Facility: Clinton Power Station Scenario No.: One Operating Test No.: 2011-301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
- Subcritical ~600 psig, Hot Restart in progress.
- Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- Continue Hot Restart. Pull Rods to criticality.
- Test the Generator Emergency Seal Oil Pump per CPS 3109.01 Section 8.1.2.3 – First Priority.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP SRO	Test the Generator Emergency Seal Oil Pump.
2	N/A	R-ATC SRO	Withdraw rods to criticality.
3	ROD2829TFIA4	C-ATC SRO	Control Rod 28-41 is difficult to withdraw.
4	NM03B	I-ATC SRO	B SRM fails erratic.
5	HP01HP_1E22C003 _MTFSHEAR 1	C-BOP TS-SRO	HPCS Water Leg Pump shaft shears.
6	Multiple Overrides	TS-SRO	SLC A OOS (Loss of Power to SLC Suction Valve A "From SLC Storage Tank" – 1C41-F001A).
7	CDSR_VAC_PMP_ A	C-BOP SRO	Vacuum Pump Trip.
8	YARITPLA_1	M-All	RCIC unisolable steam leak.
9	YP_XMFTB_4964	M-All	Auto Scram failure.
10	Multiple Overrides	M-All	Radiation monitor fails to initiate an isolation of VF and start up VG.

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

Scenario No.: One **Operating Test No.:** 2011-301

Narrative Summary

Event #	Description

1. The BOP Operator will coordinate with the field operator to test the Generator Emergency Seal Oil Pump per CPS 3109.01 Section 8.1.2.3.
2. The ATC Operator will continue the Hot Restart. First milestone this shift will be withdrawing control rods to criticality.
3. Rod 28-41 will indicate a failure to move upon the ATC Operator's initial attempt to withdraw it. The ATC Operator must increase drive water pressure (one increment of ~ 50 psig) to withdraw the rod per CPS 3304.01 Section 8.3.3.
4. Annunciator ROD OUT BLOCK (5006-2H), SRM UPSC ALARM OR INOP (5005-1K), SRM PERIOD (5005-2K) and SRM DNSC (5005-3K) come in due to SRM B failing erratic. The B SRM channel must be bypassed per CPS 3306.01 Section 8.2.2 to clear the rod block and proceed with the startup. Technical Specification 3.3.1.4 action A.1 and ORM 2.2.2 Action 3.2.2.a will be evaluated and found to be satisfied.
5. Annunciator HPCS WATER LEG PUMP DISCHARGE PRESSURE LOW (5062-7D) comes in due to the HPCS Water Leg Pump shaft shear. The BOP Operator will dispatch a field operator to investigate. Upon the report of a shaft shear, the BOP operator will stop the HPCS Water Leg Pump and direct the field operator to pull the HPCS Pump Breaker control power fuses per CPS 3309.01 Section 4.3. Technical Specification LCO 3.5.1 Actions B.1 and B.2 will be evaluated requiring verification by administrative means that the RCIC system is operable when required AND the HPCS system is restored to operable status within 14 days.
6. Annunciator STANDBY LIQUID CONTROL OUT OF SERVICE (50677-8F) comes in along with postage stamp C001A or F001A PWR LOSS or OVLD due to a loss of power to SLC Suction Valve A "From SLC Storage Tank" – 1C41-F001A. The valve's green indicating light is dark. The BOP Operator will dispatch a field operator to investigate. Technical Specifications LCO 3.1.7, Action A. will be evaluated which will require that the SLC subsystem be restored to operable within 7 days.
7. Annunciator AUTO TRIP PUMP/MOTOR (5019-1A) comes in due to a trip of the Condenser Vacuum Pump 1A (0CA01PA). The BOP Operator notes that the trip is NOT due to Hi MSL Rad and starts the standby Condenser Vacuum Pump per CPS 3112.01 Section 8.1.1.
8. Multiple annunciators are received due to The RCIC steam supply line develops a leak causing the RCIC room temperature to rise resulting in an EOP-8 entry. RCIC cannot be isolated from the MCR. A scram is required prior to exceeding the Maximum safe temperature.
9. When a Reactor Scram is attempted, an Auto Scram failure occurs due to a fault in the Reactor Protection system. The ATC Operator must perform a manual initiation of the SCRAM OR ARI to insert the control rods.

10. The VF exhaust radiation monitor trends up to the trip isolation but fails to actuate VF isolation and start of VG requiring BOP to manually perform.

EOP
8, 1A, 1

Critical tasks:
- Manual initiation of Reactor Scram prior to exceeding Maximum safe temperature.
- Manually isolate VF and startup at least one (1) VG train.

Shift Turnover Information

⇒ **Day of week and shift**

- Today Day Shift.

⇒ **Weather conditions**

- Thunderstorms are expected in the area within the next hour.

⇒ **(Plant power level)**

- Subcritical with equilibrium Xenon
- na- MWt
- na- MWe
- 26.0 Mlbm/hr CORE FLOW
- CPS 3001.01 at step 8.2.5
- CPS 3002.01 at step 8.5.2
-
-

⇒ **Thermal Limit Problems/Power Evolutions**

- ~ 600 psig, Hot Restart in progress
- Pull to critical, heatup and pressurization
- Control Rod Move Sheet:
  Step 05/Rod 36-25 @ position 00
-
- RE Instructions: Individual rod withdrawal is preferred until criticality is reached.
- RE and Rod Verifier are available on request.
-

⇒ **Existing LCOs, date of next surveillance**

- None
-
-
-

⇒ **Surveillances or major maintenance**

- None
-
-
-
-

⇒ **Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment**

- Generator Emergency Seal Oil Pump.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.
-
-

⇒ **Comments, evolutions, problems, etc.**

- Online Risk is Green
- Steam seals and Auxiliary Steam is provided by the electrode boiler
- Test the Generator Emergency Seal Oil Pump per 3109.01 section 8.1.2.3 for PMT – First Priority.
- Continue with Reactor startup.

Operator Actions

Event No.(s): 1 **Page** 1 **of** 1

Description: Test the Generator Emergency Seal Oil Pump.

Initiation: Following shift turnover

Cues: Directed by SRO

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" will be flagged in some manner.
- When the annunciator comes in the operator will announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered because it has already been reviewed in the Prebrief.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions.
	BOP	Per CPS 3109.01, Generator Seal Oil, Step 8.1.2.3: • Depress Gen H_2 Emerg Seal Oil Pump Test push-button. • Verify Gen H_2 Emergency Seal Oil Pump starts. • Verify Comp Pt TO-BC223 shows a NORMAL state. • Verify annunciators 5017-5B/6A and 5201-3A energized. • Verify locally that noise and vibration levels on the ESOP are normal. • Stop the Gen H_2 Emergency Seal Oil Pump. • Verify annunciators and computer point off.
	SRO	o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.

Terminus: Emergency Seal Oil Pump test complete

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 2 **Page** 1 **of** 1

Description: Pull rods to criticality.

Initiation: Following Emergency Seal Oil Pump test

Cues: Directed by SRO

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" will be flagged in some manner.
- When the annunciator comes in the operator will announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered because it has already been reviewed in the Prebrief.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	Per CPS 3001.01 Approach To Critical, NF-CL-721-1002 Control Rod Move Sheets, CPS 3304.02 RCIS and CPS 3306.01 SRM/IRM: • Withdraw rods for criticality. o Perform a Coupling Check for control rods withdrawn to 48. • Report/record date/time criticality was achieved, and criticality data. o Announces Reactor Critical. • Prior to exceeding 1 x 10^6 cps, withdraw SRM's. o May insert 1 rod 1 notch to slow down period/deselect rod. o Perform SRM/IRM overlap verification.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Announces Reactor Critical. o Perform SRM/IRM overlap verification.
	SRO	o Directs actions listed above. • Positions himself in proximity to the reactor operator, typically the location from which EOP actions are directed. (OP-AA-300). • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.

Terminus: Clearly observable plant response from change in power level or Reactor is critical.

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Events 3 & 4 will be performed in conjunction with Event 2.

