☐ Enter EOP-2, RPV Control on power above 6% and scram required. THEN exit and go to EOP-3, Failure to Scram because all rods are not inserted to at least 04. ☐ Enter and execute EOP-4, Primary Containment Control when torus temp reaches 85°F

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	These are EOP-2, RPV CONTROL actions □ Answer "all rods in to at least 04" NO. □ Answer "will the reactor stay shutdown without boron" NO.
	SRO **These are EOP-3, FAILURE TO SCRAM actions** □ Direct Bypass ADS. □ Direct prevent Core Spray injection per EOP-1, Attachment 4.
	These are EOP-3 Level Actions □ Direct verify containment isolations per SOP-40.2 when RPV level reaches low-low level (+5 inches) or main condenser vacuum reaches 7 in hg. (Low priority) □ Direct MSIV jumpers installed per EOP-1, Attachment 2. □ With reactor power >6% and RPV level above –41inches, go to ⑧.
When RPV injection is terminated and prevented, RPV water level lowers and approaches -41 inches. As level lowers, reactor power lowers and	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
may drop below the APRM downscale setting of 6%.	
	☐ Directs terminate and prevent injection using EOP-1, Attachment 24.
	☐ Directs level lowered to at least -41inches
	☐ When level drops below -41 inches directs level band -84 to -41 inches.
NOTE: Reactor power is most likely to be below 6% when torus temperature reaches 110°F. Terminating and preventing injection and controlling water level between -109 inches and -84 inches is highly unlikely.	☐ IF torus temperature is above 110°F, let level continue to drop until reactor power <6% **OR** RPV level reaches –84 inches **OR** all ERVs remain closed with DWP below 3.5 psig. (NOT expected)
	☐ Direct level band between –109 inches and the level it was lowered to using Cond/FW and CRD. (NOT expected)
	☐ Determine WAIT UNTIL 600 gallons boron injected (860 gallons in LP tank) OR all rods inserted to 04 OR reactor will stay shutdown without boron.
	☐ Proceed to WAIT block L-11 and WAITS until 600 gallons boron injected (860 gallons in LP tank). THEN direct level restored to +53 inches to +95 inches.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	These are EOP-3 Power Actions
	☐ Directs Reactor Mode Switch in SHUTDOWN.
	☐ Directs initiation of ARI.
	☐ Directs verify trip of RRPs.
	☐ Directs execution of EOP-3.1.
Injecting Liquid poison after torus temperature reaches 110°F is still required. This contributes to staying below HCTL.	☐ Direct LP injection and alternate boron injection. (Expected to occur before torus temperature reaches 110°F).
	☐ Record LP tank level: approximately 1460Gallons.
	☐ Direct verification RWCU isolates.
	☐ May answer "is main condenser available" YES but MSIVs are closed due to MSL high temperature. Must answer NO in step Q-13.
	These are EOP-3 Pressure actions
ECs are NOT available for pressure control due to component malfunctions. **CT-1.0** *SRO is expected to readjust RPV pressure band as often as needed to stay below HCTL.*	☐ Direct pressure band below 1080 psig using ERVs. (800 to 1000 psig)
	☐ **IF torus temperature cannot be maintained below HCTL, THEN maintain RPV pressure below the**

limit. (OK to exceed 100°F/hr cooldown rate). (Step P-3 override) (CT)

SRO

These EOP-4 actions may have already been directed, if EOP-4 was entered due to earlier scenario events (ERV opening).

These EOP-4, PRIMARY CONTAINMENT CONTROL actions

- ☐ Direct lockout of all containment spray pumps

TORUS TEMP

- ☐ Direct torus cooling per EOP-1, Attachment 16, to maintain torus temp below 85°F.
- ☐ Monitor HCTL (FIG M) and reduce reactor pressure band as necessary to stay in GOOD region.
- ☐ When informed of Containment Spray Pump trip, directs an alternate loop to be placed in service per EOP-1 Attachment 16.

BOP Terminate and prevent injection level control actions per EOP-1 Attachment 24.

CT-2.0

BOP

When directed terminate and prevent injection using EOP-1, Attachment 24.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Perform one of the following:
Expected operator response is to close FEEDWATER ISOLATION VALVE 11 and 12 to stop injection, until HPCI fuses are removed.	☐ Place FEEDWATER ISOLATION VALVE 11 and FEEDWATER ISOLATION VALVE 12 to CLOSE. **OR** ☐ Place FEEDWATER PUMP 11 and FEEDWATER PUMP 12 control switches in PTL.
VALVE CONTROL stations are placed in MAN and dialed to zero so that they remain closed when the HPCI fuses are pulled.	☐ Select MAN on FW 11 VALVE CONTROL and rotate knurled knob full CCW. ☐ Select MAN on FW 12 VALVE CONTROL and rotate knurled knob full CCW.
HPCI fuses are pulled to establish manual injection using the Feedwater Pump discharge level control valves.	☐ Select MAN on FW 13 VALVE CONTROL and rotate knurled knob full CCW. ☐ Direct AO to pull FU-8 and FU-9 (HPCI fuses) in Panel IS34.
CONSOLE OPERATOR INSTRUCTION: WHEN directed to Pull HPCI Fuses, activate trigger TRG 22 **FW24 REMOVAL OF HPCI FUSES**	☐ Verify closed FEEDWATER PUMP 13 BLOCKING VALVE. ☐ Verify FEEDWATER 11 BYPASS VALVE in MAN and at zero. ☐ Verify FEEDWATER 12 BYPASS VALVE in MAN and at zero.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Inform SRO when level reaches target level (-41inches corrected) as directed by SRO.
	☐ IF terminating and preventing injection with torus temperature above 110°F, THEN inform SRO when power <6% **or** RPV level reaches TAF (–84 inches).
CT-2.0	☐ **When directed establish injection and maintain level between –109 inches and level it was lowered to using Cond/FW. Expected -84 inches to -41 inches.**
CT-1.0	☐ **Controls pressure in assigned bands, as directed by SRO to stay below HCTL**
When re-injecting per EOP-1 Attachment 24, THROTTLE INJECTION, BOP injects as follows	BOP ☐ Perform one of the following: ☐ REOPEN FEEDWATER ISOLATION VALVE 11 and FEEDWATER ISOLATION VALVE 12 if closed to terminate injection. **OR** ☐ RESTART FEEDWATER PUMP

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	11 and/or FEEDWATER PUMP 12 by placing its control switch in START if placed in PTL to terminate injection.
	☐ Adjust FW 11 VALVE CONTROL and/or FW 12 VALVE CONTROL by rotating knob to establish injection and maintain desired level band.
	☐ Monitor and report if 600 gallons boron injected (860 gallons in LP tank).
	☐ Monitor and report if all rods inserted to 04.
Event 8 CRD Pump 12 Trip **RD35B CRD Pump 12 trip actuated after the scram.**	☐ When directed to restore level to +53 inches to +95 inches using Cond/FW.
CRD Pump 12 trips resulting in loss of a high pressure injection source and pressure source for control rod insertion. CRD Pump 11 must be manually started either as an injection source or to provide drive pressure while implementing EOP-3.1, Alternate Control Rod Insertion.	☐ When loss of CRD pump 12 is recognized, start CRD pump 11.
When directed, RO enters M Panel to install EOP jumpers identified in EOP-3.	RO ☐ When directed prevent Core Spray injection per EOP-1, Attachment 4.

EOP-1 Attachment 4, Prevent Core Spray Injection

- ☐ Obtain tools and safety equipment form EOP toolbox at SM desk.
- ☐ Bypass Core Spray IV interlocks by installing jumpers at EOP ISOLATION BYPASS JUMPER SUBPANEL (inside Panel N, between 1N1A and 1N1B):
  - ☐ Jumper 17: 40-01, INSIDE CS DISCHARGE IV121 BYPASS
  - ☐ Jumper 18: 40-11, INSIDE CS DISCHARGE IV111 BYPASS
  - ☐ Jumper 19: 40-06, CORE SPRAY TEST VALVE11 BYPASS
  - ☐ Jumper 24: 40-09, INSIDE CS DISCHARGE IV122 BYPASS
  - ☐ Jumper 25: 40-10, INSIDE CS DISCHARGE IV112 BYPASS
  - ☐ Jumper 26: 40-05, CORE SPRAY TEST VALVE12 BYPASS
- ☐ If directed, verify containment isolations per SOP-40.2 when RPV level reaches low-low level (+5 inches) or main condenser vacuum reaches 7

OPERATOR ACTIONS

in hg.

- ☐ If directed install MSIV jumpers per EOP-1, Attachment 2.

RO

EOP-1 Attachment 2, MSIV Lo-Lo Isolation Bypass

- ☐ Obtain tools and safety equipment form EOP toolbox at SM desk.
- ☐ Bypass Core Spray IV interlocks by installing jumpers at EOP ISOLATION BYPASS JUMPER SUBPANEL (inside Panel N, between 1N1A and 1N1B):
  - ☐ Jumper 1: MSIV LO/LO ISOL. BYPASS RELAY 11K19A
  - ☐ Jumper 2: MSIV LO/LO ISOL. BYPASS RELAY 11K20A
  - ☐ Jumper 8: MSIV LO/LO ISOL. BYPASS RELAY 12K19A
  - ☐ Jumper 9: MSIV LO/LO ISOL. BYPASS RELAY 12K20A

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
BOP ACTIONS FAILURE TO SCRAM **Inject per LIQUID POISON INJECTION PO-8.0** **LP01A LIQUID POISON PUMP TRIP 11, TRUE** preset malfunction becomes effective. *System 11 is started and immediately trips. If not already isolated, RWCU isolates.*	BOP □ When directed inject liquid poison. □ Place keylock switch to SYS 11. □ Confirm RED LIGHT ON and GREEN LIGHT OFF for pump started. □ Report failure of LP Pump 11 □ Dispatches operators to RB to use alternate boron injection systems per EOP-3.2.
CONSOLE OPERATOR INSTRUCTION: WHEN dispatched to inject boron with hydro pump active REMOTE using TRG 23: **LP04 ALT BORON INJ VIA HYD PMP, RUN DELAY 12:00** ROLE PLAY: After 12 minute delay and LP04 becomes active, report to control room that liquid poison is being injected using the hydro pump.	
RO actions for Alternate Control Rod Insertion, EOP-3.1. *Section 3 and 4 are implemented to manually drive control rods and by repeated manual scrams.*	RO □ Verify at least one CRD pump is running. If not previously performed, recognize CRD Pump 12 tripped and starts CRD Pump 11. □ Reactor Mode Switch to REFUEL. *Both SECTION 3 and SECTION 4 require*

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	the following actions
	☐ Place ARI OVERRIDE switch in OVERRIDE at F Panel.
	☐ Install RPS SCRAM LOGIC RELAY BYPASS JUMPERS, by performing the following:
	☐ Obtain tools and safety equipment form EOP toolbox at SM desk.
	☐ Defeat RPS logic relays by installing **jumpers** at EOP ISOLATION BYPASS JUMPER SUBPANEL (inside Panel N, between 1N1A and 1N1B): ☐ Jumper 5: BYPASS RELAY 11K7 TO RELAY 11K51B ☐ Jumper 6: BYPASS RELAY 11K8 TO RELAY 11K52B ☐ Jumper 12: BYPASS RELAY 12K7 TO RELAY 11K51B ☐ Jumper 13: BYPASS RELAY 12K8 TO RELAY 12K52B
When scram channels are reset, CH11 and CH12 white pilot solenoid group lights are on. The SDV begins draining. **CONSOLE OPERATOR INSTRUCTION:** WHEN the scram is reset, delete ALL RD33 malfunctions: RD33A, RD33B, RD33C, RD33D, RD33E	☐ Reset the scram by depressing Ch 11 and Ch 12 RESET buttons.
	☐ IF RWM is enforcing blocks, bypass the RWM.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Insert rods to 00 using EMER ROD IN starting with high power regions of core (use LPRM indications). ☐ Perform one or more of the following to establish higher drive water pressure: ☐ Fully open CRD FCV ☐ Close 44-04 CONTROL ROD DRIVE WATER CONT V ☐ Close 44-167 Charging Header Blocking Valve RB237
CONSOLE OPERATOR INSTRUCTION: IF dispatched to close 44-167, manually activate REMOTE **RD06 CRD ACCUMULATOR HEADER ISOLATION** ROLE PLAY: Report valve is closed.	MANUAL SCRAMS (Section 4) ☐ Direct AO to verify open 44-167 (CRD-12), Charging Water Header Blocking valve (RB El 237 west hall). ☐ WHEN....SDV drained (following clear): ☐ *F1-1-8, RPS CH 11 SCRAM DUMP VOL WTR LVL HIGH* ☐ *F3-1-4, CONT ROD DRIVE SCRAM DUMP VOLUME WTR LVL HIGH* ☐ *F4-1-1, RPS CH 12 SCRAM DUMP VOL WTR LVL HIGH* AND....Either Reactor Pressure or CRD Charging Water Pressure >450 psig.
When the SDV is drained and another manual scram is inserted, ALL RODS WILL FULLY	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
INSERT. **CT-3.0**	**THEN....manually scram by depressing the Ch 11 and Ch 12 scram buttons.** IF....control rods move inward, THEN....reset scram and repeat steps. □ Provides a Scram report. Report all rods fully inserted.
Event 9 Containment Spray Pump Trip **PO-9.0** **********CAUTION********** **IF a different pump is started for torus cooling, trip THAT pump using the appropriate CT01B,C or D malfunction** ********** **CONSOLE OPERATOR INSTRUCTION:** When all rods are fully inserted, activate malfunction using TRG 11: **CT01A CONTAINMENT SPRAY PUMP TRIP 111** *Containment Spray Pump 111 trips resulting in a loss of torus cooling. An alternate pump should be started, since torus temperature is still significantly above 85°F (EOP-4 condition). Entering EOP-1 Attachment 16 and re-performing steps for another loop will correctly align the system in the torus cooling mode.* *After all rods are fully inserted, exits EOP-3 and enter EOP-2*	**BOP** □ Report Containment Spray Pump tripped □ Starts an alternate containment spray pump in torus cooling per EOP-1 Attachment 16 □ Realigns Loop BVs for selected pump □ Closes Containment Spray IV to prevent spraying drywell □ Starts alternate Containment Spray Pump □ Reports torus cooling in service.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	SRO □ If all rods in then: □ Direct stopping LP injection. □ Exit EOP-3 and Enter EOP-2 □ Direct restoring level to +53 inches to +95 inches using Cond/FW and CRD.
TERMINATION CRITERIA Control Rods Inserted RPV water level being restored to normal band 53 to 95 inches. **EVENT 10 SRO**	SRO □ Classify event as SITE AREA EMERGENCY per 2.2.2.)

