Operator Actions

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

Description: **Start Shutdown Service Water (SX) Pump, 1SX01PC**
(Panel P601, Section 5062)

Initiation: Following Shift Turnover

Cues: Upon direction of the 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
	BOP	o Makes plant announcement on start of SX Pump. o Places Test Prep Switch for Div 3 SX in TEST. o Enters Short Duration Time Clock for Test Prep Switches in Test. Per CPS 3211.01, Shutdown Service Water (SX), place 'C' SX Pump, 1SX01PC in service: • Start SX Pump 1SX01PC. • Verify SX strainer outlet pressure ~ 75 psig. • Verify shut/shut 1SX014C. • Verify running or start 1VH01CC, SX Pump Room Supply Fan. • Verify 1SX006C, DG 1C HX Outlet Vlv opens.
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Contacts Chemistry for RWT manipulations.

Terminus: SX Pump 'C' has been started.

Operator Actions

Event No.(s): 2			**Page** 1 **of** 1
Description	**Hydrogen Ignitor Division 1 Power Failure** (P800, Section 5041,Technical Specification Call, No Control Room Action)		
Initiation: Following startup of SX and upon direction of the Lead Examiner.			
Cues: Annunciator CPS 5041-5H, Hyd Ignitor Sys Div 1 Trouble, is received.			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Communicates annunciator to SRO • Refers to the ARP. • Dispatches Area Operator to Panel 1HG03JA to investigate cause. • Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Contacts Electrical Maintenance to investigate breaker.	
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Monitors containment hydrogen concentration.	
	SRO	• Receives report from BOP Operator. o Upon receiving report on system status directs that electrical maintenance be called. • Declares per Technical Specification LCO 3.6.3.2, that division 1 hydrogen ignitors is Inoperable and IAW Action A.1 restore the division to Operable status within 30 days. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts Brief on problem and status. o Directs One-Time-Closure-of-Breaker per OP-CL-108-101-1001.	
Terminus: Technical Specification review complete.			

Operator Actions

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

Description: **Reduce Power With Flow**
(Panel P680, Section 5003)

Initiation: Following Technical Specification Call

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 3005.01, Unit Power Changes reduce reactor power. • Reduces power to 65% • Closes the Flow Control Valves individually while maintaining the mismatch within spec. • Monitors paramaters as flow is reduced. (Power, FCV Position, Flow, MWe)
	BOP	• Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.

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

Operator Actions

Event No.(s): 4		**Page** 1 **of** 1
Description: **High Generator Field Voltage** (Panel P680, Section 5008)		
Initiation: After power reduction, and upon direction from the Lead Examiner.		
Cues: Generator Field Voltage increases, #9 Bearing Vibration increases, & Annunciator CPS 5008-3E, Gen/Exciter Field Trouble, is received.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Communicates annunciator to SRO. • Refers to the ARP • Investigates cause of annunciator and status of Main Generator. o May attempt to control voltage with the AC Regulator. • Depresses MANUAL on the EXCITER FLD TRANSFER switch. • Reduces Generator Field Voltage to within normal band (22.0 - 22.1 Kv) with the DC Regulator o May request a Line-In-The-Sand for tripping the Main Turbine on high vibration.
	BOP	• Monitors plant to ensure operations remain within established bands. • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o May direct that the Main Turbine be tripped at a certain setpoint due to high vibration on #9 bearing. o Conducts brief on problem and status.
Terminus: Generator Field Voltage has been returned to normal.		