Operator Actions

Event No.(s): 3		**Page** 1 **of** 1
Description: Difficult to Withdraw Control Rod.		
Initiation: During withdrawal of rod.		
Cues: Control Rod 28-41 does not withdraw (currently @ position 00).		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Determine control rod 28-41 will not withdraw. • Informs SRO of a difficult to withdraw rod. Per CPS 3304.01, Control Rod Hydraulic & Contol (RD), Section 8.3.3: • While monitoring Drive Water Flow and Drive Water Diff Press, Press AND hold INSERT push-button. • Release INSERT push-button and depress WITHDRAW push-button. (Note: Double Clutch Method may be attempted per section 8.3.3.3) • **IF** Control rod failed to move, **THEN** Repeat several times. o Increase Drive Water Diff Press in ≈50 psid increments to a maximum of 600 psid. o Throttle C11-F003, CRD Press Control Valve to achieve the desired pressure. o At each ≈50 psid increment perform the following: • While monitoring Drive Water Flow and Drive Water Diff Press, Attempt to withdraw rod as described above at each pressure increment. o **IF** control rod moved; **THEN** record Drive Water Flow and Drive Water Diff Press in the CPS MCR Autolog. o **THEN** return Drive Water Diff Press to normal.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Increase Drive Water Diff Press in ≈50 psid increments to a maximum of 500 psid. o Throttle C11-F003, CRD Press Control Valve to achieve the desired pressure. o Record Drive Water Flow and Drive Water Diff Press in the CPS MCR Autolog. o Return Drive Water Diff Press to normal.
	SRO	• Acknowledge report from ATC. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Directs continuing startup.
Terminus: Control Rod has been withdrawn; Drive Water Diff Press to normal.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
The Operator must raise drive water pressure (one increment of ~ 50 psig) to withdraw the rod.

Operator Actions

Event No.(s): 4		**Page** 1 **of** 1
Description: 'B' SRM fails erratic.		
Initiation: On the signal of lead examiner. (Recommend when Control Rod 20-33 is selected)		
Cues: Annunciators CPS 5006-2H & 5005-1K, 2K, & 3K alarm.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Determine SRM 'B' is erratic. • Informs SRO of erratic SRM. Per CPS 5005-1K SRM UPSC ALARM OR INOP: • Bypass the failed SRM. Per CPS 3306.01, SRM/IRM step 8.2.2: • Place the SRM Bypass joy stick to B SRM. • Observe the rod block clears.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands.
	SRO	• Acknowledge report from ATC. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. • Reviews TS 3.3.1.2 Action A.1 and ORM 2.2.2 Action 3.2.2.a. o Contacts OCC/IMD to request Maintenance trouble shoot and repair. o Suspends power ascension. o Evaluates mode restraint. o Informs Shift Manager. o Conducts a brief. • Directs continuing startup.
Terminus: B SRM has been bypassed IAW CPS 3306.01.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
If the BOP Operator appears about to perform the operation to bypass the 'B' SRM, the Lead Evaluator should
signal for the next event to be started to draw the BOP Operator away from P-680.

Operator Actions

Event No.(s): 5		**Page** 1 **of** 1
Description: HPCS WLP Shaft shears.		
Initiation: Post criticality and on the signal of lead examiner. (Recommend when pulling rods to achieve heating power – directed by SRO)		
Cues: HPCS System, 5062-7D alarms.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Performs Plant Announcements. o Dispatch Field Operator to investigate.
	BOP	• Report issue to SRO. • Refers to the ARP. o Performs Plant Announcements. Per ARP Procedure CPS 5062-7D: o Dispatch Field Operator to investigate. o Check WLP Discharge Pressure ATM reading. • Inform SRO of HPS WLP status when received from field. When directed: o Shutdown the HPCS WLP. Per HPCS CPS 3309.01 precaution 4.3: • Dispatches Field Operator to remove HPCS control power fuses (5062-7B will alarm and green breaker indicating light will go dark).
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Evaluates and enters Technical Specification LCO 3.5.1 B.1 and B.2. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Suspends power ascension. o Evaluates mode restraint. o Informs Shift Manager. o Conducts a brief. o Directs continuing startup.
Terminus: HPCS control power fuses removed and Technical Specifications evaluated.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
If the crew does not pull the control power fuses the coupling on the HPCS pump will be broken to prevent
HPCS from injecting.

Operator Actions

Event No.(s): 6		**Page** 1 **of** 1
Description: SLC 'A' OOS – Loss of Power to SLC Suction Valve A (1C41-F001A). (Technical Specification Call, No Control Room Action)		
Initiation: After crew has addressed HPCS WLP problem, on the signal of lead examiner		
Cues: Annunciator CPS 5067-8F alarm, postage stamp C001A or F001A PWR LOSS or OVLD lit and F001A green indicating light is dark.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Directs Field Operator to investigate. o Performs Plant Announcement.
	BOP	• Report issue to SRO. • Refers to ARP. o Directs Field Operator to investigate. o Performs Plant Announcement.
	SRO	• Acknowledge report from BOP. o Directs actions listed above. o Contacts Maintenance to investigate. • Evaluates and enters Technical Specification LCO 3.1.7 A.1 (requires the SLC subsystem must be restored to OPERABLE within 7 days). • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Suspends power ascension. o Evaluates mode restraint. o Informs Shift Manager. o Conducts a brief. o Directs continuing startup. o May attempt one time breaker reclosure.
Terminus: Technical Specification review complete.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
If crew attempts breaker reclosure, breaker will not reset.

Operator Actions

Event No.(s): 7		**Page** 1 **of** 1
Description: Vacuum Pump trips.		
Initiation: Following Technical Specification call, and upon direction of Lead Examiner.		
Cues: Annunciator CPS 5019-1A alarming.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Performs Plant Announcements. o Dispatches Field Operator to perform local actions to start the standby Vacuum Pump.
	BOP	• Report issue to SRO. o Performs Plant Announcements. Per CPS 3112.01, Condenser Vacuum (or CPS 3112.01P001 Emergency/Post Scram Startup of a Vacuum Pump) o Dispatches Field Operator to perform local actions to start the standby Vacuum Pump. • After at least 5 minutes of seal water pump operation, start the standby Vacuum Pump. o Complete shutdown of the tripped Vacuum Pump.
	SRO	• Acknowledge report from BOP. o Enters CPS 4004.02 Loss of Vacuum. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Contacts Maintenance to investigate. o Suspends power ascension. o Evaluates mode restraint. o Inform Shift Manager. o Conducts a brief. o Directs continuing startup.
Terminus: Standby Vacuum Pump is in operation.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 8, 9		**Page** 1 **of** 3
Description: RCIC unisolable steam leak, Reactor scrams on initiation of Manual SCRAM Pushbuttons.		
Initiation: After Standby Vacuum Pump is running, on the signal of lead examiner.		
Cues: Multiple secondary containment area temperature and area radiation alarms, rods fail to insert upon initiation of automatic SCRAM.		
Time	**Position**	**Applicant's Actions or Behavior**
Critical Task	ATC	o Reports EOP-8 entry on Hi temperature. o Make plant announcement to evacuate Fuel/Aux buildings. • Initiate a manual reactor scram before first max safe temperature is exceeded per CPS 4100.01, Reactor Scram: • Place mode switch in Shutdown, check and report power unchanged. • **Arms and depresses MANUAL SCRAM push-buttons.** o Initiates ARI. • Verify reactor power is lowering, shutdown criteria met. • Carries out Scram Choreography by reporting. – Mode Switch in Shutdown, Power is… – Rod status is… – Reactor Power is… and trend – Reactor pressure is… and trend – Reactor level is… and trend – Any EOPs with entry conditions • Perform EOP actions as directed by SRO. o Report RPV level and pressure are following expected trends. • Stabilize pressure <1065 psig. o Coordinates with BOP operator to monitor and control RPV level and pressure.

Operator Actions

Event No.(s): 8, 9		**Page** 2 **of** 3
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	o Reports EOP-8 entry on Hi temperature. • Reports secondary containment high temperature and radiation alarms to SRO. o Make plant announcement to evacuate Fuel/Aux buildings. • Attempts to close RCIC steam isolation valves. o Diagnose failure of RCIC to isolate and reports to SRO. • Carries out Scram Choreography by: • Making an Announcement – Reactor Scram – MDRFP may start – Evacuate the RCIC room – Evacuate the Containment • Determine Rod status and report to CRS Per EOP-8 Secondary Containment Control and as directed by the SRO: o Verifies operation of area coolers. o Verifies operation of VF o Evacuates affected areas of Secondary Containment o Monitors area temperatures, levels and radiation levels o Reports secondary containment Max Safe temperature being exceeded to SRO o Coordinates with ATC to monitor and control RPV level and pressure.

Operator Actions

Event No.(s): 8, 9		**Page** 3 **of** 3
Time	**Position**	**Applicant's Actions or Behavior**
Critical Task	SRO	• Acknowledge report from ATC/BOP. Directs entry into EOP-8 and EOP actions as entry conditions are met: o Operate VF. o Operate area coolers. o Hold floor drain sump levels below max. normal. • Isolate all discharges into the affected area except systems needed for: – EOP Actions. – Fire Fighting. Per EOP-8 / CPS 4001.01 / CPS 4001.02: • Directs BOP to isolate RCIC steam lines. o Diagnose failure of RCIC to isolate. o Direct evacuating affected areas of Secondary Containment. • **Direct a scram prior to exceeding Maximum safe temperature.** o Notification of Radiation Protection (RP) Department. o Directs / Verifies entry into EOP-1A and EOP actions as entry conditions are met: • Arm and Depress MANUAL SCRAM pushbuttons • If EOP-1A is entered, exit EOP-1A and return to EOP-1 Directs / Verifies performance of appropriate actions per EOP-1: • Mode switch to SHUTDOWN • Shutdown criteria verified • Control RPV water level between Level 3 and Level 8 • Operators verify needed automatic actions – Isolations – ECCS Start – DG Start • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.
Terminus: RCIC isolation is attempted and Reactor is scrammed.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
Approximately two minutes from malfunction insertion to annunciator response.