[redacted]

V. POST SCENARIO CRITIQUE

A. NA, NRC Exam

VI. REFERENCE EVENTS AND COMMITMENTS

A. Reference Events

None

B. Commitments

1. None

VII. LESSONS LEARNED

Facility: NMP1 Scenario No.: NRC 3 Op-Test No.: NRC

Initial Conditions IC226 845 psig and 2% power, with one turbine Bypass Valve partially open. Turnover: Continue plant Startup per N1-OP-43A and complete section E.3.0. After assuming the shift, raise pressure and continue startup. Place 2nd RWCU Pump in service. Raise pressure to 918 psig with EPR in service. IRM 17 Upscale tripped (NM10G) and bypassed at start of scenario.

Event No.	Malf. No.	Event Type*	Event Description
1		N (BOP)	At about 900 psig RPV Pressure, place 2nd RWCU Pump in service
2		R (RO)	Raise RPV Pressure from 845 psig using MPR to 918 psig with EPR in service.
3	NM13A	I TS (RO SRO)	IRM 11 INOP trip. Requires bypassing, consulting Tech Specs and resetting RPS Channel 11 trip.
4	CW02A	C (BOP)	Service Water Pump 11 trips resulting in rising RBCLC and TBCLC temperatures. Service Water Pump 12 is manually started.
5	RM1U	I TS (SRO)	REACTOR BUILDING VENT RAD MONITOR fails inoperable. Requires TS 3.6.2.j entry. Input into RB Emergency Ventilation System automatic initiation. Trip channel within 24 hours.
6	RD02R3 031	C (RO)	Control Rod Drifts out. The rod is fully inserted and the HCU is valved out per Annunciator Response Procedure F3-2-6 CONTROL ROD DRIFT.
7	RR54	I (BOP)	RPV Narrow range water level transmitter failed upscale. RPV level slowly lowers requiring FW LCV placed in manual and level restored manually. N1-SOP-16.1 is entered.
8	EC02 EC08A EC08B	M (ALL)	Emergency Condenser Steam Leak into Reactor Building with Failure to Isolate. Requires a manual scram. More than one Reactor Building General Area temperature eventually exceeds 135°F, requiring an RPV Blowdown, later in the scenario.
9	RP05B RP28	C(RO)	RPS Fails to trip but manual initiation of ARI pushbutton results in complete rod insertion.
10	HV03A HV03B	C (BOP)	RB Ventilation failure. Manual action is required to trip and isolate normal ventilation and start RBEVS, if Reactor Building radiation levels are above 5 mr/hr. If below this value operation of normal ventilation can continue per EOP-5.
11	FW03A FW03B	C (BOP)	Loss of Feedwater Pumps following control rod insertion. This complicates post blowdown level control. Injecting with Feedwater Booster Pumps or Core Spray is necessary to maintain RPV Water Level.
12		SRO	Classify Site Area Emergency 3.4.1 and 4.4.1

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

[redacted]

Facility: **Nine Mile Point 1**	Scenario No.: **NRC-03**	Op-Test No.: **NRC**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	2 and 3 AND 4 and 5 events can be run simultaneously, to improve efficiency. **Total Malfunction Count:** Major not included in this count. . **Abnormal Events Count:** Does not include the SRO TS related events. These are considered separately. **SRO TS Events** Event 3 and 5 are SRO Tech Spec evaluation events.
1. Total malfunctions (5-8) **Events 3,4,6,7,9,10,11**	7	
2. Malfunctions after EOP entry (1-2) **Event 9 RPS failure Event 10 RB Ventilation failure and Event 11 Loss of FW**	3	
3. Abnormal events (2-4) **Event 6 Rod Drift Event 7 FWLC**	2	
4. Major transients (1-2) **Event 8 EC Steam Leak with Isolation Failure**	1	
5. EOPs entered/requiring substantive actions (1-2) **EOP-2 RPV and EOP-5 Sec Cont**	2	
6. EOP contingencies requiring substantive actions (0-2) **EOP-3 Failure To Scram; EOP-8 RPV Blowdown**	2	
7. Critical tasks (2-3)	4	

[redacted]

NMP SIMULATOR SCENARIO

NRC Scenario 3 **REV. 0** **No. of Pages: 35**

LOW POWER WITH SECONDARY CONTAINMENT EOP ENTRYAND RPV BLOWDOWN REQUIRED

PREPARER	G. Bobka	DATE 7/14/06
VALIDATED	M. Meier, L. Blum, J. Tsardakas	DATE 9/19/06
GEN SUPERVISOR OPS TRAINING		DATE 2/23/2007
OPERATIONS MANAGER	NA Exam Security	DATE
CONFIGURATION CONTROL	NA Exam Security	DATE

SCENARIO SUMMARY

Length: 90 minutes

Initial Power Level: 2% Power. RPV Pressure is 845 psig with Bypass valve open.

Mitigating Strategy Code: SC1 Secondary Containment. RPV Blowdown required.

The scenario begins at about 2% reactor power, during plant startup. RPV pressure is 845 psig. The crew will start the second Reactor Water Cleanup Pump per normal operating procedures. Plant startup continues and RPV pressure is raised to 918 psig and pressure control is established on the Electronic Pressure Regulator (EPR). As pressure is raised, IRM 11 failure due to an inop trip occurs resulting in a trip of RPS Channel 11. The crew will bypass the failed instrument and reset the resulting RPS channel trip.

Service Water Pump 11 trips occurs requiring a standby pump to be placed in service. Control Rod 30-31 will drift out. The rod is fully inserted and isolated. With power level below RWM setpoint the RWM must be bypassed to insert the drifting rod. The startup can now continue by pulling control rods. Reactor Building radiation monitor 11 inop condition occurs. Tech Spec entry into 3.6.2.j is required because the monitor is part of RB Emergency Ventilation initiation instrumentation.

RPV Narrow Range level input to Feedwater Level Control System (FWLC) fails upscale. With the level transmitter failed high, an RPV water level transient results requiring crew to take manual control of level control valve to prevent an automatic protective trip function per N1-SOP-16.1, Feedwater Failures. When level is stabilized the crew will maintain manual level control.

The major transient begins when an Emergency Condenser steam leak into Reactor Building occurs. Automatic and manual attempts to isolate the leak will be unsuccessful. Entry in EOP-5, Secondary Containment Control is required and the reactor will be manually scrammed.

[redacted]

When the manual scram is initiated RPS Channel 12 fails to trip. The crew enters EOP-3 Failure To Scram and takes initial actions to mitigate the event. When the crew manually initiates ARI, all control rods will fully insert and EOP-3 is exited. The crew transitions back to EOP-2 RPV Control. After the transition back into EOP-2, the operating Feedwater Pumps trip, complicating post scram level control. When Reactor Building general area temperatures exceed 135°F in more than one area, an RPV Blowdown using EOP-8 is required. Reactor Building Ventilation system malfunctions requires manual action to mitigate steam leak into the building which could lead to a release.

Major Procedures Exercised: N1-SOP-16.1, N1-SOP-1.5, N1-EOP-2, N1-EOP-5, N1-EOP-8

EAL Classification:	SAE 3.4.1 Main Steam Line, EC steam line or Reactor Water Cleanup isolation failure AND release pathway, outside normal process system flowpaths from unisolable system exists outside primary containment SAE 4.1.1 Primary system is discharging into RB resulting in RB general area temperatures >135°F in two or more areas, N1-EOP-5
Termination Criteria:	RPV Blowdown is complete and RPV level is maintained above TAF with all rods fully inserted.

[redacted]

I. SIMULATOR SET UP

A. IC Number: IC-226 or equivalent. Reactor Power 2% RPV Pressure 845 psig
Initial IC006 was at 500 psig. Shifted RWCU to High Pressure PCV and raised pressure to 845 psig by raising MHC pressure setpoint. Pulled some control during the pressure increase to raise power, but probably didn't have to. Currently, pulling rods is at RWM Group 15. This should allow the crew to increase pressure by only using MPR pressure set. Pulling control rods is not required to accomplish scenario objectives.
Ensure IRM 17 bypassed and half scram is reset.
Shift one IRM/APRM recorder to FAST in each RPS Channel

B. Presets/Function Key Assignments

1. Malfunctions:

a.	NM10G IRM CHANNEL 17 FAIL UPSCALE	INSERTED
b.	RP05B RPS FAIL TO SCRAM CH 12	INSERTED
c.	RP28 ARI AUTO INITIATION FAILURE	INSERTED
d.	AD07A ERV111 FAIL SHUT BURNT OUT SOLENOID	INSERTED
e.	HV03A RBEVS CH 11 FAIL TO AUTO INITIATE	INSERTED
f.	HV03B RBEVS CH 12 FAIL TO AUTO INITIATE	INSERTED
g.	NM13A IRM CHANNEL 13 FAIL INOP	TRG 1
h.	CW02A SERVICE WATER PUMP TRIP 11	TRG 2
i.	RM1U RX BLDG VENT RAD MON INOP	TRG 3
j.	RD02R3031 CONTROL ROD FAILURE DRIFT OUT	TRG 4
k.	RD03R3031 CONTROL ROD FAILURE ACCUM TROUBLE	TRG12
l.	RR54 RX VESS LVL TRANS (LOCAL-FW CONTROL) FAIL HIGH	TRG 6
m.	EC02 EC STEAM LEAK OUTSIDE PC 4% Ramp 5:00 min	TRG 7
n.	EC08A EC LOOP 11 STM IV FAIL TO CLOSE 111, 100%	TRG 7
o.	EC08B EC LOOP 11 STM IV FAIL TO CLOSE 112, 100%	TRG 7
p.	FW03A FEEDWATER PUMP TRIP 11	TRG 8
q.	FW03B FEEDWATER PUMP TRIP 12	TRG 8

2. Remotes:

a.	RD07 RESET ROD DRIFT ALARM, RESET	TRG 5
b.	FW24 REMOVAL OF HPCI FUSES FU8/FU9, PULL	TRG10

3. Overrides:
   a. None
4. Annunciators:
   a. None

[redacted]

C. Equipment Out of Service

1. IRM 17 failed and is bypassed

D. Support Documentation

1. Working copy of N1-OP-43A. Section 1.0 and E.2.0 are complete. E.3.0 is in progress and signed off complete including E.3.20. The next step is E.3.21, for starting the second RWCU pump at 900 psig. The 900 psig Drywell Inspection is NOT required.
2. Working copy of N1-OP-31 with sign-offs indicating step E.4.11 is in progress.

E. Miscellaneous

1. EVENT TRIGGERS/COMPOSITES
   a. None

[redacted]

II. **SHIFT TURNOVER INFORMATION**

OFF GOING SHIFT: ☐ N ■ D DATE: _____

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, CSO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Supervisor Log (SM, CRS, STA)
- CSO Log (CSO)
- Lit Control Room Annunciators (SM, CRS, STA, CSO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (CSO)

Evolutions/General Information/Equipment Status:

- Reactor Power = 2%
- Loadline = NA
- RPV Pressure is 845 psig with a bypass valve partially open. MPR in control.
- N1-OP-43A in progress at step E.3.21
- Drywell Inspection at 900 psig is complete.
- N1-OP-31 in progress at step E.4.11
- IRM 17 is failed upscale and is bypassed. Tech Spec LCO is being complied with.

PART III: Remarks/Planned Evolutions:

- Start the second RWCU Pump.
- Raise RPV pressure to 918 psig and place EPR in service.
- Continue startup and complete section E.3.0

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

[redacted]

Scenario ID#

INSTRUCTOR COMMENTS (Strengths, Areas for Improvement, Open Items etc.)

What Happened?	What we did?	Why? (Goals)	Other Options?

[redacted]

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CT-1.0 Given an unisolable Emergency Condenser steam leak and secondary containment temperature approaching maximum safe values in one area, the crew will enter EOP-2 RPV Control and initiate a manual reactor scram before performing an RPV Blowdown.

CT-2.0 Given a condition requiring scram and failure of an RPS Channel to trip, the crew will manually initiate Alternate Rod Insertion (ARI) per N1-EOP-3 to shutdown the reactor.

CT-3.0 Given an unisolable Emergency Condenser steam leak and secondary containment temperature above maximum safe values in more than one area, the crew will perform an RPV Blowdown per EOP-C2.

CT-4.0 Given a loss of Feedwater Pumps following a scram, the crew will restore and maintain RPV water level above -84 inches using Alternate Injection Systems per EOP-2.

B. Performance Objectives:

PO-1.0 Given the plant during a reactor startup, the crew will place the second RWCU pump in service per normal operating procedures.

PO-2.0 Given the plant during a reactor startup, the crew will raise pressure to 918 psig per N1-OP-43A.

PO-3.0 Given the plant during startup conditions, the crew will establish pressure control on the Electronic Pressure Regulator (EPR).

PO-4.0 Given the plant during startup conditions and an IRM failure, the crew will bypass the failed channel and reset the tripped RPS channel. The SRO enters Tech Specs.

PO-5.0 Given the plant during startup conditions and a Service Water Pump trip, the crew will start the standby pump per station procedures.

PO-6.0 Given the plant during startup conditions and an inop condition on Reactor Building Rad Monitor 11, the SRO will enter Tech Specs.

[redacted]

PO-7.0 Given the plant during startup conditions and a drifting control rod, the crew will fully insert and valve out the affected HCU per ARP F3-2-6 and N1-OP-5.