Operator Actions

Event No.(s): 5			**Page** 1 **of** 1
Description: **Auto Trip of 'C' Shutdown Service Water (SX) Pump, 1SX01PC** (Panel P601, Section 5062)			
Initiation: After Voltage Regulator has been taken to MANUAL, and upon direction of Lead Examiner			
Cues: Annunciator 5064-1A, Auto Trip SSW Pump 1C is received.			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Communicates annunciator to SRO • Refers to ARP • Dispatches Area Operator to Pump and Breaker. o Performs Plant Announcement on Pump Trip. Per CPS 5064-1C, Auto Trip SSW Pump 1C: • Place SSW Pump 1C, 1SX01PC control switch in Pull-To-Lock. • IF An Emergency does not exist, • THEN Refer to CPS 3211.01, Shutdown Service Water (SX) to manually reopen 1SX014C, PSW To SSX 1C Hdr Isol Vlv to provide Plant Service Water to the SSW 1C system. Per CPS 3211.01, Shutdown Service Water (SX): • Deenergize the breaker for 1SX014C and manually open the valve no more than 25% until SX system pressure approaches WS system pressure. • Open 1SX014C and demonstrate remote valve control per the following: 1) Energize the breaker for 1SX014C. 2) Electrically open 1SX014C to full OPEN. 3) Verify 1SX014C fully open. 4) Verify SX pressure stabilizes near WS pressure. • Shut 1SX006C.	
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Performs Plant Announcement on Pump Trip.	
	SRO	• Directs actions listed above. o Contacts Electrical Maintenance to investigate. o May conduct brief. • Enforces OPS expectations and standards • Declares per Technical Specification LCO 3.7.2, that HPCS is Inoperable immediately, and LCO 3.5.1, verify that RCIC is Operable within 1 hour and restore HPCS to Operable status within 14 days. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts brief on problem and status.	
Terminus: 'C' Shutdown Service Water system is being supplied from Plant Service Water.			

Event No.(s): 6		**Page** 1 **of** 1
Description: DCS Component Failure (Panel P680, Section 5004)		
Initiation: After SX problem has been resolved, and upon direction of the Lead Examiner.		
Cues: Annunciator CPS 5004-2L, DCS Component Failure, is received.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Communicates annunciator to SRO • Refers to the ARP • Investigates annunciator • Identifies that Display Generator #4 has failed resulting in the loss of #4 & #8 DCS Screens. o May attempt to cycle power supplies. Per CPS 3512.01, DCS & PMS, Step 8.8.4: • Depresses the DG 4 Bypass Pushbutton on P680, Section 5004 to reroute the information and restore the #4 & #8 DCS Screens. • Returns DCS #4 & #8 to original screens. • Re-depresses the DG 4 Bypass Pushbutton to restore it to normal operation.
	BOP	• Monitors plant to ensure operations remain within established bands. • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	SRO	• Directs actions listed above. o Notifies IMD and requests investigation. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts brief on problem and status.
Terminus: DG 4 has been bypassed and DCS Screens #4 & #8 have been restored.		

Operator Actions

Event No.(s): 7			**Page** 1 **of** 1
Description: **Trip of TBCCW Pump 'B'** (Panel P870, Section 5017)			
Initiation: After DCS Screens have been restored, and upon direction from the Lead Examiner			
Cues: Following Annunciators are received: CPS 5017-1A, Auto Trip Turbine Auxiliary Pump/Motor, CPS 5017-1B, Low Pressure TBCCW HX Outlet Hdr, CPS 5018-2A, Trouble GC System Local Panel 1PL10J.			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Communicates annunciators to SRO • Refers to the ARPs. o Performs Plant Announcement on Pump Trip Per CPS 5017-1A & 1B • Immediately take action for Loss of TBCCW per CPS 3204.01, Turbine Building Closed Cooling Water – Loss of TBCCW System: Section 8.3.1. Per CPS 3204.01, Turbine Building Closed Cooling Water: • Determines that TBCCW Storage Tank Level is >24". • If attempts are made to restart the tripped pump, it will not start. • Starts Standby Pump (1WT001PA) by: 1) Direct Area Operator to shut Pump Discharge Valve, 1WT003A. 2) Starts TBCCW Pump 'A' 3) Directs Area Operator to slowly open Pump Discharge Valve, 1WT003A. Per CPS 5018-2A, Trouble GC System Local Panel 1PL10J: • Have Area Operator check out Panel 1PL10J.	
	ATC	• Monitors on DCS TBCCW Storage Tank Level, computer points WT-BA401 & 402. • Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Monitors CD Pump Temperatures. o Performs plant Announcement on Pump Trip.	
	SRO	• Directs actions listed above. o Directs monitoring CD Pump temperatures. o Directs monitoring TBCCW Storage Tank Level. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts brief on problem and status.	
Terminus: 'A' TBCCW Pump has been started and system pressure has returned to normal.			