Operator Actions

Event No.(s): 10		**Page** 1 **of** 1
Description: Radiation monitor fails to initiate an isolation of VF and start up VG.		
Initiation: Following the steam leak into the secondary containment.		
Cues: Annunciator 5050-7F, 5052-7F and AR/PR 1RIX-PR006A-D monitors alarms.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Report EOP-8 entry condition.
	BOP	Performs actions directed by SRO and CPS 5050-7F, 5052-7F, Hi Rad Initiation VG: • Verify alarming condition of 1RIX-PR006A-D. o Report EOP-8 entry condition. o Shutdown and isolate VF IAW CPS 3404.01, Fuel Building Ventilation, step 8.3. **Critical Task** • **Isolate Fuel Building Ventilation (VF).** o Startup VG IAW CPS 3319.01, Standby Gas, step 8.2.1. **Critical Task** • **Startup at least one Standby Gas (VG) train.** Note: Steps can be done in any order.
	SRO	• Acknowledge report from ATC/BOP. **Critical Task** • **When fuel build exhaust is above 10 mrem/hr ensures Fuel Building Ventilation (VF) is isolated and Standby Gas (VG) is started.** o Directs isolation of VF and startup of VG. General: • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager.
Terminus: • RPV level stable and under control. • Reactor is Scrammed. • Effort has been made to isolate RCIC steam lines. • Failed automatic isolation and actuation (VF/VG) manually performed. • Upon approval of lead examiner.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Simulator Operator Instructions

Initial Setup

1. Fill out plant status and have Turnover Sheet ready for the crew.
2. Verify daily lamp test completed.
3. Reset to an IC with Pressure at 600 psig to match turnover.
4. Load the lesson plan for this scenario.
5. Place simulator in RUN.
6. Select the A FWLC level instrument.
7. Turn on and advance recorders.
8. Verify RCIC Flow Controller is set at 620 psig.
9. Verify the AR/PR server is running and stabilize AR/PR.
10. Verify Rod Drive pressure is in the expected range.
11. Provide pull sheets: on step 05, rod 36-25 is at 00.
12. Hang OOS tags per turnover on 1B SF Pump.
13. Identify T/S issues associated with OOS and turnover.
14. Operating Equipment: None.
15. Provide marked up CPS 3001.01 complete to step 8.2.5.
16. Provide a marked up CPS 3002.01 complete to step 8.5.2.
17. Provide a marked up CPS 9000.06D001 with stable heatup values.
18. Verify simulator conditions match the turnover.
19. Select correct screen – SRM-IRM Overlap Display.

Event Triggers and Role Play

Event #

1. Test the Generator Emergency Seal Oil Pump (CPS 3109.01 Section 8.1.2.3).
   a. No trigger.
   b. Role play – **Field Operator:** Noise and vibration are normal.

2. Withdraw Rods To criticality
   a. No trigger.
   b. Role play – None.

3. Control Rod 28-41 is difficult to withdraw.
   a. After Drive Water Diff Press has been raised ≈50 psid and before ATC Operator attempts to move Control Rod 28-41, **Remote trigger 1**.
   b. Role play – **RE**: Mech has been in service for two cycles and has no history of double notching.

4. 'B' SRM fails
   a. **Remote trigger 2**. Delete after SRM is bypassed.
   b. Role play – **Work Control Supervisor:** If SRM 'B' drawer is checked report the reading at the drawer for period and scale are going up and down, trip and INOP lights are ON
   c. Role play – **Maintenance:** If requested, respond as dispatching personnel to investigate.

5. HPCS WLP shaft shears
   a. **Remote trigger 3,** on request from lead evaluator
   b. **Remote trigger 8,** When directed remove HPCS motor breaker Trip and C/P fuses and report it completed.
   c. Role play – **Field Operator:** If asked HPCS WLP the motor is turning but the pump is not.
   d. Role play – **Maintenance:** If requested, respond as dispatching personnel to investigate.
   e. Role play – **Work Control Supervisor:** If ATM is checked it is reading 6 psig. If requested by CRS, RCIC is operable by administrative means.

6. SLC 'A' OOS
   a. **Remote trigger 4,** on request from lead evaluator
   b. Role play – **Maintenance:** If requested, respond as dispatching personnel to investigate.
      Field Operator: If asked breaker is tripped. If directed to attempt breaker reclosure, breaker will not reset.

7. Vacuum Pump (1A) trip
   a. **Remote trigger 5,** on request from lead evaluator
   b. Role play – **Field Operator (**IAW CPS 3112.01 Section 8.1.1 and as directed):
      (1) Commence local actions to start B Vacuum Pump.
      (2) PENDING STEP: Start Seal Water Pump B, 0CA02PB and **MARK TIME**.
      (3) PENDING STEP: Coordinate with BOP Operator and Open 0CA006B Separator B Discharge Valve (after Seal Water Pump B has been running for a minimum of 5 minutes) and notify BOP operator.
      (4) Complete local actions to start B Vacuum Pump.

8. RCIC unisolable steam leak
   a. **Remote trigger 6,** on request from lead evaluator
   b. Role play – **Work Control Supervisor:** If RCIC ATM's are checked they read 10 times higher than on the last 9000.01 reading.
   c. Role play – **Field Operator:** If directed, report:
      (1) Heavy steam in RCIC room.
      (2) Breakers checked, no problems are found.

9. Reactor scrams on initiation of Manual SCRAM
   a. **No triggers**
   b. After 2 minutes from scram announcement go to MCR as IMD.

10. Radiation monitor fails to initiate an isolation of VF and start up VG.
    a. **No triggers**
    b. Role play – **Field Operator:** If directed to S/D VF locally:
       (1) Wait 3 minutes then **Remote trigger 7.**
       (2) Report VF S/D locally.

Facility: Clinton Power Station Scenario No.: Two Operating Test No.: 2011-301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
- 78% power, power ascension in progress.
- Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- Raise Reactor Power to 96% using a combination of rods and flow.
- RCIC Surveillance 9054.01 was completed last shift. RHR B is currently in Suppression Pool Cooling to support the RCIC surveillance and is no longer required. Secure Suppression Pool Cooling per CPS 3312.01 Section 8.1.10 – First Priority. NOTE: RHR HX MC layup is being deferred.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP SRO	Secure from Suppression Pool Cooling.
2	N/A	R-ATC SRO	Raise Reactor Power to 96% using a combination of rods and flow.
3	2045I_Action3ROD1 649I_ACTION3 1	C-ATC TS-SRO	Rod drifts outward.
4	YFFWPPSS_13 1	C-BOP	MC pump 1B coupling fails.
5	A01_A08_A01_1	C-ATC SRO	Hot well overflow level control valve controller failure.
6	YP_XMFTB_5010	C-BOP TS-SRO	Train A Control Room Supply Fan (0VC03CA) trips.
7	RAT_A_DIFFEREN TIAL	M-All	RAT A trips on Differential Overcurrent. IA containment & drywell isolation valves go shut. A circuit breaker supplying the HPCS injection valve (1E22F004) trips open.
8	YPXMALSE_511	M-All	An unisolable leak develops on the lower Reactor Vessel plenum. The RCIC turbine will trip when started and cannot be reset.
9	N/A	M-All	When RPV water level reaches TAF, enter EOP-3 and blowdown. Recover and restore RPV level IAW EOP-3.
10	YP-XMFTB_4948	C-BOP	RHR B Pump fails to auto start. Pump will operate as intended by handswitch manipulation.