PO-8.0 Given a failed RPV level instrument resulting in lowering RPV water level, the crew will manually control level to avoid a reactor scram per N1-SOP-16.1 Feedwater Failures

PO-9.0 Given an EC steam leak and general area temperatures approaching 135°F, the crew will manually scram per N1-EOP-5 and EOP-2.

PO-10.0 Given an EC steam leak and general area temperatures in two areas exceeding 135°F, the crew will perform an RPV Blowdown per N1-EOP-8.

PO-11.0 Given a failure of Reactor Building Ventilation to isolate AND RB Vent monitor reading above 5 mr/hr, the crew will isolate RB Ventilation and start RBEVS per N1-EOP-5.

PO-12.0 Given a failure of Reactor Building Ventilation to isolate AND RB Vent monitor reading below 5 mr/hr, the crew will recognize that an isolation should have occurred. With readings below 5 mr/hr, operation of normal ventilation is allowed per N1-EOP-5.

PO-13.0 Given events that meet the criteria for emergency classification, the SRO will classify the event per EPP-EPIP-01 EAL Matrix.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	Crew □ Crew conducts a pre-brief, walks down panels, and tests annunciators.
EVENT 1 Place 2nd RWCU PUMP In Service. **PO-1.0** *Crew places the second RWCU Pump (Pump 12) in service per N1-OP-3 Section E.7.0. The crew is expected to place the second pump in service before raising pressure. The crew may raise pressure to 900 psig before placing the pump in service.*	SRO □ Directs the second RWCU Pump placed in service per N1-OP-3. BOP □ Monitor NON-REGENERATIVE HX outlet temperature (F359) AND REGENERATIVE HX inlet temperature (F363) UNTIL system parameters stabilize AND ensure temperatures do not exceed 120°F. □ IF NON-REGENERATIVE HX outlet temperature (F359) OR REGENERATIVE HX inlet temperature (F363) approach or exceed 120°F, THEN lower Cleanup system flow using RMC-33-151, CLEANUP SYS FLOW. □ Verify adequate thermal margin exists to core thermal power limits. (Not a concern for this power level). □ Perform the following to start CLEANUP PUMP 12: □ Verify closed 33-16, CLEANUP PUMP 12 DISCHARGE VALVE. □ Adjust 33-40, CLEANUP SYS FLOW, using RMC-33-151 to
RWCU System Flow is indicated on dual pen chart recorder P/FR-35-150. Flow is the RED PEN and reads out in 0-400 X 10^3 lbm/hr.	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
System Flow in gpm can be determined using FC-33-169 and adjusting the thumbwheel to null the meter on the controller tape setting.	establish cleanup system flow between 180 X 10^3 and 220 X 10^3 lbm/hr (360-440 gpm).
	☐ Verify open 33-158, CLEANUP PUMP RECIRC VALVE 12.
	☐ Verify cleanup system pressure as indicated on PI-35-131A is being maintained 80 to 100 psig.
	☐ Start Cleanup Pump 12
As system flow is lowered, CLEANUP SYSTEM PRESSURE PI-35-131A pressure rises. If flow is reduced too rapidly high pressure system isolation may occur at 130 psig.	☐ Slowly jogs open 33-16, CLEANUP PUMP 12 DISCHARGE VALVE while maintaining approximately 80 to 100 psig system pressure.
	☐ Maintain pump discharge pressure less than 1400 psig by opening 33-40, CLEANUP SYS FLOW using RMC-33-151.
	☐ WHEN 33-36 CLEANUP PUMP 12 DISCHARGE VALVE is fully open adjust 33-40, CLEANUP SYS FLOW using RMC-33-151 to maintain desired system flow 250 X 10^3 and 380 X 10^3 lbm/hr (500 to 760 gpm).
	☐ Continue at 7.6 (of procedure)
	☐ Verify cleanup system computer point inputs to core thermal power calculations are in scan and updating. May contact STA or Reactor Engineer to verify points in scan.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	◻ Adjust thumbwheel on FC-33-169 to indicate current system flow rate in gpm.
After CLEANUP PUMP 12 is in service the crew will continue raising RPV Pressure to 918 psig, if not previously done.	◻ Report CLEANUP PUMP 12 is in service.
EVENT 2 **Raise RPV Pressure From 845 psig to 918 psig and place EPR in service.** **PO-2.0** **NOTE: At the Examiners discretion, EVENT 3 can be initiated while EVENT 2 is in progress, if desired.**	SRO ◻ Directs startup continued per N1-OP-43A E.3.21 ◻ Functions as Reactivity SRO. ◻ May direct control rod withdrawal to raise power. (Not expected) ◻ Directs pressure raised by adjusting MPR setpoint.
As MPR setpoint is raised Bypass Valves (BPVs) throttle closed then reopen as RPV pressure rises from 845 psig to the new MPR setpoint. As the MPR is adjusted Annunciator A1-4-6 TURBINE BY-PASS VALVES OPEN clears and alarms, as the BPV close when setpoint is raised and re-open as pressure rises to the new setpoint. *As RPV pressure rises above 850 psig, Annunciator F1-4-7 (F4-4-2) RPS CH 11 (12) REACTOR PRESS LOW clears.* *Annunciator F3-1-1 APRM 15-18 may also intermittently alarm as some APRM downscale conditions clear and alarm.*	RO ◻ Manually adjusts MPR setpoint by bumping MECHANICAL PRESSURE REG switch to RAISE ◻ Continue to raise RPV pressure to about 900 psig. ◻ Allows BPV to regulate pressure at 900 psig while starting second RWCU Pump, if not previously started. ◻ If directed, commences pulling control rods to establish BPV position or power increase.
Reactor coolant temperature also rises from 525°F (large E window display on K Panel). The crew monitor heat-up rate.	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
EVENT 3 IRM 11 INOP TRIP. **PO-4.0.** *This event can be initiated at any point up until 918 psig is reached, in the scenario as determined by the NRC Lead Examiner. It may be done simultaneously with the RWCU pump start or prior to the pump start.*	
CONSOLE OPERATOR INSTRUCTION: When directed by the Lead Examiner, active malfunction using TRG 1: **NM13A IRM 11 FAILURE-INOP** *IRM 11 INOP TRIP is generated. RPS CHANNEL 11 trips and four white scram pilot solenoid lights and one red backup scram light extinguish on F Panel. At E Console for IRM 11, the white DOWNSCALE/INOP light is lit. IRM 11 reading on chart is downscale.* *The Rod Block Monitor panel on E Console blue "SRM 11&12 IRM 11,12,13&14 APRM 11,12,13&14 lights are lit.*	SRO □ Acknowledges report □ Consults Tech Spec 3.6.2.a and 3.6.2.g and determines minimum numbers of channels are still operable for each trip system. □ Directs IRM 11 bypassed □ Directs RPS CH 11 reset □ Notifies WEC □ Notifies Ops management □ Conducts Crew Brief/Update
The following Annunciators actuate: *F1-1-1RPS CH 11 REACT NEUTRON MONITOR* *F1-2-1 RPS CH 11 AUTO REACTOR TRIP* *F14-1 RPS CH 11 REFUEL INST TRIP* *F2-3-6 IRM 11-14* *F3-4-4 ROD BLOCK* *At backpanel, IRM 11Drawer white DOWNSCALE and INOP lights are lit and the meter is downscale.*	RO □ Reports alarms to SRO **These actions are from F1-1-1** □ Confirms RPS Channel 11 tripped. □ Confirms alarm using available indications. □ Confirm other channels of neutron monitoring are normal. □ Consult Tech Specs (Notifies SRO)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ WHEN the cause of the alarm is corrected, reset RPS Channel 11. **These additional actions are from F1-2-1** ☐ Determine which sensor in RPS Channel 11 caused trip. (Determines IRM 11 inop condition). ☐ Confirms RPS Channel 12 sensors normal based on plant conditions. (Determines RPS 12 sensors normal). **Theses applicable actions are from F2-3-6** ☐ Confirm alarm on computer printout. (B193 is expected). ☐ Observe E Console to determine condition: Observes DOWNSCALE OR INOP light is on. The UPSCALE lights are off. ☐ IF instrument is malfunctioning, THEN refer to N1-OP-38B ☐ Consult Tech Spec 3.6.2.a and 3.6.2.g (Notifies SRO).
SRO determines and directs IRM 11 is to be bypassed per N1-OP-38 H.1.0	**These actions are in OP-38B H.1.0 for Bypassing IRM at E Console** ☐ Confirm requirements of Tech Specs will be met after IRM is bypassed. (Action completed by SRO). ☐ Place IRM BYPASS switch in BYPASS (IRM 11) position. ☐ Confirm IRM BYPASS light lit on panel E. ☐ Confirm IRM BYPASS light lit on IRM

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
SRM-IRM AUXILIARIES drawer is a separate drawer from the IRM channel drawers with status lights, located in same vicinity. *SRO determines and directs RPS Channel 11 to be reset.*	auxiliaries drawer (back panels). ☐ Confirm computer printout "IRM 11 BYPASS YES" ☐ Report IRM 11 bypassed to SRO **These actions are required to reset RPS Channel 11 trip** RO ☐ Depress REACTOR TRIP RESET pushbutton on E Console ☐ Observe RPS Channel 11 four white pilot lights illuminate ☐ Report RPS Channel 11 trip is reset.
When the trip is reset, the RPS Channel 11 four white pilot lights and one red light illuminate and associated annunciators clear.	
EVENT 4 Service Water Pump 11 trips **PO-5.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by the Lead Examiner, active malfunction using TRG 2: **CW02A SERVICE WATER PUMP TRIP 11** *SERVICE WTR PUMP 11 trips.* *The following annunciators actuate:* *H1-1-2 SERVICE WTR PUMP 11 TRIP OVERLOAD*	SRO ☐ Acknowledges report ☐ Directs starting Service Water Pump 12 ☐ Notifies WEC ☐ Notifies Ops management ☐ Conducts Crew Brief/Update BOP ☐ Reports alarms ☐ Reports Service Water Pump 11 tripped **These actions are from H1-1-2** ☐ Confirm alarm on computer printout. ☐ Start Service Water Pump 12. (Pump starts) ☐ IF Service Water Pump 12 will NOT
H1-4-2 R. BUILDING SW PRESS / SERV W PUMP HDR PRESS *H1-4-1 R. BUILDING COOLING WTR PRESS-TEMP MAKEUP FLOW*	
When Service Water Pump 12 is started, header pressures and system temperatures return to normal values.	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	start, THEN enter N1-SOP-18.1. (NA; Pump 12 starts) □ Place Service Water Pump 11 control switch to STOP. May be delayed until after the WEC is contacted. □ Also refers to H1-4-2, but actions in either ARP are effective in mitigating the pump trip.
EVENT 5 RX BLDG VENT RAD MON 11 INOP **PO-6.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by the Lead Examiner, active malfunction using TRG 3: **RM1U RX BLDG VENT RAD MON 11 INOP** *L1-4-3 RB VENT RAD MONITOR OFF NORMAL alarms.* *Channel 12 can still automatically start RBEVS, if 5 mr/hr setpoint is reached.*	BOP □ Reports alarm. □ Observes back panel reading of instrument. □ Reports downscale indication to SRO. □ Notifies RP. SRO □ Acknowledges status reports □ Enters TS 3.6.2.j. Determines channel must be tripped within 24 hours or the action required in 3.6.2.a must be taken (Enter TS 3.4.4). □ Notifies WEC □ Notifies Ops management □ Conducts Crew Brief/Update

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
EVENT 6 Control Rod Drifts Out **PO-7.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by the Lead Examiner, active malfunction using TRG 4: **RD02R3031 30-31 CONTROL ROD FAILURE DRIFT OUT** ☐ **WHEN rod is inserted and valved out, then delete this malfunction.** ☐ **WHEN directed to reset drift alarm in Aux Control Room;** activate REMOTE using TRG 5: **RD07 RESET ROD DRIFT ALARM**	SRO ☐ Acknowledges report ☐ Directs control rod inserted per ARP ☐ Notifies Reactor Engineering ☐ Notifies WEC ☐ Notifies Ops management ☐ Conducts Crew Brief/Update
Control Rod 30-31 drifts outward. *The following annunciator actuates:* *F3-2-6 CONTROL ROD DRIFT*	**These actions are from F3-2-6 and SOP-1.5** RO ☐ Confirm rod is drifting by observing F Panel RPIS indication AND/OR the process computer. ☐ Enters SOP-1.5 for rod drift ☐ Identifies rod 30-31 is drifting out. ☐ Turn ON Control Rod Power
When drifting rod is selected and driven in, the rod will insert to notch 00.	☐ Selects drifting rod 30-31 and inserts to notch 00 using EMERGENCY ROD IN.

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
CONSOLE OPERATOR INSTRUCTION: While isolating HCU, in order to simulate depressurizing the accumulator BEFORE contacting control room, activate malfunction using TRG 12: **RD03R3031 30-31 CONTROL ROD ACCUM Failure** *Annunciator F3-2-5 alarms* *When HCU is isolated and the malfunction is deleted, the rod will remain at notch position 00 (full in).*	□ Determines rod can be fully inserted. □ Release Emergency Rod In Switch. □ Determines rod did not remain fully inserted by observing the rod position. □ Select and hold Emergency Rod In Switch to maintain rod fully inserted. □ When rod is fully inserted, direct isolation of HCU 30-31 per OP-5. (Dispatches Operator/Directs task to be performed in Reactor Building). □ WHEN HCU is isolated, release Emergency Rod In Switch.
ROLE PLAYS: After isolating and depressurizing the HCU, THEN as operator dispatched report HCU is isolated, with cooling water maintained. Activating TRG 5 REMOTE RD07, THEN as operator dispatched report rod drift alarm has been reset. *When the Rod Drift Alarm is reset in the Aux Control Room Annunciator F3-2-6 CONTROL ROD DRIFT clears.*	□ Determine rod is no longer drifting out. □ Informs SRO to refer to TS 3.3.3 □ When directed by SM, exits SOP-1.5
EVENT 6 RPV Level Transmitter Failed HIGH PO-8.0 This event has the potential to lead to an automatic reactor scram. If this occurs, then activate TRG 7 to initiate the EC steam leak. The scenario can proceed under these conditions.	