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

Scenario No.: Two **Operating Test No.:** 2011-301

Narrative Summary

Event # **Description**

1. The BOP Operator will secure Suppression Pool Cooling per CPS 3312.01 Section 8.1.10.
2. The ATC Operator will raise reactor power to 96% using a combination of control rods and reactor coolant flow.
3. Annunciator ROD DRIFT (5006-4G) come in due to rod 20-45 drifting outward. The ATC Operator will take the Immediate Actions and applicable Subsequent Actions as directed by the CRS for an Inadvertent Rod Movement per CPS 4007.01. Rod 20-45 will drift outward until individually scrammed at the Hydraulic Control Unit (HCU). Technical Specification LCO 3.1.6 Actions C.1 and C.2 will be evaluated requiring full insertion of the inoperable control rod in 3 hours and disarming the associated CRD in 4 hours. Technical Specification LCO 3.1.6 Actions A.1 will also be evaluated will be evaluated and found not to apply.
4. Annunciator LOW PRESS MAKE-UP COND XFER PUMPS DISCH HDR (5014-2C) comes in due to the Make-Up Condensate Transfer Pump 1B (0MC01PB) shaft shear. The BOP Operator will dispatch a field operator to investigate. Upon the report of a shaft shear, the BOP operator will stop the failed pump and start the standby pump per CPS 3208.01 Section 8.1.1 (or 8.2.2).
5. Annunciator NOT FULLY CLOSED CDSR EMERG O/FLOW VLV 1CD020 (5014-4B) is received or an Operator notes Hot well Level is lowering. Upon discovery, the ATC Operator recognizes the failure of the Hot well Level Control Valve controller to control in automatic and takes manual control per CPS 3104.01 Section 8.6.1.
6. Annunciator AUTO TRIP PUMP/FAN DIVISION 1 (5050-1A) comes in due to the Train A Control Room Supply Fan (0VC03CA) tripping. The BOP Operator will coordinate with the field operator to shift Control Room HVAC (VC) to Train B per CPS 3402.01 Section 8.1.7. Technical Specification LCO 3.7.3 Actions A.1 will be evaluated requiring restoration of control room ventilation subsystem to an operable status within 7 days. Technical Specification LCO 3.7.4 Actions A.1 will also be evaluated requiring restoration of control room AC subsystem to an operable status within 30 days.
7. Multiple annunciators are received due to the "A" Reserve Auxiliary Transformer (RAT A) tripping on Differential Overcurrent. IA containment & drywell isolation valves (1IA005/006 and 1IA007/008) go shut. Failure of the shift to recognize and reopen these valves will lead to a SCRAM. Concurrent with this event, the circuit breaker supplying the HPCS injection valve (1E22F004) trips open on overcurrent.
8. An unisolable RR loop leak develops. The RCIC turbine will trip when started and cannot be reset. This failure completes a loss of all major high pressure feed sources.

9. Reactor Pressure Vessel (RPV) water level will lower until it reaches Top of Active Fuel (TAF). At that time the CRS will enter EOP-3, blowdown, recover and restore RPV level per EOP-3.

10. The "B" RHR Pump (1E12AC002B) fails to automatically start. The BOP Operator must manually start the "B" RHR Pump to maximize injection of available sources per EOP-1.

EOP
1, 3, 6

Critical tasks:
- Enter EOP-3, Blowdown.
- Maximizes injection to recover level above TAF. Restore and control RPV water level to a band of Level 3 to Level 8.

Shift Turnover Information

⇒ **Day of week and shift**

- Today Day Shift

⇒ **Weather conditions**

- Thunderstorms are expected in the area within the next hour.

⇒ **(Plant power level)**

- 78% Power / 90% FCL
- 2678 MWt
- 885 MWe
- 66.2 Mlbm/hr CORE FLOW
- CPS 3005.01 complete to step 8.1.14

⇒ **Thermal Limit Problems/Power Evolutions**

- Continue power ascension.
- RE Instructions: Pull control rods to ~82% CTP then continue raising power with flow.
- Control Rod Move Sheet: Step 36/Group 04-29 @ position 10
- Gang rod withdrawal is preferred

⇒ **Existing LCOs, date of next surveillance**

- None

⇒ **Surveillances or major maintenance**

- RCIC Surveillance CPS 9054.01 was completed last shift.

⇒ **Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment**

- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

⇒ **Comments, evolutions, problems, etc.**

- Online Risk is Green
- Continue with power ascension.
- Secure Suppression Pool Cooling per CPS 3312.01 Section 8.1.10 – First Priority. NOTE: RHR HX MC layup is being deferred.

Operator Actions

Event No.(s): 1	**Page** 1 **of** 2
Description: Secure from Suppression Pool Cooling.	
Initiation: Following shift turnover	
Cues: Directed by SRO	

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" may be flagged in some manner.
- When the annunciator comes in the operator may announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered if it has already been reviewed.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	• Monitors reactor to ensure operations remain within established bands o Monitors control room panels, notifies the SRO of unusual/unexpected conditions.

	BOP	o Test Prep Switches (SSW Sys Div 2 and RHR B) may be taken to TEST prior to the operation of RHR and SSW motor-operated valves.
		
		Per CPS 3312.01, Residual Heat Removal, Step 8.1.10:
		o Verify that Suppression Pool Cooling is NOT needed to support operation of Feedwater Leakage Control System (FWLCS).
		• Shut 1E12-F024B, RHR B Test Valve To Suppr Pool.
		• Stop RHR Pump B, 1E12-C002B.
		o Open 1E12-F048B, RHR B Hx Bypass Valve.
		• Secure SX flow through the RHR HX.
		  • Shut 1E12-F068B, RHR B Hx SSW Outlet Valve.
		  • Shut 1E12-F014B, SSW Inlet RHR B Hx Vlv.
		  o Open 1SX082B, RHR B HX MU Cond Inlet Vlv to re-establish the normal MC RHR HX float.
		o Verify the secured RHR loop is in STANDBY per 8.1.1.
		o Verify/Place the SX loop is in STANDBY per CPS 3211.01, Shutdown Service Water.
		
		o If Test Prep Switches (SSW Sys Div 2 and RHR B) were placed in TEST prior to the operation of RHR and SSW motor-operated valves, they should be taken back to NORMAL at the completion of the evolution.

Operator Actions

Event No.(s): 1		**Page** 2 **of** 2
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.
Terminus: Suppression Pool Cooling secured.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 2 **Page** 1 **of** 1

Description: Raise reactor power to 96% with Rods and Flow.

Initiation: Following shift turnover

Cues: Directed by SRO

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" may be flagged in some manner.
- When the annunciator comes in the operator may announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered if it has already been reviewed.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	Per CPS 3005.01 Unit Power Changes, NF-CL-721-1002 Control Rod Move Sheets and CPS 3304.02 RCIS: • Withdraw control rods per the control rod sequence and/or increases Recirc Flow with the Loop Flow Controllers to raise power. Note: The operator will open one Flow Control Valve at a time. o Monitor the Power to Flow Map during power ascension.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Monitor the Power to Flow Map during power ascension.
	SRO	o Directs actions listed above. • Stays in a position of oversight. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.

Terminus: Observable power increase has been observed.

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 3		**Page** 1 **of** 1
Description: Rod drifts outward.		
Initiation: Upon direction from the Lead Examiner.		
Cues: Rod Drift, 5006-4G alarms.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Report issue to SRO. Per CPS 4007.02,Inadvertent Rod Movement Immediate Actions: • Select Rod 20-45 (individual rod vice gang) and fully insert the moving rod with the In Timer Skip button. Subsequent actions: • Once fully inserted release the In Timer Skip button. • Observe rod withdrawal. • Reinsert rod with the In Timer Skip button. o Evaluates thermal limits.
	BOP	• Dispatch a field operator to the HCU for the rod. • Directs field operator to individually scram rod 20-45. o Evaluate MSL rad monitor values. o Evaluates OG Rad levels.
	SRO	• Acknowledge report from ATC. • Enters Inadvertent Rod Movement, CPS 4007.02 o Directs actions listed above. • Evaluates and enters Technical Specification LCO 3.1.3 action C.1 and C.2. o LCO 3.1.5 action A.1 or A.2 if the accumulator is discharged. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Suspends power ascension. o Informs Shift Manager. o Directs hydraulic isolation of HCU. o Evaluates thermal limits. o Conducts a brief. o Contact RE for guidance prior to recommencing power ascension.
Terminus: Once rod is fully inserted, individually scrammed and Tech Specs referenced.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 4		**Page** 1 **of** 1
Description: MC pump 1B coupling fails.		
Initiation: Following the power ascension, on the signal of lead examiner		
Cues: Annunciator CPS 5014-2C alarming.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands o Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Dispatch Field Operator to investigate.
	BOP	• Report issue to SRO. o Dispatch Field Operator to investigate. Per CPS 3208.01 MC/CY, STEP 8.2.2 (or 8.1.1.1): o Direct shutting the discharge valve and reopen upon pump start (if section 8.1.1.1 is used). • Start up the standby pump o Shutdown the failed pump (may place in PTL)
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate and repair MC pump. o Recommence power ascension.
Terminus: Standby Pump started and shutdown of the failed pump		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 5 **Page** 1 **of** 1

Description: Hot well Overflow Level Control Valve Controller Failure.

Initiation: After crew has started another MC pump, on the signal of lead examiner.

Cues: Annunciators 5014-3B, 4B alarm.

Time	Position	Applicant's Actions or Behavior
	ATC	• Report issue to SRO. • Upon identification of problem, may take manual control of controller first and then follow up with Operating Procedure (OP), or may follow through ARP to OP. Per CPS 3104.01, Condensate/Condensate Booster, Sections 8.6.2/8.3.2: • Manually control Hotwell level as necessary: 1. Place Condenser Overflow Controller 1LC-CD057A in MANUAL, 2. Control Hotwell level as necessary for plant conditions. o May direct isolation of the emergency overflow valve.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Communicates annunciators 5014-3B, 4B in alarm. o References ARP, and ensures that the ATC Operator is taking actions per CPS 3104.01, Condensate/Condensate Booster (CD/CB). o May direct isolation of the emergency overflow valve.
	SRO	• Acknowledge report from ATC. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate and repair controller failure. o Recommence power ascension.

Terminus: Hotwell level has been restored to normal band (36-55 inches)

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 6		**Page** 1 **of** 1
Description: Train 'A' Control Room Supply Fan (0VC03CA) trips.		
Initiation: Restoration of hot well level and on the signal of lead examiner.		
Cues: Annunciator CPS 5050-1A alarming and amber light for 0VC03CA lit.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Dispatch Field Operator to investigate/prepare to shift VC trains.
	BOP	• Report issue to SRO. o Dispatch Field Operator to investigate/prepare to shift VC trains. Per 3402.01P001, VC Train Shifting • Direct Equipment Operator to perform local operations • Shut Locker Room EXH Fan ISOL DMPR 0VC69Y • Shut Locker Room EXH Fan ISOL DMPR 0VC70Y • Stop Cont Rm Trn A Supply Fan 0VC03CA • Verify Dampers reposition • Start Cont Rm Trn B Supply Fan 0VC03CB • Verify Dampers reposition • Open Locker Room EXH Fan ISOL DMPR 0VC69Y • Open Locker Room EXH Fan ISOL DMPR 0VC70Y • Direct Chiller Startup
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Evaluates and enters TS 3.7.3 Action A.1 and TS 3.7.4 Action A.1. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate and repair VC Fan. o Recommence power ascension.
Terminus: VC train B is running and Technical Specifications evaluated.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 7		**Page** 1 **of** 1
Description: RAT A trips on Differential Overcurrent. HPCS injection valve (1E22F004) breaker trips open.		
Initiation: On the signal of lead examiner.		
Cues: Multiple annunciators alarming.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	o Report issue to SRO. o Notes Annunciator 5003-5M and directs restoration of IA to Containment. o Performs panel walkdown to determine equipment/plant status. • Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions.
	BOP	o Report issue to SRO. o Notes IA to Containment is isolated and performs restoration by opening 1IA005, 1IA006, 1IA007 and 1IA008. o Performs panel walkdown to determine equipment/plant status. Loss of Reserve Auxiliary Transformer (RAT) o Determines/Reports the RAT has tripped. • Verifies transfer of 1E buses to Emergency Reserve Auxiliary Transformer (ERAT). Loss of HPCS injection valve o Determines/Reports condition of 1E22F004. o Dispatches field operator to investigate. o Performs panel walkdown o Isolates FC to containment by shutting 1FC007, 1FC008, 1FC036 and 1FC037.
	SRO	• Enters CPS 4200.01 Loss of AC o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Contacts security for visual report. o Conducts a brief.
Terminus: SRO brief complete.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed
Evaluator Note:
The plant may scram if IA valves shut and are not reopened fast enough.
VC B and operating VP chiller trips on the loss RAT.

Operator Actions

Event No.(s): 8, 9, 10		**Page** 1 **of** 3
Description: Unisolable RR loop leak, RCIC Turbine trips when started, RHR 'B' pump fails to Auto Start.		
Initiation: SRO brief complete or on the signal of lead examiner.		
Cues: Increasing Drywell pressure and temperature; Decreasing RPV Level.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	o Reports Drywell Pressure rising. o Initiate a manual reactor scram before Drywell Pressure 1.3 psig and rising per CPS 4100.01, Reactor Scram: • Place mode switch in Shutdown. • Verify reactor power is lowering, shutdown criteria met. • Carries out Scram Choreography by reporting. – Mode Switch in Shutdown, Power is… – Rod status is… – Reactor Power is… and trend – Reactor pressure is… and trend – Reactor level is… and trend – Any EOPs with entry conditions • IF RPV level is rising with 2 feed pumps operating, THEN Secure 1 Feed Pump and control RPV water level Level 3 to Level 8. • Verify Turbine and Generator trip when required. • Perform EOP actions as directed by SRO. • Report EOP-1 Entry Condition on High Drywell Pressure and/or Low RPV Water Level. • Report EOP-6 Entry Condition on High Drywell Pressure. o Reports loss of High Pressure Feed. • Report RPV level and pressure. o Coordinates with BOP operator to monitor and control RPV level and pressure. o Starts both trains of SLC, as directed. o Identifies the failure of RHR 'B' Pump to auto start and manually starts pump. o Recognizes that HPCS Injection Valve, 1E22-F004, will not automatically open (from previous fault) and recommends to SRO having a field operator open valve locally. Per EOP-3, Emergency RPV Depressurization (may be performed by BOP): Critical Task o **When TAF (-160 inches) is reached, initiates ADS to Blowdown the reactor.** o Verifies seven ADS valves are open. Critical Task o **Maximizes ECCS injection to restore RPV water level above TAF.**

Operator Actions

Event No.(s): 8, 9, 10		**Page** 2 **of** 3
Time	**Position**	**Applicant's Actions or Behavior**

	BOP	o Reports Drywell Pressure rising.
		• Carries out Scram Choreography by:
		  • Making an Announcement
		  – Reactor Scram
		  – MDRFP may start
		  – Evacuate the RCIC room
		  – Evacuate the Containment
		  • Determine Rod status and report to CRS
		
		Per EOP-6 Primary Containment Control
		
		o Starts Drywell Mixers, as directed.
		o Starts Containment Spray, as directed.
		o Starts both trains of SLC, as directed.
		• Monitors the start of the ECCS Systems on High Drywell Pressure.
		o Identifies the failure of RHR 'B' Pump to auto start and manually starts pump.
		o Recognizes that HPCS Injection Valve, 1E22-F004, will not automatically open (from previous fault) and recommends to SRO having a field operator open valve locally.
		o Operates ECCS Systems as needed, to control RPV Water Level, Level 3 to Level 8
		o Dispatch an operator to open the HPCS injection valve
		o Dispatch an operator to reset RCIC
		
		Per EOP-3, Emergency RPV Depressurization (may be performed by ATC):
		Critical Task o **When TAF (-160 inches) is reached, initiates ADS to Blowdown the reactor.**
		o Verifies seven ADS valves are open.
		Critical Task o **Maximizes ECCS injection to restore RPV water level above TAF.**

Operator Actions

Event No.(s): 8, 9, 10		**Page** 3 **of** 3
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	Directs / Verifies performance of appropriate actions per EOP-1: • Mode Switch is in SHUTDOWN. • Shutdown Criteria is met. • Control of RPV Pressure 800 to 1065 psig with Bypass Valves or SRVs. • Control of RPV Level, Level 3 to Level 8 by using Preferred Injection Systems. o Use of Alternate Level Control Systems (may not have time). o Monitor area temperatures, levels and radiation levels. Enters EOP-3, Emergency RPV Depressurization, upon reaching TAF.
Critical Task		• **Directs initiation of ADS to Blowdown the reactor.**
Critical Task		• **Directs maximizing ECCS injection to restore RPV water level above TAF.** o Directs throttling an injection source.
		Enters EOP-6, Primary Containment Control, and directs the following: • Starting Mixers. o IAW Fig. O directs the start of Containment Sprays (dependent on RPV Level). • If Containment Sprays are running, directs stopping Containment Sprays prior to TAF. (≈-100"). o May direct the isolation of RT, Group 1 and/or RR.

Terminus:
- Blowdown has been completed.
- RPV level has been recovered and is being controlled >Level 3.
- Upon approval of Lead Examiner.

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Simulator Operator Instructions

Initial Setup

1. Fill out plant status and have Turnover Sheet ready for the crew.
2. Verify daily lamp test completed.
3. Reset to an IC with Reactor Power at 78% to match turnover.
4. Load the lesson plan for this scenario.
5. Place simulator in RUN.
6. Select the A FWLC level instrument.
7. Turn on and advance recorders.
8. Verify RCIC Flow Controller is set at 620 psig.
9. Verify the AR/PR server is running and stabilize AR/PR.
10. Verify Rod Drive pressure is in the expected range.
11. Provide pull sheets: on step 36 group 04-29 is at position 10.
12. Hang OOS tags per turnover on 1B SF Pump.
13. Identify T/S issues associated with OOS and turnover.
14. Operating Equipment: Verify RHR 'A' is in Suppression Pool Cooling IAW CPS 3312.01.
15. Provide marked up CPS 3005.01 complete to step 8.1.14.
16. Provide REMA and RE instructions.
17. Verify simulator conditions match the turnover.