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
CONSOLE OPERATOR INSTRUCTION: When directed by the Lead Examiner, active malfunction using TRG 6: **RR54 RPV LEVEL TRANSMITTER (LOCAL FW CONTROL FAILS HIGH**	
F2-3-3 REACTOR VESSEL LEVEL HIGH-LOW alarms *GEMAC level transmitter REACTOR LEVEL COL11 (ID59A) fails upscale. Dual pen RX VESSEL LEVEL – TOTAL FW FLOW recorder ID14 on F Panel, level indication pegs high. It will remain high until level column 12 is selected, at which point, the recorder input is from Column 12. FWLC input from a failed water level instruments results in slowly lowering RPV water level, as FWP 11 BYPASS VALVE closes in response to the sensed high level condition.* *Yarway water level instruments LI36-09 and 36-10 and GEMAC Col 12 level transmitter ID59B all start to slowly lower.*	SRO ☐ Acknowledge status reports ☐ Direct entry into N1-SOP-16.1 Feedwater Failures ☐ Notifies WEC ☐ Notifies Ops management ☐ Conducts Crew Brief/Update
NOTE: Annunciator response action will mitigate the transient. The crew will be expected to also enter SOP-16.1 Feedwater Failures. These actions are also effective in mitigating the transient. *As FWP 11 valve is re-opened, actual RPV water level will begin to rise, as observed on other instruments.*	**These actions are from F2-3-3** BOP ☐ Confirm vessel level by monitoring level indications. ☐ Observe steam flow/ feed flow mismatch. ☐ Take manual control of mis-operating system that are feeding or draining the vessel.

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INSTRUCTOR ACTIONS/
PLANT RESPONSE

OPERATOR ACTIONS

- Depresses MAN pushbutton for FWP 11 BYPASS VALVE at F panel.
- Adjusts FWP 11 BYPASS VALVE output signal to restore and maintain level as directed.

- Determine cause AND return level to normal. (Cause is failed COL 11 instrument).

These actions are from SOP-16.1

BOP

- IF RPV level is lowering THEN Reduce reactor power per SOP-1.1 as necessary to maintain level. (Not expected to reduce power)
- Problem with FWLC, FW Pumps OR FW heating? FWLC
- FCV Lockup? NO
- FWLC Malfunction? YES
- Using available FCVs take manual control of FWLC at MA stations placing controllers in Manual AND attempt to control RPV level.
  - Depresses MAN pushbutton for FWP 11 BYPASS VALVE at F panel.
  - Adjusts FWP 11 BYPASS VALVE output signal to restore and maintain level as directed.
- Can level be maintained > 53 inches? YES
- Restore level to 65 to 83 inches.
- IF feed/ steam flow OR narrow range

NOTE:

It is NOT required for the crew to transition to OP-16 to transfer the level column to 12. FW may remain in MAN for the remainder of the scenario.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	level instrument is malfunctioning THEN Shift Reactor Pressure/ level Columns or FW modes per N1-OP-16 Section F and return FWLC to auto.
EVENT 8 EC Steam leak into Secondary **PO-9.0, 10.0, 11.0, 12.0** Containment with Isolation Failure Console Operator: Refer to Attachment for reporting Reactor Building general area temperatures. Blowdown when evaluators are ready to allow the scenario to continue. **CONSOLE OPERATOR INSTRUCTION:** When RPV level is stabilized and directed by the Lead Examiner, active malfunction using TRG 7: **EC02 STEAM LEAKAGE OUTSIDE PRIMARY CONTAINMENT (4% 5:00 minute ramp)** **EC08A EC LOOP 11 STM IV FAIL TO CLOSE 111 100%** **EC08B EC LOOP 11 STM IV FAIL TO CLOSE 112 100%**	
Emergency Condenser steam leakage into the Secondary Containment begins. The following annunciators actuate: *K1-4-3 EMER COOLING SYSTEM 11 STEAM LEAK AREA T HIGH* *(with computer points C190, C189, C187)* *Followed shortly by* *K1-4-5 EMER COOLING SYSTEM 12 STEAM LEAK AREA T HIGH* *(with computer points C193 and C194)* *H1-4-8 AREA RAD MONITORS (EOP)*	SRO □ Enters and executes EOP-5 due to *"Area temperature above any alarm setpoint (Detail T)"* when K1 4-3 alarms. □ Activates the Emergency Plan, if required. (Expected later). □ IF Reactor Building Ventilation Exhaust radiation levels exceed 5 mr/hr THEN Verify RB Ventilation isolation and EVS initiation.

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Area Rad Monitors #18 (RB 340) and #22 (RB 281) alarm and are above Detail R values. Also, RB PNG monitor goes into ALERT alarm.	□ IF Reactor Building Ventilation isolates AND Exhaust radiation level is below 5 mr/hr THEN Restart RB Ventilation. (SC-2) (Not Expected)
As steam leak rate rises, RPV pressure begins to lower. Turbine Bypass Valves are regulated closed. Pressure and power continue to lower as RPV pressure lowers. Eventually, as RCS coolant temperature begins to rapidly lower, a large power excursion may occur.	**These actions are from TEMPERATURE/RADIATION Leg** □ Directs operation of area unit coolers and RB Ventilation as required. (SC-3) □ IF any area temperature or radiation level is above its alarm setpoint (Detail R, T), THEN Go to 27 (which is SC-5).....(SC-3) (Expected because ARM #18 is exceeding and also Detail T values exceeded with K1-4-3 and C189 and C190)
Fire panel Alarms actuate *2-1 1-7 REAC BLDG 318 LOCAL PANEL NO 7 FIRE* *2-1 4-7 REAC BLDG 318 LOCAL PANEL NO 7 TROUBLE* *2-2 1-2 DIESEL FIRE PUMP #1 RUNNING* *2-2 2-2 ELECTRIC FIRE PUMP #1 STARTED* *Fire systems actuate in RB 318 areas.*	□ IF a primary system is discharging into the reactor building AND the discharge cannot be isolated THEN Go to 28 (which is SC-9) (Expected, because based on temperatures, radiation levels and fire alarms, crew is expected to determine the source as a primary system EC steam line) □ Directs action to isolate EC 11 (all discharges into affected areas) (SC-6)
After about a minute *L1-3-6 (4-6) EMERG VENT SYS CHANNEL 11 (12) RELAY OPERATE* *Reactor Building Supply and Exhaust Fans should*	□ Proceeds to WAIT block SC-7 and WAITS until 2 or more general areas are above Max Safe Values. Also

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
trip and RB isolation dampers close. Malfunction HV03A and B prevent the isolation from occurring.	concurrently executes the actions in 28, since a primary system is discharging into the reactor building.
When RPV pressure lowers below 850 psig, a turbine trip signal is generated from actuation of Vacuum Trip 1. The turbine trip results in HPCI actuation. **CT-1.0**	□ BEFORE any area temperature, radiation or water levels reaches a Max Safe Value (SC-9) (Detail S).....**Directs a manual scram and ENTER RPV CONTROL EOP-2, while continuing here in EOP-5** (SC-10) (Expected, because the unisolable leak is increasing Sec Containment temperatures and radiation levels).
While WAITING in block SC-11and executing EOP-2 RPV Control, the SRO should determine that "RPV Blowdown is anticipated" and direct rapidly depressurizing the RPV using ECs and Bypass Valves per override step P-1 of EOP-2.	□ Proceeds to WAIT block SC-11 and WAITS until 2 or more general areas are above Max Safe Values. □ IF anticipating RPV Blowdown, directs use of EC and BPVs to rapidly depressurize. (EOP-2 P-1 Override)
When the second area (RB 298 West) is reported approximately 6 minutes after being dispatched.....	□ WHEN notified that 2 or more general areas are above Max Safe Values....proceeds to step SC-12 and directs entry to EOP-8, RPV Blowdown while continuing here in EOP-5 (SC-12) (Expected) **These actions are directed when EOP-2 is entered from EOP-5 step SC-10**

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Event 9 RPS failure **SRO Entry into EOP-2 for scram, including the transition to EOP-3, due to RPS failure. Control rods should be quickly inserted with manual ARI initiation and transition back to EOP-2 occurs.**	SRO ☐ **Directs a manual scram from EOP-5 step SC-10 (CT)** ☐ Repeats back Scram Report and acknowledge RPS failure to trip. ☐ Enters EOP-2 RPV Control ☐ All rods in to at least 04? (Step 2) NO ☐ Will reactor stay shutdown without boron? (Step 3) NO ☐ Exits EOP-2 and Enter EOP-3 (Step 4)
Transition from EOP-2 to EOP-3	**These actions are directed when EOP-3 is entered from EOP-2 step 4**
SRO Entry into EOP-3	SRO ☐ IF all rods are inserted to at least 04 OR the reactor will stay shutdown without boron THEN stop injecting boron (injection is not expected) and return to RPV Control, exit this EOP-3 and enter EOP-2. (Step 1) Expected after manual ARI initiation. ☐ Directs Bypass ADS ☐ Directs Prevent Core Spray injection per EOP-1 Attachment 4 (Install Core Spray Jumpers) (Step2)
All legs are implemented concurrently but priority may be given to POWER leg first.	**These actions are from POWER LEG** ☐ Directs Mode Switch to SHUTDOWN.

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INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	(Q-1) (Already done)
CT-2.0 *When ARI is manually initiated, control rods will fully insert. EOP-3 will be exited per override step 1 and EOP-2 is entered.*	☐ **Directs verify ARI initiation. (Q-2)** ☐ Turbine Generator on-line? (Q-3) NO (May direct based on timing) ☐ Directs EOP-3.1. (Q-7) (May direct based on timing). ☐ WHEN informed of all rods are inserted to at least 04 OR the reactor will stay shutdown without boron THEN stop injecting boron (injection is not expected) and return to RPV Control, exit this EOP-3 and enter EOP-2. From override step 1.
Transition from EOP-3 to EOP-2	
SRO Entry into EOP-2	**These actions are directed when EOP-2 is entered from EOP-3, after rod insertion** ☐ Repeats back Scram Report and acknowledge. ☐ Enters EOP-2 RPV Control ☐ All rods in to at least 04? (Step 2) YES ☐ Directs entry into SOP-1 (SCRAM) ☐ IF water level is unknown exit this procedure and enter EOP-7 to flood the RPV (L-2) (Not expected) ☐ Directs level restored and maintained between 53 inches and 95 inches using one or more of the following systems (L-3):
CONSOLE OPERATOR INSTRUCTION: IF directed to pull HPCI fuses WAIT three minutes, active REMOTE using TRG 10: **FW24 REMOVAL OF HPCI FUSES FU8/ FU9**	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
THEN report HPCI fuses are pulled.	☐ Condenstate/FW ☐ CRD ☐ Core Spray (EOP-1 Att 4) ☐ Bypass Core Spray IV interlocks
When FWP trips, level control strategy should change, since level cannot be maintained above 53 inches.	
Alternate Injection Systems (Detail E) are: Containment Spray Raw Water to Core Spray (EOP1 Att 5) Fire Water (EOP 1 Att 19) Liquid Poison Test Tank (EOP 1 Att 12) Liquid Poison Boron Tank (EOP 1 Att 13) RPV Level Control through 13 FW FCV (EOP-1 Attachment 25) RPV Level Control through 11 and 12 FW FCV (EOP-1 Attachment 26)	☐ IF RPV water level cannot be restored and maintained above 53 inches **THEN directs level maintained above -84 inches TAF. Use Alternate Injection Systems if needed (Detail E) L-3 (CT)**
Anticipating blowdown on more than one area exceeding Max Safe temperature values is expected.	☐ IF RPV Blowdown is anticipated THEN rapidly depressurize the RPV using EC and turbine bypass valves. OK to exceed 100°F/hr cooldown rate. (P-1 override) (Expected to direct use of EC and BPVs to depressurize). ☐ Directs RPV pressure stabilized 800 to 1000 psig using Turbine bypass valves. ☐ If needed, directs use of Alternate Pressure Control Systems (P-5) ☐ EC ☐ ERV ☐ Others (Not expected)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
BOP Actions on EC Steam Leak	BOP □ Report annunciators. □ Confirm alarm on computer printout. □ Enter N1-EOP-5. (Notifies SRO of entry condition). □ Verify system isolation. □ Attempts to manually close EC Steam IVs. □ Reports failure of EC isolation valves to close. □ Dispatches operator RB to take local area temperatures. □ Reports local area temperature to the SRO.
BOP Actions when reactor scrammed	BOP □ Performs RPV Level Control at F Panel. □ Restore level 53 to 95 inches as directed.
BOP Actions when EOP-3 is entered	BOP □ When directed, Bypass ADS using keylock switches at F Panel □ When directed, Prevent Core Spray injection per EOP-1 Attachment 4 (Install Core Spray Jumpers) at EOP ISOLATION BYPASS JUMPER SUBPANEL (inside N Panel) □ #17 40-01 INSIDE CORE SPRAY DISCHARGE IV121 BYPASS □ #18 40-11 INSIDE CS DISCHARGE IV111 BYPASS

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ #19 40-06 CORE SPRAY TEST VALVE 11 BYPASS ☐ #24 40-09 INSIDE CS DISCHARGE IV122 BYPASS ☐ #25 40-10 INSIDE CS DISCHARGE IV112 BYPASS ☐ #26 40-05 CORE SPRAY TEST VALVE 12 BYPASS ☐ Throttle Core Spray Inboard IVs (40-01, 40-09, 40-10 and 40-11) as necessary.
Event 9 RPS Failure *When scram is initiated RPS Channel 11 trips but Channel 12 does not. The crew enters transitions to EOP-3. When directed to "verify ARI" in the POWER leg, the RO actuates manual ARI at F Panel. The scram air header depressurizes after the ARI valves actuate. All control rods fully insert.* **CT-2.0**	RO ☐ When directed, initiates a manual scram by pacing Mode Switch to SHUTDOWN or using Manual Scram pushbuttons and implements SOP-1 Reactor Scram. ☐ Provides Scram Report, including failure of RPS Channel 12 to trip. ☐ **When directed to "verify ARI" depresses MANUAL ARI pushbutton F Panel.** ☐ Reports ARI successful ☐ When all rods are full in, provides a 2nd scram report. ☐ Reduce RECIRC MASTER flow 25 to 43 Mlbm/hr ☐ Perform SOP-1 Scram Verification steps ☐ Confirm all rods inserted to position 04 or beyond using Full Core Display.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ If ALL RODS IN cannot be confirmed THEN continue and confirm when scram is reset. ☐ Observe power decreasing ☐ Insert IRM and SRM detectors ☐ Downrange IRMs as necessary ☐ Verify turbine and generator tripped. ☐ Maintain RPV pressure below 1080 psig using one or more of the following (unless given other direction from EOP-2): ☐ Turbine Bypass Valves ☐ Emergency Condensers ☐ ERVs ☐ Others (Not expected)
WHEN ready to provide temperature data to require the RPV Blowdown, reports can be made from those dispatched to monitor temperatures. Reactor Building temperatures continue to rise and when RB 298 West is reported to be 141°F (more than one general area temperature is reported to be above 135°F)....EOP is entered. **SRO Actions for EOP-8**	SRO ☐ Updates crew of transition to EOP-8 ☐ IF RPV water level is unknown THEN Exit this procedure and enter EOP-7 (Step 2) Not expected ☐ Are all rods inserted to at least position 04? YES (Step 3)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Drywell Pressure? BELOW 3.5 psig (Step 10) ☐ Directs ECs initiated (Step 12) ☐ Torus water level? ABOVE 8 feet (Step13) ☐ Directs 3 ERVs opened. (Step 14) ☐ OK to exceed 100°F/hr. ☐ Do NOT use hi/lo lo/lo rosemounts below 500 psig ☐ Evaluates override conditions for Step 15, ☐ WAIT until shutdown cooling pressure interlock clears 120 psig. (Step 16) ☐ Subsequent steps are not expected to be performed during scenario.
Event 10 RBEVS Fail To Start **PO-11.0, 12.0** **Malfunctions become effective** **HV03A RBEVS CH 11 FAIL TO AUTO INITIATE** **HV03B RBEVS CH 12 FAIL TO AUTO INITIATE** *When RB Vent Radiation levels exceed 5 mr/hr on the operable vent monitor, RB Normal Ventilation should trip and both RBEVS trains should start.* *NOTE: EOP-5 (step SC-2) allows RB Ventilation restarted, if isolated and radiation levels are below 5 mr/hr.*	BOP Determine failure of RB Ventilation to trip and isolate by observing supply and exhaust fans still operating with containment isolation dampers still open. Report failure to SRO.

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INSTRUCTOR ACTIONS/
PLANT RESPONSE

OPERATOR ACTIONS

BOP Actions to Start RBEVS OP-10 H.1.0

ROLE PLAY:

As RP acknowledge RBEVS is being placed in service.

- ☐ Verify open 202-36 EM VENTILATION FROM REACTOR BLDG BV.
- ☐ Verify closed the following:
  - ☐ 202-47 EM VENTILATION TIE BV
  - ☐ 202-74 EM VENTILATION LOOP 11 COOLING BV
  - ☐ 202-75 EM VENTILATION LOOP 12 COOLING BV
- ☐ Notify RP of placing RBEVS in service.
- ☐ Place RBEVS 11 (12) in service:
  - ☐ Place 202-37 (38) to OPEN
  - ☐ Verify open 202-37 (38)
  - ☐ Start 202-53 (33) EVS FAN 11 (12)
  - ☐ Verify open 202-34 (35)
  - ☐ Confirm proper operation of 202-50 (51) Inlet FCV by lights and flow indication.
- ☐ Report RBEVS manually started.

  Stops the following fans:
  - ☐ 202-01 RB Supply Fan 11
  - ☐ 202-02 RB Supply Fan 12
  - ☐ 202-05 RB Exhaust Fan 11
  - ☐ 202-06 RB Exhaust fan 12

  Close Containment isolation dampers
  - ☐ 202-15 RB Supply Isolation Valve 11
  - ☐ 202-16 RB Supply Isolation Valve 12
  - ☐ 202-32 RB Exhaust Isolation Valve

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	11 □ 202-31 RB Exhaust Isolation Valve 12
EVENT 11 Loss of Feedwater Pumps **CT-4.0** **CONSOLE OPERATOR INSTRUCTION:** After rods are inserted by ARI and before RPV Blowdown is directed, activate malfunction using TRG 8: FW03A FWP TRIP 11 FW03B FWP TRIP 12 **CT-4.0**	**BOP** □ Report loss of feedwater pumps □ Use injection sources as directed □ If directed, executes EOP-1 Attachment 25 or 26 to control level using FWBP and FW Level Control Valves 11,12 or 13. □ **Injects, using systems directed by SRO to restore and maintain level above -84 inches.**
After feedpumps trip, inventory will be lost during the RPV Blowdown. FWBP or Core Spray Pumps can be used to maintain RPV water level above TAF (-84 inches). *Injecting using FWP 11 or 12 FCV required pulling HPCI fuses to establish control with valves. If using 13 FCV, these fuses are not required to be removed.*	
BOP Actions for Blowdown	BOP □ **If directed, initiate ECs (CT)** □ **When directed open 3 ERVs (CT)** □ Monitor RPV pressure.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
If Torus water temperature reaches 85°F *All legs are executed concurrently, but major actions are taken to control the rising torus water temperature, after EOP entry.*	SRO ☐ Enters EOP-4 on high torus water temperature, if required ☐ Directs Containment Spray lock out Executes Torus Temperature Leg ☐ Maintain Torus temperature below 85°F using Torus Cooling (EOP 1 Att 16) (TT-2)
BOP Actions to start torus cooling per EOP-1 Attachment 16	BOP ☐ If directed, lockout Containment Spray Pumps by placing switches in PTL. ☐ If directed, starts Torus Cooling per Attachment 16 ☐ Torus Cooling shall be placed in service within 15 minutes of Torus temperature ≥ 85°F ☐ Close CONT SPRAY BYPASS BV for selected loop: ☐ 111; 80-45 ☐ 112 or 121; 80-40 and 80-45 ☐ 122; 80-40 ☐ Verify closed 80-115, CONT SPRAY TO RAD WASTE IV 12 ☐ Verify closed 80-114, CONT SPRAY TO RAD WASTE IV 11 ☐ Verify closed Cont Spray Discharge IV using keylock switch for selected loop: ☐ 111; 80-16 ☐ 112; 80-36 ☐ 121;80-15 ☐ 122; 80-35

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Verify open CONT SPRAY BYPASS BV for selected loop: ☐ 111; 80-40 ☐ 112; 80-44 ☐ 121;80-41 ☐ 122; 80-45 ☐ Fully open 80-118, CONT SPRAY TEST TO TORUS FCV ☐ Start CONTAINMENT SPRAY RAW WATER PUMP in selected loop. ☐ Start CONTAINMENT SPRAY PUMP in selected loop. ☐ WHEN torus water reaches desired temperature stop Containment Spray pump. ☐ Stop all operating Raw Water Pumps ☐ If desired, return system to standby per N1-OP-14. ☐ Report status to SRO.
TERMINATION CRITERIA RPV Blowdown complete. RPV water level restored and maintained above TAF. All rods fully inserted.	
EVENT 12 SRO Classification **PO-13.0**	SRO Classify the event as SAE 3.4.1 and 4.4.1

[redacted]

V. POST SCENARIO CRITIQUE

A. NA, NRC Exam

VI. REFERENCE EVENTS AND COMMITMENTS

A. Reference Events

B. Commitments

1. None

VII. LESSONS LEARNED

[redacted]

ATTACHMENT

INSTRUCTOR USE AS CONSOLE OPERATOR

TIME LINE FOR ACTION AND REPORTS FOR STEAM LEAK

REPORT TEMPERATURES WHEN EVALUATORS ARE READY TO ALLOW BLOWDOWN

0:00 EC02 Initiated using TRG 7	
3:00 K1-1-1 RX BLDG AREA TEMP HIGH alarms	Cue crew that computer points alarming H318 W INST RM AREA TEMP F 125°F H319 W INST RM AREA TEMP F 125°F
DISPATCHED TO MONITOR + 5:00	Report as NAO in field: RB 261 West temperature is 123°F AND RB 281 West temperature is 137°F (one general area above max safe value Detail S 135°F
DISPATCHED TO MONITOR + 6:00	Report as NAO in field: RB 298 West temperature is 141°F. (This is the second are above max Safe).

Facility: NMP1 Scenario No.: NRC 4 Op-Test No.: NRC

Initial Conditions IC20 Reduce Power to 95% with RCS Flow.
Turnover: Feedwater Pump 11 is out of service for repairs. Red Clearance applied. HPCI LCO in effect.

Event No.	Malf. No.	Event Type*	Event Description
1		R	Return power to 100% by raising Recirc Flow.
2		N (BOP)	Switch CRD Stabilizing Valves from A and B to E and F per N1-OP-5, Section F.4.1
3	NM19C	I (BOP) TS (SRO)	APRM 13 fails upscale resulting in half scram and Tech Spec entry. Bypassing channel and resetting half scram is required.
4	RR06A RR07A Overrides	C (BOP) TS (SRO)	Recirc Pump 11 seal leakage requires pump removal from service. Pump suction valves fail to fully close resulting in partial loop isolation. Tech Spec 3.1.7.e is entered for 4 loop operation.
5	TC06	C (RO)	Electrical Pressure Regulator Failure Oscillations. The EPR is removed from service and the Mechanical Pressure Regulator (MPR) is placed in service
6	TC08	M (ALL)	Mechanical Pressure Regulator Failure Low. The MPR fails low resulting in rapid pressure and power rise. An automatic reactor scram occurs.
7	ED07	C (RO)	Electric Fault on Emergency AC Powerboard PB102. Diesel Generator 102 automatically starts, but does not close in on the bus due to the fault. DG102 must be manually shutdown due to loss of power to the diesel auxiliaries. Downstream 600 VAC Powerboard PB16B must be re-energized from an alternate source.
8	FW03B	C (BOP)	Motor Driven Feedwater Pump 12 trips resulting in a loss of high pressure feed. Additional high pressure injection sources (CRD and Liquid Poison) must be started as directed from EOP.
9	RR29	C (RO)	A small LOCA (approximately 14%) occurs which reduces vessel inventory and level lowers to top of active fuel. Containment Spray system operation is required due to elevated Drywell pressure.
10	CS01B CS05D	C (BOP)	Core Spray Pump 112 trips and Core Spray Pump 122 suction strainer becomes plugged. Injection can be restored using Feedwater Booster Pumps, after depressurizing the RPV.
11			SRO Classify event as ALERT 3.1.1

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

[redacted]

Facility: **Nine Mile Point 1**	Scenario No.: **NRC 4**	Op-Test No.: **NRC**
TARGET QUANTITATIVE ATTRIBUTES **(PER SCENARIO; SEE SECTION D.5.d)**	ACTUAL ATTRIBUTES	
1. Total malfunctions (5-8) **Events 3,4,5,7,8,10**	6	**Total Malfunction Count:** Major not included in this count. .
2. Malfunctions after EOP entry (1-2) **Event 7,8,9,10**	4	**Abnormal Events Count:** Does not include the SRO TS related events. These are considered separately.
3. Abnormal events (2-4) **Event 4,5**	2	
4. Major transients (1-2) **Event 6**	1	**SRO TS Events** Event 3 and 4
5. EOPs entered/requiring substantive actions (1-2) **EOP-2 RPV and EOP-4 Pri Cont**	2	
6. EOP contingencies requiring substantive actions (0-2) **Alternate Level Control of EOP-2 EOP-8 RPV Blosdown**	2	
7. Critical tasks (2-3)	2	

Operators

SRO	
ATC RO	SRO 1 Minnick
BOP RO	SRO 2 Driscoll

[redacted]

NMP SIMULATOR SCENARIO

NRC Scenario 4 **REV. 0** **No. of Pages: 35**

LOCA WITH DEGRADED CORE SPRAY SYSTEMS

PREPARER	G. Bobka	DATE 10/13/06
VALIDATED	G. Spears, S. Evanchik, G Rabalais	DATE 10/17/06
GEN SUPERVISOR OPS TRAINING		DATE 2/23/2007
OPERATIONS MANAGER	NA Exam Security	DATE
CONFIGURATION CONTROL	NA Exam Security	DATE

SCENARIO SUMMARY

Length: 90 minutes

Mitigating Strategy Code: RL2 Small LOCA. RPV Blowdown required to recover level above TAF. Inject with Alternate Systems.

Crew assumes the shift with the plant at 95% power with 11 FWP out of service for repairs. The crew is directed to restore reactor power to 100% following performance of N1-ST-W1, Control Rod Exercising and Operability Test. Following the power change the crew is directed to swap CRD Stabilizing Valves from A and B to E and F. After this, 13 APRM will fail upscale, producing a half scram that may be reset. Crew will bypass the failed APRM, reset the half-scram and review Technical Specifications for the failed instrument.

After the Technical Specifications review, a seal leak develops on 11 Reactor Recirculation Pump. Crew will remove that pump from service, attempt to isolate it, and review Technical Specifications.

Reactor pressure will then begin to oscillate. Crew will recognize a failing EPR, place the MPR in control, move the EPR to its high stop, and review Technical Specifications for operation without a backup regulator. When the plant is stable, the MPR will fail, causing a reactor scram. Crew enters EOP-2 on low RPV water level.

After scram actions are complete, Powerboard 102 will develop a fault; EDG 102 will start, but its output breaker will not close. The Crew crossties PB 16B and PB 16A and restore loads. Shortly afterwards, 12 FWP will trip, leaving only CRD pumps and Liquid Poison pumps for high-pressure injection.

A medium break LOCA begins to develop inside Primary Containment. Crew enters EOP-4 on high drywell pressure. When Core Spray pumps start, one of the operable pumps will trip.

[redacted]

Recognizing its inability to maintain level above TAF with high-pressure injection, the crew aligns alternate injection sources, and enters EOP-8 for blowdown.