Event Triggers and Role Play

Event #

1. Secure from Suppression Pool Cooling**.**
   - **a. No trigger.**
   - b. Role play – None

2. Raise Reactor Power to 96% using a combination of rods and flow.
   - **a. No trigger.**
   - b. Role play – None

3. Rod 20-45 drifts outward.
   - a. **Remote trigger 1** – on request from lead evaluator.
   - b. No problem lights at the RGDC or RACCs
   - c. Role Play – **Field Operator:** If requested, reports no indications of problem at the HCU. If directed to hydraulically isolate the HCU, report "1C11-F103 and 1C11-F105 are SHUT".
   - d. Role Play – **Reactor Engineer:** If scram times are requested, respond "no rods are slow". If asked as the RE (after rod 20-45 has been scrammed) raise power from here with flow.
   - e. **Remote trigger 8** – When directed to scram the rod and report it completed. When asked accumulator N_2 pressure is 1200 psig after rod is scrammed.

4. MC pump 1B coupling fails.
   - a. **Remote trigger 2** on request from lead evaluator.
   - b. Role Play – **Field Operator:** If directed to investigate, report 'B' MC coupling is failed. If directed, Shut/Open 0MC006A (B) MC Transfer Pump A (B) Discharge Isolation as directed and in support the startup of the 'A' MC pump.

5. Hot well overflow level control valve failure.
   - a. **Remote trigger 3,** on request from lead evaluator.
   - b. Role play – **Maintenance:** If requested, respond as dispatching personnel to investigate.

6. Train A Control Room Supply Fan (0VC03CA) trips.
   - a. **Remote trigger 4** on request from lead evaluator.
   - b. Role Play – **Field Operator** (IAW CPS 3402.01P001 and as directed):
     - (1) Perform local operations to support Control Room HVAC (VC) Train Shifting.
     - (2) On PENDING PAGE: Start VC 'B' Chiller

7. RAT 'A' trips on Differential Overcurrent. HPCS injection valve (1E22F004) breaker trips open.
   - a. **Remote trigger 5,** on request from lead evaluator
   - b. Role Play – **Field Operator:** If asked,
     - (1) report the breaker for 1E22F004 is tripped and will not reset if directed (CB 781', Div 3 Switchgear Room HPCS MCC 1C bucket 2E [1E22-S002 – 2E])
     - (2) (Possible call to security for visual on RAT transformers), report NO problems/abnormalities visible any of the A, B or C RAT transformers.

8. Unisolable RR loop leak develops, RCIC turbine will trip when started.
   a. **Remote trigger 6,** on request from lead evaluator
   b. Role play – **Field Operator:** If directed to investigate/reset RCIC turbine, report RCIC turbine is tripped and will not reset.
   c. After 2 minutes from scram announcement go to MCR as IMD.

9. Enter EOP-3 and blowdown, restore RPV water level IAW EOP-3.
   a. **No trigger.**
   b. Role play – **Field Operator:** If directed to open HPCS Injection Valve, 1E22-F004 locally, inform MCR Operator that handwheel clutch will not engage.
   c. Role play – **Maintenance** If requested:
      (1) respond as dispatching personnel to investigate 1E22-F004.
      (2) On PENDING PAGE: defeat interlocks for 1E12F042A/B

10. RHR B Pump fails to Auto Start.
    a. **No trigger,** set in Initial Conditions.
    b. Role Play – None.

Facility: Clinton Power Station Scenario No.: Three Operating Test No.: 2011-301

Examiners: _____ Operators: _____
_____ _____
_____ _____

Initial Conditions:
- 96% power, steady state operation.
- Thunderstorms are expected in the area within the next hour.
- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

Turnover:
- Secure Division 2 Diesel Generator (DG 1B) from CPS 9080.02, DG 1B Operability – Manual and Quick Start Operability, by performing Section 8.3.1 through 8.3.7 – First Priority.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP	Secure DG 1B.
2	N/A	R-ATC SRO	Lower Reactor Power/Generator Output with flow.
3	Override	TS-SRO	Low DG Starting Air Pressure.
4	LC08A	C-ATC SRO	Clogged Oil Filter – CB Pump 1A.
5	CW06A	C-BOP SRO	Auto Trip of 'B' CCW Pump.
6	YP_XMFTB_4914	TS-SRO	'A' APRM fails downscale.
7	YPXMALSE_612	I-BOP	TGLO Temperature Controller Failure.
8	Override	C-ATC	'B' RWCU pump seal plate temperature high.
9	Override	M-All	"A" Inboard MSIV drifts shut/Group 1 Isolation/Rx Scram.
10	YPXMALSE_511	M-All	Rx Coolant Leak.
11	YPXMALSE_74 YPXMALSE_76	M-All	During B/D, 2 SRV's fail to open.

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

Scenario No.: Three **Operating Test No.:** 2011-301

Narrative Summary

Event # **Description**

1. CPS 9080.02, DG 1B Operability – Manual and Quick Start Operability, has been completed. The BOP operator will secure DG 1B and place it back in standby.
2. The Load Dispatcher will call the MCR, declare a grid emergency and request that CPS lower generator output 100MWe within the next thirty (30) minutes. The ATC Operator will lower reactor power/generator output using reactor coolant flow.
3. Annunciator OUT OF SERVICE DIESEL GEN 1B (5061-7F) comes in due to low Starting Air Pressure (190 psig). The BOP operator will dispatch a field operator to investigate. No cause will be evident. Technical Specification 3.8.3, Action E.1 will be evaluated requiring starting air receiver pressure be restored to ≥ 200 psig within 48 hours.
4. Annunciator CLOGGED OIL FILTER CONDENSATE BOOSTER PUMP 1A (5001-1H) comes in due to a clogged CUNO filter. The ATC Operator will dispatch a field operator to clear the alarm. Attempts are unsuccessful and the ATC Operator will startup the standby condensate booster pump and shutdown the affected pump per the Annunciator Response Procedure (ARP).
5. Annunciator AUTO TRIP PUMP/MOTOR (5040-1B) and RECIRC MTR A/B WDG CLG WTR FLOW LO (5003-3D/3K) come in due to a trip of the 'B' Component Cooling Water (CCW) Pump. The BOP Operator will start the standby pump per the Annunciator Response Procedure (ARP).
6. Annunciator ROD OUT BLOCK (5006-2H) and APRM DNSC (5004-1L) come in due to APRM A failing downscale. Technical Specification LCO 3.3.1.1 Actions A.1 will be evaluated requiring the channel's affected function in trip within 48 hours. Technical Specification LCO 3.3.1.3 Actions A.1 or A.2 or A.3 will be evaluated requiring the channel in TRIP or the associated RPS trip system in TRIP or initiate an alternate method to detect and suppress thermal hydraulic instability oscillations all within 30 days.
7. Annunciator HIGH TEMP TURB GEN LUBE OIL (5018-3A) comes in due to a failure in the auto portion of the TURB OIL CLG WTR Controller. The BOP operator will diagnose the problem with the controller, place the controller in MANUAL and coordinate with the ATC Operator to stabilize turbine oil outlet temperature.
8. Annunciator CLEANUP PUMP SEAL GLAND PLATE TEMP HI (5000-2E) comes in due to RWCU Recirc Pump B (1G33-C001B) developing excessive seal leak requiring its removal from service. The ATC Operator will dispatch a field operator and coordinate/perform operations per CPS 3303.01 Sections 8.1.3 and 8.1.4.
9. The "A" Inboard MSIV drifts shut, resulting in a transient that causes a Group 1 isolation due to the increased steam flow in the remaining three Main Steam Lines which in turn causes a Reactor Scram.
10. A Reactor Coolant Leak develops followed shortly by a Drywell to Containment leak. When Containment Pressure exceeds Figure N, EOP-3 is entered and a blowdown is performed.
11. Upon the initiation of ADS 2 SRV's 41B and 41D fail to open which requires manual operation to open two more relief valves to complete the blow down.

EOP
1, 6, 3

Critical tasks:

- Enters EOP-3, Blowdown, and then maximizes injection to recover level above TAF.
- Verify Open/Open seven relief valves upon initiation of ADS.

Shift Turnover Information

⇒ **Day of week and shift**

- Today Day Shift

⇒ **Weather conditions**

- Thunderstorms are expected in the area within the next hour.

⇒ **(Plant power level)**

- 96% Power/100% FCL
- 3323 MWt
- 1106 MWe
- 84.2 Mlbm/hr CORE FLOW
- CPS 3005.01 thru step 8.1.19

⇒ **Thermal Limit Problems/Power Evolutions**

- Control Rod Move Sheet:
  Step 37/Group 12-21 @ position 10

⇒ **Existing LCOs, date of next surveillance**

- None

⇒ **Surveillances or major maintenance**

- Division 2 Diesel Generator (DG 1B) from Monthly Test in progress

⇒ **Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment**

- Suppression Pool Cleanup and Transfer Pump 1B (1SF01PB) is OOS for a motor bearing replacement.

⇒ **Comments, evolutions, problems, etc.**

- Online Risk is Green
- Secure Division 2 Diesel Generator (DG 1B) from Monthly Test IAW CPS 9080.02, DG 1B Operability – Manual and Quick Start Operability, starting at Section 8.3.1 – First Priority.

Operator Actions

Event No.(s): 1 **Page** 1 **of** 1

Description: Secure DG 1B.

Initiation: Following shift turnover.

Cues: Directed by SRO.

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" may be flagged in some manner.
- When the annunciator comes in the operator may announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered if it has already been reviewed.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	• Monitors reactor to ensure operations remain within established bands o Monitors control room panels, notifies the SRO of unusual/unexpected conditions.
Cue	BOP	Per CPS 9080.02, Steps 8.3.1 through 8.3.9 secures DG 1B from surveillance: o Place/verify DG 1B Output Bkr Sync switch to the ON position. • Adjust DG 1B Output Frequency using the Governor control switch to ≈60.0 Hz. • Adjust DG 1B output voltage to ≈4200 V. • Return/Verify DG 1B Output Bkr Sync switch to OFF. Perform cooldown of the DG. • Direct local operator to place Run-Idle switch, 1HS-DG291, to IDLE. For Step 8.3.5.2, Operate DG 1B unloaded at idle speed… • **Cue the BOP that 10 minutes have now elapsed.** • Notify local operator of impending DG shutdown. • Stop DG 1B with DG 1B control switch. • Direct local operator to place Run-Idle switch, 1HS-DG291, to RUN. • Verify the following: 1) DG 1B Fuel Oil Day Tank level is at the overflow level (≈88.5%) 2) 1DO01PB, DG Fuel Oil Xfer Pmp 1B automatically stops. 3) AUTO START DG FUEL OIL XFER PUMP 1B [5061-4C] annunciator reset.
	SRO	o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.

Terminus: DG 1B is secured from the surveillance.

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 2 **Page** 1 **of** 1

Description: Lower Reactor Power/Generator Output with flow.

Initiation: Following Shutdown of DG 1B, on the signal of lead examiner.

Cues: Directed by SRO.

General Note

If this evolution was Prebriefed and "Expected Alarms" were reviewed, the following may be allowed:
- The "Expected Alarms" may be flagged in some manner.
- When the annunciator comes in the operator may announce "Expected Alarm"
- The Annunciator Response Procedure (ARP) need not be entered if it has already been reviewed.

If a Prebrief was not conducted the operator should perform the following:
- When an annunciator comes in the ARP should be referred to
- The annunciator may then be identified as an "Expected Alarm", flagged, and from that point on the ARP need not be referred to. (OP-AA-103-102)

Time	Position	Applicant's Actions or Behavior
	ATC	Per, CPS 3005.01, Unit Power Changes reduce reactor power. • Reduces power to coincide with a 100 MWe reduction within the next 30 minutes. • Closes the Flow Control Valves individually while maintaining the mismatch within spec. (OK to use double detent) • Monitors parameters as flow is reduced. (Power, FCV Position, Flow, MWe) o Monitors RR pump vibrations. o May finish the power reduction with control rods. o Verify Power to flow map / Thermal limits – 3D Case
	BOP	o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Monitors RR pump vibrations. o Verify Power to flow map / Thermal limits – 3D Case
	SRO	o Directs actions listed above. • Stays in a position of oversight. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Verify Power to flow map / Thermal limits – 3D Case o Informs Shift Manager. • Informs Load Dispatcher when complete.

Terminus: Clearly observable plant response from change in power level.

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 3 **Page** 1 **of** 1

Description: Low DG Starting Air Pressure.

Initiation: After power reduction, and upon direction from the Lead Examiner.

Cues: Identified during securing of Diesel Generator or Annunciator 5061-7F, OUT OF SERVICE DIESEL GEN 1B is received.

Time	Position	Applicant's Actions or Behavior
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Dispatch Field Operator to investigate.
	BOP	• Report issue to SRO. o Dispatch Field Operator to investigate. • Refers to the ARP.
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. • Evaluates and enters Technical Specification LCO 3.8.3 E.1 (requires starting air receiver pressure be restored to ≥ 200 psig within 48 hours). o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.

Terminus: The Technical Specification call has been made.

NOTES:

- Solid bullets are required actions
- o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 4		**Page** 1 **of** 1
Description: Clogged Oil Filter – CB Pump 1A.		
Initiation: Following resolution of Technical Specification call and upon direction from the Lead Examiner.		
Cues: Annunciator CPS 5001-1H alarming.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Report issue to SRO. Per CPS 5001-1H, Clogged Oil Filter CB Pump 1A: o Directs field operator to turn Cuno filter. Per ARP or CPS 3104.01, CD/CB step 8.2.2: • Startup standby CB pump • Shutdown 'A' CB pump.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Directs field operator to turn Cuno filter.
	SRO	• Acknowledge report from ATC. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.
Terminus: Standby CB pump started and the 'A' CB pump shutdown.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 5		**Page** 1 **of** 1
Description: Auto Trip of 'B' CCW Pump.		
Initiation: After shifting of CB pumps, on the signal of lead examiner.		
Cues: Annunciator CPS 5040-1B and 5003-3D/3K alarm.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Performs Plant Announcements. o Dispatches Field Operator to investigate. • Responds to annunciator 5003-3D and 3E, RR Low Cooling Water Flow. o Monitors RR and RT parameters.
	BOP	• Report issue to SRO. o Performs Plant Announcements. o Dispatch Field Operator to investigate. Per CPS 5040-1B, Auto Trip Pump/Motor: • Starts standby CCW pump. o Monitor RR seal temperatures.
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.
Terminus: Standby CCW pump started.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 6		**Page** 1 **of** 1
Description: 'A' APRM fails downscale. (Technical Specification Call, No Control Room Action)		
Initiation: After crew has addressed CCW pump trip and on the signal of lead examiner.		
Cues: Annunciators 5006-2H and 5004-1L alarm.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Report issue to SRO. • Refers to ARP.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands.
	SRO	• Acknowledge report from ATC. • Evaluates and enters Technical Specification LCO 3.3.1.1 A.1 ('A' APRM Inop) and LCO 3.3.1.3 A.1 or A.2 or A.3. ('A' OPRM Inop). o May direct placing Division 1 RPS in Sensor Bypass (Evaluates and enters additional Technical Specification LCO's 3.3.4.1, 3.3.6.1 and ORM 2.2.1/3, 2.2.14). • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.
Terminus: Technical Specification review complete.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 7		**Page** 1 **of** 1
Description: TGLO Temperature Controller Failure.		
Initiation: Following Technical Specification call, and upon direction of Lead Examiner.		
Cues: Annunciator CPS 5018-3A, High Temp Turb-Gen Lube Oil.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands. o Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Dispatches Field Operator to investigate. o Checks for excessive temperatures across the turbine bearings. o Monitor turbine bearing vibrations. o Monitor turbine lube oil temperature.
	BOP	• Report issue to SRO. • Refers to the ARP. o Dispatches Field Operator to investigate. Per CPS 5018-3A, High Temp Turb-Gen Lube Oil: • Determines that the Temperature Controller has failed: a) Place TURB OIL CLG WTR Controller in MANUAL. b) Adjust (open/close) TCV controller as needed to maintain turbine oil outlet temperature 110°F to 120°F. o Checks for excessive temperatures across the turbine bearings.
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.
Terminus: Turbine LO Temperature Controller has been placed in MANUAL and temperature has returned to normal.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 8		**Page** 1 **of** 1
Description: 'B' RWCU Pump seal plate temperature high.		
Initiation: Turbine LO Temperature has been stabilized, and upon direction of Lead Examiner.		
Cues: Annunciator CPS 5000-2E alarms.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Report issue to SRO. • Refers to ARP. o Dispatches a field operator to investigate/support RWCU operation. Per CPS 3303.01, RWCU step 8.1.4 and 8.1.3: • Direct field Operator to remove all Filter demins from service. • Throttle Open the F/D bypass valve (1G33-F044). • Shutdown RWCU pump 'B'. o Place one F/D in service. o Throttle shut the F/D bypass valve (1G33-F044). • Monitors reactor to ensure operations remain within established bands.
	BOP	• Monitors control room panels, notifies the SRO of unusual/unexpected conditions. o Monitors reactor to ensure operations remain within established bands. o Dispatches a field operator to investigate/support RWCU operation.
	SRO	• Acknowledge report from BOP. o Directs actions listed above. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures. o Informs Shift Manager. o Conducts a brief. o Contacts Maintenance to investigate.
Terminus: RWCU pump has been shutdown IAW CPS 3303.01		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Operator Actions