One Core Spray Pump is available, but its injection capability is limited by suction strainer clogging. The Condensate System remains available for injection using the Feedwater Booster Pumps through the Feed Pump level control valves, after pressure is reduced by performing an RPV Blowdown. Crew will restore and maintain RPV water level above -109 inches.

Major Procedures: N1-SOP-1.2, N1-SOP-31.2, N1-EOP-2, 4, and 8

EAL Classification: Alert EAL 3.1.1

Termination Criteria: RPV Blowdown completed, RPV Water Level > -84 inches and rising and Drywell pressure reduced below 3.5 psig

[redacted]

I. SIMULATOR SET UP

A. IC Number: IC-244; IC-20 or equivalent. Reduce Power to 95%. FWP 11 INOP. CRD Stabilizing Valves A and B in service.

B. Presets/Function Key Assignments

1. Malfunctions:

a.	FW03A FEEDWATER PUMP TRIP 11	INSERTED
b.	CS01B CORE SPRAY PUMP TRIP 112	INSERTED
c.	NM19C APRM CHANNEL 13 FAIL UPSCALE	TRG 1
d.	RR06A RR PUMP 11 LOWER INNER SEAL 75% Ramp 10 min	TRG 2
e.	RR07A RR PUMP 11 UPPER OUTER SEAL 25% Ramp 10 min	TRG 2
f.	TC06 EPR REG FAIL OSCILLATES	TRG 3
g.	TC08 MPR REG FAIL LOW	TRG 4
h.	ED07 AC POWERBOARD FAULT PB102 Delay 2:30 min (Event Trigger Mode Switch to Shutdown)	TRG 5
i.	FW03B FEEDWATER PUMP TRIP 12 Delay 4:30 min (Event Trigger Mode Switch to Shutdown)	TRG 6
j.	RR29 RR LOOP RUPTURE LOCA 14% Delay 6:30 min (Event Trigger Mode Switch to Shutdown)	TRG 7
k.	CS05D CORE SPRAY PMP 122 SUCT CLOG 100% Ramp 0:30	TRG 8

2. Remotes:

a.	LP03 LIQUID POISON PUMP WATER SUPPLY, TEST TANK	TRG 9
b.	FP04 FIRE WTR TO FW BLOCK VLV 100% Delay 10:00 min	TRG10
c.	FW24 REMOVAL OF HPCI FUSES FU8/FU9, PULL	TRG12

3. Overrides:

a.	5S61DI3715 RRP 11 SUCT CONTROL SW OFF POS FAILS (Event Trigger hzlrrv02c== 1 RRP 11 Suct Valve green light ON)	TRG16
b.	5S61DI380 RRP 11 SUCT CONTROL SW ON POS FAILS (Event Trigger hzlrrv02c== 1 RRP 11 Suct Valve green light ON)	TRG17
c.	5DS235LO3450 RRP 11 SUCT GREEN LIGHT OFF, delay 10 sec (Event Trigger hzlrrv02c == 1 RRP 11 Suct Valve green light ON)	TRG18
d.	5DS236LO3451 RRP 11 SUCT RED LIGHT OFF, delay 10 sec (Event Trigger hzlrrv02c == 1 RRP 11 Suct Valve green light ON)	TRG19

4. Annunciators:

a. None

[redacted]

C. Equipment Out of Service

1. Feedwater Pump FWP 11 with red clearance applied to control switch.
2. Feedwater Blocking Valve Closed for FWP 11 and red clearance applied.

D. Support Documentation

1. Reactivity Maneuver Request Form, (Page 1, Attachment 1 to GAP-OPS-05) to support performance of power restoration following performance of N1-ST-W1.
2. N1-OP-43B F.2 through F.6 signed off and performing step 2.7
    a. Setup C875 instantaneous MWth in window
    b. Depress LPRM Dnsc bypass pushbutton on E panel.

E. Miscellaneous

1. Red Clearance for FWP 11 and blocking valve.
2. Protected Equipment Signs placed on the following with FWP 11 inoperable:
    - ☐ 13 Condensate Pump
    - ☐ 13 FW Booster Pump
    - ☐ 12 FWP
    - ☐ PB12 (R122)
    - ☐ Diesel Generator 103
    - ☐ Offsite Breaker R40
3. EVENT TRIGGERS/COMPOSITES
    a. trgset 5 "zdrpstdn== 1" Mode Switch in Shutdown (ED07)
    b. trgset 6 "zdrpstdn== 1" Mode Switch in Shutdown (FW03B)
    c. trgset 7 "zdrpstdn== 1" Mode Switch in Shutdown (RR29)
    d. trgset 16 "hzlrrv02c== 1" RRP 11 Suct Valve green light ON
    5S61DI3715 RRP 11 Suct control sw off pos fails
    e. trgset 17 " hzlrrv02c == 1" RRP 11 Suct Valve green light ON
    5S61DI380 RRP 11 Suct control sw on pos fails
    f. trgset 18 " hzlrrv02c == 1" RRP 11 Suct Valve green light ON
    5DS235LO3450 RRP 11 Suct green light off, delay 10 sec
    g. trgset 19 " hzlrrv02c == 1" RRP 11 Suct Valve green light ON
    5DS236LO3451 RRP 11 Suct red light off, delay 10 sec

[redacted]

II. SHIFT TURNOVER INFORMATION

OFF GOING SHIFT: ☐ N ■ D DATE:

PART I: To be performed by the oncoming Operator before assuming the shift.

- Control Panel Walkdown (all panels) (SM, CRS, STA, RO, CRE)

PART II: To be reviewed by the oncoming Operator before assuming the shift.

- Shift Supervisor Log (SM, CRS, STA)
- RO Log (RO)
- Lit Control Room Annunciators (SM, CRS, STA, RO, CRE)
- Shift Turnover Checklist (ALL)
- LCO Status (SM, CRS, STA)
- Computer Alarm Summary (RO)

Evolutions/General Information/Equipment Status:

- Reactor Power = 95%
- Loadline = >100%
- FWP 11 is out of service.

- Raise reactor power to 100% in accordance with RMR and N1-OP-43B, following performance of N1-ST-W1, Control Rod Exercising and Operability Test by previous shift.
- N1-OP-43B in progress to restore power to 100%, with rod exercising completed.

PART III: Remarks/Planned Evolutions:

- Return power to 100%
- Swap Stabilizing Valves from A and B to E and F.

PART IV: To be reviewed/accomplished shortly after assuming the shift:

- Review new Clearances (SM)
- Shift Crew Composition (SM/CRS)
- Test Control Annunciators (CRE)

TITLE	NAME	TITLE	NAME
SRO			
ATC RO			
BOP RO			

[redacted]

Scenario ID

INSTRUCTOR COMMENTS (Strengths, Areas for Improvement, Open Items etc.)

What Happened?	What we did?	Why? (Goals)	Other Options?

[redacted]

III. PERFORMANCE OBJECTIVES

A. Critical Tasks:

CT-1.0 Given a primary system leak into the containment, when torus pressure exceeds 13 psig or before drywell air temperature exceeds 300°F, the crew will initiate Containment Sprays, while in the safe region of the Containment Spray Initiation Limit and prior to exceeding the Pressure Suppression Pressure limit IAW N1-EOP-4.

CT-2.0 Given degraded RPV injection sources the crew will depressurize the RPV and inject with Preferred and Alternate Injection Systems to restore and maintain RPV water level above –109 inches IAW N1-EOP-2, such that Severe Accident Procedure (SAP) entry is not required.

B. Performance Objectives:

PO-1.0 Given the plant at less than rated power the crew will raise power to rated, per N1-OP-43B and the RMR provided.

PO-2.0 Given the plant at power, the crew will transfer CRD stabilizing valves in accordance with N1-OP-5.

PO-3.0 Given the plant at power and a failed APRM the crew will bypass the instrument and reset the tripped RPS channel in accordance with N1-ARP-F2 (F2-1-6) and N1-OP-38C.

PO-4.0 Given the plant at power and a failed APRM the SRO will ensure compliance with the limitations imposed by Technical Specifications (TS 3.6.2.a and 3.6.2.g).

PO-5.0 Given the plant at power with a failure of Reactor Recirculation Pump mechanical seals, the crew will remove the pump from service and isolate the loop in accordance with N1-SOP-1.2.

PO-6.0 Given the plant at power with 4 loop operation, the SRO will ensure compliance with the limitations imposed by Technical Specifications (TS 3.1.7).

PO-7.0 Given the plant at power with a failure of automatic pressure control system (EPR), the crew will place the MPR in service in accordance with N1-ARP-A2 (A2-4-4) and N1-SOP-31.2.

[redacted]

PO-8.0 Given the plant at power with an automatic reactor scram, the crew will implement scram action and enter EOPs in accordance with N1-SOP-1, EOP-2 and EOP-4.

PO-9.0 Given the plant at power with a loss of PB102 the crew will shutdown the affected diesel and reenergize PB16B in accordance with N1-ARP-A4 (A4-1-6).

PO-10.0 Given an event requiring activation of the Emergency Plan, the SRO will correctly classify the event per the EAL Matrix.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Take the simulator out of freeze before the crew enters for the pre-shift walkdown and briefing. Allow no more than 5 minutes for panel Walkdown	Crew □ Crew conducts a pre-brief, walks down the panels, and tests annunciators.
Event 1 Power Restoration to 100% **PO-1.0** NOTE: Reactivity briefing, procedure review and RMR review should occur prior to scenario start, in secure briefing room.	SRO □ Conducts reactivity brief for power restoration, if not previously performed. □ Reviews Reactivity Maneuver Request Form, if not previously performed. □ Directs RO to restore power to 100% using recirculation flow in accordance with the RMR and N1-OP-43B. □ Provides Reactivity SRO monitoring
	RO □ Acknowledges direction from SRO □ Obtains copy RMR form □ Begins raising Master Recirculation Flow Controller while monitoring APRM and Total Recirculation Flow indications □ Reports to SRO when power restoration is complete.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	BOP □ Monitors individual RRP for response □ Individual M/A-Speed Control stations trending uniformly □ Individual RRP indications trending normally for speed increase □ Monitors feed water controls for proper response □ FWP 13 FCV responding to power change □ RPV Water Level remains within program band (65" - 75")
Event 2 CRD Stabilizing Valve Swap **PO-2.0**	SRO • Direct BOP to swap CRD Stabilizing Valves from A-B to E-F per N1-OP-5, Section F.4.1
Role Play: As Operator, when requested, report: BV-44-175 is OPEN BV-44-184 is OPEN After Stabilizing Valve Transfer Switch selected to E and F and requested by Control Room, report: BV-44-176 is CLOSED BV-44-183 is CLOSED Role Play: When requested to confirm exhaust flow report: EXHAUST FLOW 6.0 GPM	BOP □ Acknowledges direction from SRO. □ Performs N1-OP-5, Section F.4.1, Switching Stabilizing Valves from A and B to E and F. □ Directs NAO to perform valve lineups for transfer. □ Places Stabilizing Solenoid Valves Transfer Switch to "E and F" position on Panel "F" □ Directs NAO to confirm stabilizing exhaust line flow between 5.8 and 6.5 gpm.

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Event 3 APRM 13 Failure **PO-3.0 and PO-4.0** **CONSOLE OPERATOR INSTRUCTION** When stabilizing valve operation is completed, insert malfunction by activating TRG 1: **NM19C APRM CHANNEL 13 FAIL UPSCALE** *APRM 13 Fails Upscale* *The following annunciators alarm* *F2-1-6 APRM 11-14* *F1-1-1 RPS CH 11 REACT NEUTRON MONITOR* *F1-2-1 RPS CH 11 REACTOR AUTO TRIP* *F3-4-4 ROD BLOCK*	RO □ Recognize/report RPS Channel 11 trip □ Reports APRM 13 Upscale
Role Play: As WEC/Mgmt. acknowledge report from SRO. Advise that you will provide requested assistance. The APRM will not be repaired during the scenario. NOTE: Technical Specification requirements from Tables 3.6.2.a and 3.6.2.g are satisfied with only one APRM failed.	SRO PO-3 □ Acknowledges report from RO □ Directs RO/BOP to follow ARPs for failed APRM, Half-SCRAM and ROD BLOCK □ Contacts WEC/Management and informs them of failed instrument. Requests assistance in correcting problem.
PO-4.0	☐ Reviews Technical Specifications for impact of failed instrument. ☐ TS 3.6.2.a requires 2 operable trip systems and 3 operable channels per system to cause a SCRAM on High Flux ☐ TS 3.6.2.g requires 2 operable trip

systems and 3 operable channels per system to initiate a ROD BLOCK on High Flux

- Determines that APRM 13 may be bypassed
- Directs RO to bypass APRM 13 and reset RPS Channel 11 trip.

BOP

- Acknowledges direction from SRO
- Obtains ARP F2-1-6 and executes
  - Verifies alarm computer points B183 (ROD BLOCK) and D052 (UPSCALE HIHI FLUX)
  - Observes LPRM-APRM Auxiliaries Drawer (Panel "G") and determines that APRM 13 has an upscale condition
  - If required, bypass APRM per N1-OP-38C.

- Obtains/reviews ARP F1-1-1
  - Confirm RPS Channel 11 tripped
  - Confirms other channel readings are normal/
  - Obtains/reviews ARP F1-2-1
  - Determines that failed APRM caused trip
  - When cause is corrected (APRM is bypassed), reset RPS Channel 11
- Obtains/reviews ARP F3-4-4

- Confirms alarm by observing computer point C067 RWM ROD BLOCK
- Determines caused by failed APRM

- When directed to verify APRM 13 bypassed, observes APRM 13 bypass light on Panel "G" (LPRM-APRM AUXILIARIES DRAWER)

When APRM 13 is bypassed F2-1-6, F3-4-4 and F1-1-1 should all clear.
The LPRM-APRM Auxiliaries drawer will indicate the HIHI condition until the APRM is bypassed then the BYPASS indicating light will also be illuminated. Following the bypassing of APRM 13 and the reset of the half-scram, all annunciators will be clear.

RO

- Completes RO actions for ARP F2-1-6
- Determines that APRM 13 has UPSCALE/HI-HI condition
- Monitors other APRM channels to determine that power is stable/unchanged
- Verifies proper power to flow ratio on 5-Loop Operating Curve

Bypass APRM

BOP

- Bypasses APRM 13 per N1-OP-38C
  - Places APRM BYPASS joystick on Panel "E" to "APRM 13" position
  - Confirm APRM BYPASS light lit on E Panel.
  - Confirm APRM BYPASS light lit on LPRM-APRM auxiliaries drawer (G

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	Panel). ☐ Confirm computer printout "APRM BYPASS YES".
Reset RPS Channel 11 Trip	RO ☐ After APRM bypassed reset RPS Channel 11 trip ☐ Verifies F1-1-1 clear ☐ Depress SCRAM RESET pushbutton on "E" ☐ Verifies F1-2-1 clear and resets annunciators ☐ Report APRM 13 bypassed and ARP actions completed to SRO
Event 4 RRP 11 Failure of Both Seals **PO-5.0 and PO-6.0** **CONSOLE OPERATOR INSTRUCTION:** When directed by Lead Evaluator or after actions for failed APRM are completed insert malfunctions by activating TRG 2: **RR06A, RRP 11 Inner HP Seal** 75% with 10:00 minute ramp time **RR07A, RRP 11 Outer LP Seal** 25% with 10:00 minute ramp time	BOP ☐ Recognizes/reports annunciator F2-1-1 SRO ☐ Acknowledges report from BOP ☐ Directs execution of ARP ☐ Directs entry into SOP-1.2

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
High pressure seal pressure will remain essentially unchanged at approximately system pressure at about 1040 psig. Low pressure seal pressure will gradually rise from initial value of about 510 psig. ARP F2-1-1 directs entry into SOP-1.2 if seal pressure reaches 625 psig or high seal flow/leakage exists. Initial indications are that only a single seal has failed. Drywell conditions will begin to deteriorate and increased drywell humidity and in-leakage to the DWEDT will be indicated. When Drywell parameters are impacted, the failure is considered "catastrophic" in SOP-1.2 and the pump must be tripped and isolated.	BOP ☐ Reviews/executes ARP F2-1-1 ☐ Enters SOP-1.2 for seal failure ☐ Confirms alarm computer point A072 RRP 11 SEAL LEAK DET FL ☐ Monitors DWEDT and DWFDT level recorders ☐ Contacts Engineering for evaluation. ☐ Monitors drywell pressure and temperature ☐ Monitors and compares RRP Seal Pressure indications ☐ Determines that HP Seal has failed based on rising pressure of LP Seal ☐ Determines that LP Seal failure is occurring due to LP Seal pressure changes in Drywell parameters. ☐ When Drywell pressure begins to rise, notifies SRO.
CONSOLE OPERATOR INSTRUCTION: If necessary and directed by the Lead Evaluator, malfunction RR07A severity level can be raised to about 30% to lower seal pressure.	
Role Play: As WEC/Mgmt. when contacted regarding the seal leakage inform the SRO that you will provide what assistance is required.	SRO ☐ Acknowledge report from BOP ☐ Inform the WEC/Mgmt. of the leaking RRP seals ☐ Determine that the pump should be isolated ☐ Review Technical Specifications for impact of seal leakage and removal of pump from service

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Tech Spec 3.2.5 identifies RCS leakage be limited to <2 GPM/day increase for identified leakage. This will apply until the RRP is isolated. ☐ Tech Spec 3.1.7.e requires that power be maintained below 90.5% until the isolated loop has valve motor breakers locked open and RRP Motor circuit breaker removed ☐ May direct RRP 11 removed from service, per OP. ☐ When informed of rising Drywell pressure, direct/concur with tripping pump per SOP-1.2. ☐ Direct BOP that discharge and suction valves SHOULD NOT be reopened 2 - 3 seconds after closing. ☐ Provide reactivity management oversight for removing the pump from service. ☐ Evaluates EAL 2.1 for RPV Water level, due to changes in containment leakage.
SRO may direct the pump removed from service per operating procedures. The most likely sequence is that the pump will remain in service and monitored until conditions inside the Drywell are affected. When Drywell pressure rises and the crew determines that both seals are failed, the pump is tripped and isolated per SOP-1.2.	BOP ☐ If directed to shutdown the pump, prior to determination that a catastrophic failure has occurred: ☐ Obtain/review copy of N1-OP-1 for shutting down and isolating 11 RRP ☐ Remove 11 RRP from service ☐ Verify 11 RRP M/A station balanced ☐ Place 11 RRP M/A control selector switch to "MANUAL"

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Reduce speed of pump (RRP Flow) to between 6 - 8 x 10^6 lbm/hr ☐ Close 11 RRP discharge valve by holding switch in CLOSE position ☐ Time valve stroke with wall clock, watch or stop watch. Closure time is 2 minutes. ☐ Trip 11 RRP MG Set ☐ Isolate 11 RRP ☐ Close 11 RRP Suction Valve by holding switch in CLOSE position ☐ Time valve stroke with wall clock, watch or stop watch. Closure time is 2 minutes. ☐ Recognize/report when suction valve indication is lost.
CONSOLE OPERATOR INSTRUCTION: **This action is performed no matter which method is used to remove pump from service. When BOP begins closing 11 RRP Suction Valve**, ensure that overrides on triggers 16-19 activated. This will insert overrides: OVR-5S61DI3715 POS A OFF (SWITCH) OVR-5S61DI380 POS C OFF (SWITCH) OVR-5DS235LO3450 Green light OFF OVR-5DS236LO3451 Red light OFF **AND MANUALLY change and activate seal leak rate malfunctions to new values** **RR06A set to 10% with 1:30 min ramp** **RR07A set to 10% with 1:30 min ramp** *This will simulate the 11 RRP Suction MOV breaker tripping after valve 90% closed. Leak will reduce but not stop.*	
If tripping RRP per SOP-1.2	BOP ☐ When DWP rises, trip RRP per SOP-1.2 ☐ Place REACTOR RP MOTOR 11 MG SET control switch to STOP. ☐ Close REACTOR PUMP 11 BYPASS VALVE

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Simultaneously close RRP 11 suction and discharge valves ☐ Reports loss of red and green light indication for REACTOR R PUMP 11 SUCTION.
	RO ☐ Monitor total recirculation flow and APRM power levels while 11 RRP being shutdown ☐ Monitor 4-Loop Power Operating Curve and verify allowable region ☐ Verify power less than 90.5% after 11 RRP is removed from service ☐ If directed, reduces power
Role Play: As WEC/Mgmt. acknowledge report from SRO. If requested to determine the problem with 11 RRP Suction Valve, report the breaker has tripped on overload and cannot be reset. *The seal leak will have reduced significantly. Seal pressures will not lower due to partially open Suction Valve.*	SRO ☐ Acknowledge report from BOP ☐ Contact WEC/Mgmt and advise of problem with 11 RRP Suction Valve. ☐ Directs that troubleshooting be done due to pump seal leak. ☐ Direct that BOP monitors RRP 11 pressures and drywell leakage and report trends.
ROLE PLAY: If contacted as Reactor Engineer, report thermal limits are within specifications.	☐ Verify and directs power reduction if power not less than 90.5% and that operating point within limits on 4-Loop Power Operating Curve ☐ Notify WEC/Mgmt. that 11 RRP has been shutdown but not isolated.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ May contact Reactor Engineering to verify thermal limits.
Event 5 EPR Regulator Oscillations **PO-7.0** **CONSOLE OPERATOR INSTRUCTION:** When actions to isolate 11 RRP have been completed or as directed by Lead Evaluator insert malfunction by activating TRG 3: **TC06 EPR Failure - Oscillates** *RPV pressure to rise approximately 12 PSIG and power to rise 2-3%. Pressure will peak and level off when MPR is in control then begin to lower again. RO will observe control valve position oscillations as well.*	RO ☐ Recognize/Report Annunciator A2-4-4, TURBINE MECHANICAL PRESSURE REGULATOR IN CONTROL
CONSOLE OPERATOR INSTRUCTION As WEC/Mgmt. Acknowledge report of failed EPR. Advise SRO that you will provide requested assistance. (The EPR will not be repaired.)	SRO ☐ Acknowledge report by RO ☐ Direct execution of ARP A2-4-4 ☐ Direct entry into SOP-31.2 for oscillating EPR ☐ Notify WEC/Mgmt. of failed EPR
	BOP ☐ Monitor suppressed range pressure recorder/indications (Panel F) and turbine control indications (Panel A1/B1)

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Note: This step may be performed by either operator or concurrently. The required controls are located on the desk section of Panel "E". *As MPR setpoint is lowered, pressure will steady out, as the MPR takes control. Pressure is likely to be lower by several psig.*	RO **These actions are in SOP-31.2** □ EPR in control? YES □ Pressure oscillating? YES □ Lower MPR setpoint until MPR is in control □ Raise EPR Setpoint to 1010 psig □ Verify alarm A2 4-4 MPR IN CONTROL □ Confirm and report RPV pressure steady on MPR. □ Does EPR stroke go to zero? YES □ Pressure under control? YES □ Restore pressure to pre-transient value. Adjust MPR setpoint
Raises RPV pressure by raising MPR setpoint to return pressure to pre-transient value. If power is above 90%, there are no thermal limit restrictions with one pressure regulator inoperable.	□ Refer to N1-OP-31 section H, operation with one Regulator Inoperable. □ Exits SOP-31.2
	SRO □ Acknowledge report from operator □ Review Technical Specifications for limitations imposed by operating without backup pressure regulator □ Directed by TS 3.1.7.c into COLR for MCPR limitations □ Contacts Reactor Engineering to have

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
Role Play: As Reactor Engineering inform SRO that MCPR limits are satisfied. As WEC/Mgmt acknowledge report of EPR malfunction and present operational status.	RE determine current MCPR based on power level. Advises WEC/Mgmt of failed EPR and plant status.
Event 6 MPR Fails Low causes automatic Reactor Scram **PO-8.0**	
CONSOLE OPERATOR INSTRUCTION: When directed by Lead Evaluator insert malfunction by activating TRG 4: **TC08 MPR Fails Low** *This failure mode is the loss of pressure signal to MPR. RPV pressure rapidly rises as the MPR closes turbine CVs. Bypass valves have a delayed open due to MPR failure and EPR setpoint (1010 PSIG) and the resulting pressure rise will cause a reactor scram and ERV actuation.*	RO ☐ Recognize/report reactor SCRAM ☐ Place Mode Switch in SHUTDOWN ☐ Verify reactor SCRAM ☐ Confirm FW LVL SP SETDN INIT light ON, if level below 52 inches ☐ Provide SCRAM report: ☐ Mode switch position ☐ RPV pressure (value/trend) ☐ RPV level (value/trend), below 53 inches (EOP-2 entry) ☐ Reactor power, APRMs downscale. ☐ Control rod position, as full in.
WHEN Mode Switch is placed in SHUTDOWN, the following events are triggered by time delay, on TRG 5, 6 and 7, respectively: **ED07 ELECTRIC FAULT PB102 in 2:30 min** **FW03B FEED PUMP TRIP 12 in 4:30 min** **RR29 RR LOOP RUPTURE 14% in 6:30 min**	

SRO

- ☐ Acknowledges SCRAM report
- ☐ Enters EOP-2 on low RPV water) level (below 53 inches or high pressure (above 1080 psig).
- ☐ Direct RO to execute SOP-1
- ☐ Direct BOP to restore and maintain water level (53 inches to 95 inches) using condensate, feed and CRD
- ☐ Verifies no ERV cycling
- ☐ Direct BOP/RO to maintain pressure (800-1000 PSIG) using ECs or Turbine Bypass Valves

RO

- ☐ Acknowledge SRO direction
- ☐ Execute SOP-1 actions
  - ☐ Reduce RECIRC MASTER flow 25 to 43 x 10^6 lbm/hr
  - ☐ Confirm all rods in
  - ☐ Place IRM range switches in Range 9
  - ☐ Insert all IRM/SRM detectors
  - ☐ Verify Main Turbine and Generator tripped

BOP

- ☐ Acknowledge SRO direction
- ☐ Execute SOP-1 actions for RPV level control
  - ☐ Confirm RPV level recovering
  - ☐ Verify 12 FWP pump running
  - ☐ Place 13 FWP flow control valve

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	in MAN and dial to 0. ☐ Disengage 13 FWP ☐ Give 29-10 (FWP 13 Discharge BV) a CLOSE signal. ☐ Verify 11 and 12 FWP controllers in MAN and dialed to 0. ☐ Reset HPCI at E Panel. ☐ Place 12 FWP BYPASS valve in "AUTO" and set to 65-70 inches. □ If level reaches 85 inches and rising ☐ Verify FWPs are OFF ☐ Secure CRD pumps, if required. ☐ Maximize RWCU reject flow ☐ Close FW IVs, if required. ☐ Close MSIVs, if required. □ Establish RWCU reject flow to condenser ☐ Open CLEANUP SELECTOR CONDENSER WASTE to COND. ☐ Open reject flow valve using controller RMC-33-165C. ☐ Using Bypass Valve Opening Jack operate Turbine BV as required to maintain pressure in directed band. ☐ Report actions complete to SRO.
2:30 min after scram, initial scram and EOP actions should be complete and the plant stabilized. Next malfunction automatically triggers on TRG5: **ED07 ELECTRIC FAULT PB102 at 2:30 min**	

[redacted]

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
The following loads will be lost and not re-energized when PB102 trips: □ *111 and 112 Core Spray Pumps and Core Spray Topping Pumps* □ *111 and 112 Containment Spray and Containment Spray Raw Water Pumps* *The following significant loads will be lost but will be re-powered when PB16B is re-energized:* □ *EDG102 Auxiliaries, RBCLC Pump 13, CRD Pump 11, RPS-UPS 162A/B, SBC161A/B, ESW Pump 11, MG167* Role Play: As WEC and acknowledge report from SRO. Report that you will have the problem with PB102 investigated. After 10 minutes report that there is a fault on PB102.	RO □ Recognize/report loss of PB102 □ Reports EDG 102 started but did not close in on powerboard □ Recognize fault on PB102 SRO □ Acknowledge report from RO □ Directs execution of ARP A4-1-6, POWER BD 102 BUS VOLTAGE LOW □ Notify WEC/Mgmt of PB102 trip RO □ Acknowledges direction from SRO □ Executes ARP A4-1-6 □ Confirm alarm on computer (F138, D199) □ Determine that PB102 cannot be reenergized □ Place normal supply R1012 in pull-to-lock □ Place EDG control switch in EMERGENCY STOP □ Verify 12 CRD Pump in service □ Verify RBCLC pressure ≥40 PSIG □ Reset 86-16 (H panel) □ Verify OPEN R1043 □ Make plant announcement that