Event No.(s): 9,10,11		**Page** 1 **of** 3
Description: **"A" Inboard MSIV drifts shut/Group 1 Isolation/Rx Scram.** **Rx Coolant Leak.** **During B/D, 2 SRV's fail to open.**		
Initiation: RWCU pump has been shutdown IAW CPS 3303.01, on the signal of lead examiner.		
Cues: Annunciators 5004-3C, 5002-1P, 5066/7-2E alarm and reactor scram.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Places the Mode Switch in S/D. • Carries out Scram Choreography by reporting: 1) Mode Switch in Shutdown, Power is… 2) Rod status is… 3) Reactor Power is… and trend 4) Reactor pressure is… and trend 5) Reactor level is… and trend 6) Any EOPs with entry conditions (EOP-1) Per CPS 4100.01, Reactor Scram • Turn Mode Switch to SHUTDOWN 1) Verify reactor power is lowering 2) Verify SHUTDOWN CRITERIA met • IF RPV level is rising with 2 feed pumps operating • THEN Secure 1 Feed Pump and control RPV water level Level 3 to Level 8. • Verify Turbine and Generator trip when required o Reports cause of Group 1 isolation – High Steam Line Flow. o Perform EOP actions as directed by SRO. o Announce rising Drywell Pressure and EOP-6 entry. • Stop both RR pumps within 1 minute of Hi Drywell Pressure (1.68 psig). Per EOP-3, Emergency RPV Depressurization (will probably be BOP): Critical Task o **Initiates ADS.** o Determine that two ADS Valve did not open. Critical Task o **Opens other SRV's for a total of seven open.** • Operates ECCS Systems as needed to control RPV Water Level, Level 3 to Level 8. (may be performed by BOP)

Operator Actions

Event No.(s): 9,10,11 **Page** 1 **of** 2

Time	Position	Applicant's Actions or Behavior
	BOP	Carries out Scram Choreography by: • Making an Announcement – Reactor Scram – MDRFP may start – Evacuate the RCIC room – Evacuate the Containment • Determine Rod status and report to CRS o Reports cause of Group 1 isolation – High Steam Line Flow. o Verifies the Group 1 Isolation using the Hard Card. o Perform EOP actions as directed by SRO. o Announce rising Drywell Pressure and EOP-6 entry. Per EOP-6 Primary Containment Control • Starts Drywell Mixers, as directed.
	Critical Task	• **Starts Containment Spray, as directed.**
		o Monitors the start of the ECCS Systems on High Drywell Pressure. o Operates ECCS Systems as needed, to control RPV Water Level, Level 3 to Level 8. (will probably be BOP) Per EOP-3, Emergency RPV Depressurization (may be performed by ATC):
	Critical Task	• **Initiates ADS**
		• Determine that two ADS Valve did not open.
	Critical Task	• **Opens other SRV's for a total of seven open.**

Operator Actions

Event No.(s): 9,10,11		**Page** 3 **of** 3
Time	**Position**	**Applicant's Actions or Behavior**
	SRO	o Acknowledge Group 1 Isolation. • Carries out Scram Choreography by performing an Update: – Entering EOP-1 – Entering Scram Off-Normal – Transient Annunciator Response is authorized Enters EOP-1, RPV Control, and directs the following: • Control RPV Pressure 800 to 1065 psig with SRVs. (may lower pressure band) • Maintain RPV Level, Level 3 to Level 8 by using Preferred Injection Systems. (may use expanded level band) Enters EOP-6, Primary Containment Control, and directs the following: • Starting Mixers
	Critical Task	• **IAW Fig. O, directs the start of Containment Sprays.** Enters EOP-3, Emergency RPV Depressurization, when Figure N is exceeded.
	Critical Task	• **Directs initiation of ADS** o Directs opening other SRVs until 7 are open o Acknowledge Group 1 Isolation • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations expectations, standards and approved procedures.
Terminus: 7 SRVs are open, RPV water level being controlled in prescribed band and upon direction of Lead Examiner.		

NOTES:

• Solid bullets are required actions
o Hollow bullets are actions that may or may not be performed

Simulator Operator Instructions

Initial Setup

1. Fill out plant status and have Turnover Sheet ready for the crew.
2. Verify daily lamp test completed. Exercise meters (Verify DG 1B Output Frequency meter NOT stuck downscale).
3. Reset to an IC with Reactor Power at 96% to match turnover.
4. Load the lesson plan for this scenario.
5. Place simulator in RUN.
6. Select the A FWLC level instrument.
7. Turn on and advance recorders.
8. Verify RCIC Flow Controller is set at 620 psig.
9. Verify the AR/PR server is running and stabilize AR/PR.
10. Verify Rod Drive pressure is in the expected range.
11. Provide pull sheets: on step 37 group 12-21 is at position 12.
12. Hang OOS tags per turnover on 1B SF Pump.
13. Identify T/S issues associated with OOS and turnover.
14. Operating Equipment: Verify Div 2 DG (DG1B) is running for CPS 9080.02.
15. Provide marked up CPS 9080.02 complete to step 8.3.1.
16. Provide marked up CPS 9080.02D001.
17. Verify simulator conditions match the turnover.

Event Triggers and Role Play

Event #

1. Secure DG 1B.
   - **a. No trigger.**
   - **b.** Role Play **– Field Operator:** If requested, report:
     - **(1)** At panel 1PL12JB, the Run-Idle Switch, 1HS-DG292 is in the IDLE position – **Remote trigger 9**.
     - **(2)** Circulating Oil **and** Turbocharger Soak Back Pumps on both DG 1B engines are running.
     - **(3)** When DG1B control switch taken to STOP – **Remote trigger 10**.
     - **(4)** At panel 1PL12JB, the Run-Idle Switch, 1HS-DG292 has been placed to RUN.
     - **(5)** Room temperature is > ambient and lowering slowly.
     - **(6)** DG 1B lube oil temperature is 145°F.
     - **(7)** Day Tank Level is 88.5%. Storage Tank Level is 92.7%.
     - **(8)** Air Bank is 245 psig.

2. Lower Reactor Power/Generator Output with flow.
   - **a. No trigger.**
   - **b.** Role Play **– Load Dispatcher:** MISO has declared a grid emergency and requested that CPS lower generator output by 100 MWe over the next 30 minutes.

3. Low DG Starting Air Pressure.
   - **a. Remote trigger 1.**
   - **b.** Role Play **– Field Operator:** If requested, report both banks of starting air pressure are 145 psig and STEADY (normal value is 245 psig if requested prior to fault). Neither compressor is running and if tasked to investigate, report "No abnormalities noted".

4. Clogged Oil Filter – CB Pump 1A.
   - a. **Remote trigger 2** on request from lead evaluator.
   - b. Role Play **– Field Operator:** turn the Cuno filter for the CB A pump and report it done (alarm stays in). Support startup of the standby CB pump. Pre starts are done. If requested, report Lube oil is >8 psi and >75°F.

5. Auto Trip of 'B' CCW Pump.
   - a. **Remote trigger 3** on request from lead evaluator.
   - b. Role Play **– Field Operator:** When sent to B CCW pump, report "No abnormalities noted". When sent to the breaker, report "The Phase 'C' overcurrent relay indicates tripped". No fire.
   - c. Role Play **– Maintenance:** If requested, respond as dispatching personnel to investigate.
   - d. If BOP Operator checks RR seal temperatures at the back panels, indicate all affected temperatures show a slight rise but are returning to normal.

6. 'A' APRM fails downscale.
   - a. **Remote trigger 4** on request from lead evaluator
   - b. Role Play **– Maintenance:** If requested, respond as dispatching personnel to investigate.

7. TGLO Temperature Controller Failure.
   a. **Remote trigger 5** on request from lead evaluator
   b. Role Play – **Field Operator:** when directed to check out the Turbine L.O. Coolers report back that everything appears to be fine (if problem has been corrected) or that Temperature Control Valve is closed (if problem has not been corrected).

8. 'B' RWCU pump seal plate temperature high.
   a. **Remote trigger 6** on request from lead evaluator.
   b. Role Play – **Field Operator:** If requested, respond 'B' RT pump seal temperature is 285 degrees and rising slowly. The CCW is lined up to this pump and the other 'A' RT pump is at 175 degrees and stable. No steam in the room. No change in RT pump room temperatures. When local actions to isolate and vent B RT pump are requested, respond that you will go to RP to obtain a Hi Rad Brief.
   c. **On Pending Page** to remove RT F/D 'A', **On Pending Page** to remove RT F/D 'B'.
   d. **On Pending Page** to place on service RT F/D 'A', **On Pending Page** to place on service RT F/D 'B'.

9. "A" Inboard MSIV drifts shut/Group 1 Isolation/Rx Scram.
   a. **Remote trigger 7** on request from lead evaluator.
   b. After 2 minutes from scram announcement go to MCR as IMD.

10. Rx Coolant Leak.
    a. **No triggers**, cued on Scram.
    b. Role Play- none

11. During B/D, 2 SRV's fail to open.
    a. **No trigger.**
    b. Role Play- none