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	Power Board 16B will be re-energized ☐ Close PB16 A-B tie breaker R1042 ☐ Contacts WEC to prepare a clearance for R1012 to prevent auto-start of EDG102 ☐ Informs SRO that actions for ARP are complete
Next malfunction automatically triggers on TRG 6: **FW03B FEED PUMP TRIP 12 in 4:30 min, following scram.**	BOP ☐ Recognize/report trip of 12 FWP ☐ Report no Feed Pumps available ☐ If required start CRD Pump 12 for level control.
Role Play: As WEC/Mgmt and acknowledge report of 12 FWP trip. Inform SRO that you will dispatch personnel to investigate the problem. *(12 FWP will not be returned to service.)* *After 10 minutes report that 12 FWP tripped on electrical overload.* *When FWP trips, level control strategy should change, since level cannot be maintained above 53 inches.*	SRO ☐ Acknowledge report from BOP ☐ Recognize only CRD/Liquid Poison pumps available for high pressure RPV makeup ☐ Evaluate RPV level/trend ☐ Notify WEC/Mgmt of problem with 12 FWP. Direct WEC to dispatch operators/maintenance to investigate.
Next malfunction automatically triggers on TRG 7: **RR29 RR LOOP RUPTURE 14% at 6:30 min, following scram.**	
Drywell pressure/temperature begins to rise. RPV pressure begins to lower, RPV water level begins to lower.	
Drywell pressure exceeds 2.0 PSIG *Annunciator K2-4-3 alarms*	RO ☐ Recognize/report annunciator K2-4-3, Drywell Pressure Hi-Low

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	☐ Confirm alarm computer point ☐ Report drywell pressure/temperature rising SRO ☐ Acknowledge report from RO ☐ Direct execution of ARP K2-4-3 RO/BOP ☐ Acknowledge direction from SRO ☐ Monitor primary containment parameters ☐ Monitor RPV level/pressure BOP
RPV Level begins lowering	☐ Recognize/report lowering RPV level ☐ Start CRD pumps (if not running)
Drywell pressure exceeds 3.5 psig *Core Spray Pump 122 starts and stays running.* *Core Spray pump112 starts but immediately trips.* *Core Spray Topping Pump 122 also starts. Pumps 111 and 121 cannot start because of the loss of PB102.*	☐ Recognize/report drywell pressure above3.5 psig. (EOP-4 and EOP-2 Entry Conditions). ☐ Recognize/report that Core Spray Pump 112 is not running (tripped). Core Spray Pump 122 and Topping Pump are the only available Core Spray Pumps. ☐ Report RPV level below 53 inches and lowering.
SRO may direct alternate injection sources be lined up (e.g., Fire Water, Liquid Poison pumps to Test Tank, etc.)	SRO ☐ Acknowledge reports from operators ☐ Enter EOP-4 and re-enter EOP-2 on High Drywell Pressure. Re-enter EOP-2 on RPV level

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	◻ Direct Containment Spray Pumps locked out (placed in pull-to-lock) ◻ Directs monitoring of Torus pressure (for reaching 13 psig)
	◻ Directs level restored and maintained between 53 inches and 95 inches using one or more of the following systems (L-3): ◻ Condenstate/FW ◻ CRD ◻ Core Spray (EOP-1 Att 4) ◻ Bypass Core Spray IV interlocks (If using for level control)
Alternate Injection Systems (Detail E) are: ◻ Containment Spray Raw Water to Core Spray (EOP1 Att 5) ◻ Fire Water (EOP 1 Att 19) ◻ Liquid Poison Test Tank (EOP 1 Att 12) ◻ **Liquid Poison Boron Tank (EOP 1 Att 13)** ◻ RPV Level Control through 13 FW FCV (EOP-1 Attachment 25) ◻ RPV Level Control through 11 and 12 FW FCV (EOP-1 Attachment 26)	◻ IF RPV water level cannot be restored and maintained above 53 inches THEN directs level maintained above -84 inches TAF. Use Alternate Injection Systems if needed (Detail E) L-3 ◻ May direct RPV injection from LP tank per EOP-1 Attachment 13.
Anticipating blowdown on more than one area exceeding Max Safe temperature values is expected.	◻ IF RPV Blowdown is anticipated THEN rapidly depressurize the RPV using EC and turbine bypass valves. OK to exceed 100°F/hr cooldown rate. (P-1 override)
	◻ Directs RPV pressure stabilized 800 to 1000 psig using Turbine bypass

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	valves. □ If needed, directs use of Alternate Pressure Control Systems (P-5) □ EC (Expected) □ ERV (Not Expected) □ Others (Not expected) RO □ Acknowledge direction from SRO □ Place all Containment Spray Pumps in "pull-to-lock" □ Informs SRO when Torus Pressure reaches 13 psig □ Reports Drywell parameters for verifying Containment Spray Initiation Limit
As level lowers, Drywell and Torus pressure rise. Torus pressure reaches 13 psig requiring Drywell Sprays while level is sill lowering but still above -84 inches. The crew is expected to be initiating Drywell Sprays, while level continues to lower toward TAF.	SRO **These actions are from EOP-4** □ When notified of Torus pressure reaching 13 psig, continues to execute PCP leg □ Inside Containment Spray Initiation Limit (Fig K)? YES □ Direct all recirculation pumps verified tripped □ Direct all drywell cooling fans be tripped □ Direct RO to initiate Containment Sprays per EOP-1 Attachment 17 □ Direct RO secure Containment Spray when drywell pressure drops below 3.5 PSIG

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	RO: □ Acknowledge direction from SRO □ Verifies all recirculation pumps tripped ■ Observes GREEN RRPMG breaker lights or places RRPMG Control switches to TRIP then neutral ■ Verifies all drywell cooling fans tripped ■ Places DW Cooling Fan control switches to TRIP then neutral
CT-1.0 *After Drywell Spray is initiated, Drywell and Torus pressure lower. Pressure is not expected to drop below 3.5 psig until after level is being recovered above -84 inches.*	■ Initiates Containment Sprays □ **Start Containment Spray pump 122** □ **Start Containment Spray pump 121** ■ Monitor Drywell pressure □ Report containment spray initiated to SRO □ Monitors drywell pressure and reports when reduced below 3.5 psig.
As level continues to drop, the SRO determines that level cannot be maintained above -84 inches and proceeds to alternate level control leg at EOP-2 step L-4 EOP-2 Step L-7 Preferred Injection Systems are: ■ Condenstate/FW (Can't inject due to pressure)	SRO ■ Determines RPV water level cannot be maintained above -84 inches. ■ Directs ADS bypassed. ■ Directs ECs placed in service. ■ Maximize injection using Preferred Injection Systems ■ Directs CRD maximized

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
◻ CRD (Can inject) ◻ Core Spray (One Pump, Can't inject due to pressure)	
	◻ Are 2 or more subsystems lined up? NO (L-8)
Alternate Injection Systems (Detail E) are: ◻ Containment Spray Raw Water to Core Spray (EOP1 Att 5) ◻ Fire Water (EOP 1 Att 19) ◻ Liquid Poison Test Tank (EOP 1 Att 12) ◻ Liquid Poison Boron Tank (EOP 1 Att 13) ◻ **RPV Level Control through 13 FW FCV (EOP-1 Attachment 25)** ◻ **RPV Level Control through 11 and 12 FW FCV (EOP-1 Attachment 26)**	◻ Start lining up Alternate Injection Systems (Detail E) ◻ Directs EOP-1 Attachment 25 to lineup injection from 13 FW FCV. ◻ May also direct EOP-1 Attachment 26 to lineup injection through 11 and 12 FW FCV. (Requires pulling HPCI fuses).
Available sources (FW and Core Spray) will restore level above TAF. Blowdown should not be delayed.	◻ WAITS until level drops to -84 inches. (L-10)
	◻ Is any subsystem lined up with a pump running? YES CS 122 pump
Blowdown is not required to be initiated before level reaches -109 inches. It's ok to open ERV's even if below -109 inches.	◻ Before level drops to -109, enter EOP-8, RPV Blowdown and continue here.
SRO Actions for EOP-8	SRO ◻ Updates crew of transition to EOP-8 ◻ IF RPV water level is unknown THEN Exit this procedure and enter EOP-7 (Step 2) Not expected ◻ Are all rods inserted to at least position 04? YES (Step 3) ◻ Drywell Pressure? BELOW 3.5 psig (Step 10) ◻ Directs ECs initiated (Step 12) ◻ Torus water level? ABOVE 8 feet

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	(Step13) □ Directs 3 ERVs opened. (Step 14) □ OK to exceed 100°F/hr. □ Do NOT use hi/lo lo/lo rosemounts below 500 psig □ Evaluates override conditions for Step 15, □ WAIT until shutdown cooling pressure interlock clears 120 psig. (Step 16) □ Subsequent steps are not expected to be performed during scenario. □ Return to EOP-2 for maximizing injection. □ Acknowledge reports for Core Spray status. □ May direct tripping Core Spray 122 due to cavitation.
CONSOLE OPERATOR INSTRUCTION: WHEN 3 ERVs are opened, insert malfunction by activating TRG 8: **CS05D, CORE SPRAY PMP 122 SUCT CLOGGING, 100% 0:30 SEC RAMP** *Core Spray Pump 122 and Topping Pump 122 amps will fluctuate. When RPV pressure drops below 365 psig and injection valves open, no flow is observed from Loop 12.* *If the pumps are allowed to run for an extended period of time, an automatic pump trip occurs.*	BOP □ Monitors Core Spray operation for injection. □ Reports fluctuating pump amps for Core Spray Pump 122 and Topping Pump 122. □ Reports no flow with injection valves open. □ If directed, trips pump. □ If pumps automatically trip, report conditions to SRO.

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
BOP actions for level restoration, using Feedwater Booster Pumps	BOP □ If directed, performs EOP-1 Attachment 25 for lining up 13 FW FCV. □ When FWBP pressure (PI-51-61A) is greater than RPV pressure □ Place LVL SETPOINT SETDOWN to OVERRIDE at F Panel. □ Verify open at least one FEEDWATER ISOLATION VALVES 11 and 12 □ Verify open FEEDWATER PUMP 13 BLOCKING VALVE
When 13 FWP BV is opened and the controller is operated, 13 FWP Flow will rise. RPV water level will begin to recover, once injection is established.	□ Select manual on 13 FWP VALVE CONTROL MA □ Turn FCV (knurled knob) clockwise to open valve. □ Position as necessary to control flow. □ Reports water level rising.
Using FWBP injection to the RPV while an Recirc pipe break exists in the Drywell, will result in lowering Hotwell level and rising Torus level.	BOP □ If directed, performs EOP-1 Attachment 26 for lining up 11 and 12 FW FCV. □ When FWBP pressure (PI-51-61A) is greater than RPV pressure □ Verify open at least one FEEDWATER ISOLATION VALVES 11 and 12 □ Verify open both FEEDWATER PUMP 11 and 12 BLOCKING VALVES.
CONSOLE OPERATOR INSTRUCTION: If dispatched to pull HPCI fuses trigger remote by activating TRG 12:	□ Select manual on 11 and 12 FWP VALVE CONTROL MA □ Turn FCV (knurled knob) fully counter-

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
FW24 HPCI Fuses, Pull **THEN report fuses removed.**	clockwise to close valves. □ Dispatch operator to remove HPCI fuses FU-8 and FU-9.
Pump flows will rise when FCVs are opened.	□ Position as 11 and 12 FCVs necessary to control flow, while maintaining each below 1.5 E6 lbm/hr.
CT-2.0	□ **Inject with Alternate Injection Systems to restore and maintain RPV water level above -109 inches.** □ Reports water level rising
IF NEEDED **CONSOLE OPERATOR INSTRUCTION:** If contacted to line up Fire water to feedwater header per EOP-1 Attachment 19, trigger remote by activating TRG 10: **FP04, 100%, 10 minute delay** **After 10 minutes, report Firewater is lined up.** NOTE: Use of fire water is not expected, because other injection sources, such as feedwater injection through FWP pump level control valves is still available.	RO: □ Acknowledge direction from SRO □ Contacts WEC/NAO and directs lineup of Fire Water to Feed system
When RPV water level is rising, SRO establishes level band above TAF. Level strategy changes to returning level to 53 to 95 inches.	SRO □ When level is rising, Go to EOP-2 step L-1. □ Directs verification of necessary isolations and auto actions. (L-1) □ Directs level restored and maintained between 53 inches and 95 inches, using Condensate/FW and CRD. (L-3)

INSTRUCTOR ACTIONS/ PLANT RESPONSE	OPERATOR ACTIONS
	BOP
RPV level rises and is expected to be returned to the normal	☐ Restores level to directed band, using Condensate/FW and CRD.
	RO
Drywell pressure drops below 3.5 psig	☐ Reports when Drywell Pressure drops below 3.5 psig
RPV water level continues to rise and is restored above -84 inches.	☐ Secures Containment Spray ☐ Places control switches for Containment Spray Pumps 121/122 in pull-to-lock ☐ Reports Containment Sprays secured
TERMINATING CUE • *RPV Blowdown completed* • *RPV Water Level > -84 inches and rising* • *Drywell pressure reduced below 3.5 psig*	
Event SRO Classification	SRO: Classify the event as an ALERT, EAL 3.1.1

V. POST SCENARIO CRITIQUE

A. NA, NRC Exam

VI. REFERENCE EVENTS AND COMMITMENTS

A. Reference Events

1. None

B. Commitments

1. None

VII. LESSONS LEARNED