After Terminus is reached:

Security should call SRO and report that Thunderstorm watch has been upgraded to a Tornado Warning and a tornado was spotted at south edge of Clinton on an Easterly path. Warning should be for ~1 hour from present time.

Operator Actions

Event No.(s): 8		**Page** 1 **of** 1
Description: Tornado, Loss of RAT/ERAT, Failure of Div II DG to Auto Start.		
Initiation: After TBCCW Pump has been started, Tornado Warning has been reported, and upon direction of the Lead Examiner.		
Cues: Loss of power annunciators, no bus voltage, and a loss of lighting.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Reports Drywell pressure increasing due to loss of Drywell Cooling, if BOP Operator has not started the 'A' Drywell Cooling System. o May dispatch Area Operators due to the BOP Operator workload. Receives Annunciator 5003-5M, Cnmt/DW IA Isol Vlv Closed. • Notifies SRO and BOP of Isolation Valve closure.
Critical Task	BOP	• Reports numerous alarms indicating that power has been lost to the RAT and ERAT. • Determines that Div. II DG has failed to start. • Reports to SRO that Div. II DG has failed to start. • **Takes action to start Div. II DG and reenergize the bus.** • Dispatches Area Operators to assess damage to RAT and ERAT. • Monitors panels and reports loss of other equipment due to loss of bus. • Identifies that 'B' Drywell Cooling has tripped, and emergency starts the 'A' Drywell Cooling System. o Directs Area Operators to check out Drywell Chillers. • Identifies that Div 3 DG has tripped after scram due to loss of cooling water. o Directs Area Operators to check out various plant equipment.
	SRO	• Receives report from Security that a Tornado has been sighted coming across the lake, and heading for the Makeup Water Pumphouse • Reenters CPS 4302.01. Tornado/High Winds and directs Plant Announcements. • Receives report from Security that a Tornado has struck the Makeup Water Pumphouse. • Acknowledge that Div. II DG Output Breaker failed to close. o May direct BOP Operator to start Drywell Mixers. Per CPS 4200.01, Loss of AC Power • Directs actions to reenergize Bus 1B1 • Directs stabilization of RPV Pressure 800 to 1065 psig. • Directs actions related to loss of Drywell Cooling and Cnmt/DW IA Isolation.
Terminus: Actions related to the bus trip have been stabilized.		

Event No.(s): 9		**Page** 1 **of** 2
Description: RCIC Line Break.		
Initiation: After actions have been taken for Loss of RAT, & ERAT, and upon direction of Lead Examiner.		
Cues: Annunciator CPS 5065-6F, Sec. CNMT. Area High Temp.		
Time	**Position**	**Applicant's Actions or Behavior**

	ATC	Report EOP-8, Secondary Containment Control, Entry Condition on Area Temperature.
		
		Performs EOP actions as directed by SRO.
		Initiates a manual reactor scram before first Max Safe Temperature is exceeded, and performs Scram Choreography.
		
		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
		
		Per CPS 4100.01, Reactor Scram
		• Turn Mode Switch to SHUTDOWN
		  o Verify reactor power is lowering
		  o 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
		• Evacuate the containment.
		
		• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
		• Coordinates with BOP to monitor and control RPV level and press.

Event No.(s): 9		**Page** 1 **of** 2
Description: RCIC Line Break.		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	Carries out Scram Choreography by: • Making an Announcement 1) Reactor Scram 2) MDRFP may start 3) Evacuate the RCIC room 4) Evacuate the Containment • DetermineRod status and report to CRS Per CPS 5065-6F, Sec. CNMT. Area High Temp. • At 1H13-P678, monitor temperature recorders 1TR-CM326 and 1TR-CM327 and determine which area(s) is in alarm. • Observes on 1TR-CM326; Point 8, Aux Bldg RCIC Pump Room, & Point 9, Aux Bldg RCIC Instr Pnl Rm are alarming and increasing. • Reports that Point 18, Aux Bldg Steam Tunnel is alarming and increasing. o Dispatches an operator to RCIC room to investigate • Attempts to isolate RCIC • Reports that isolation valves did not close. Performs EOP actions as directed by SRO. • Verifies status of Fuel Building Ventilation and SGTS. • **Performs BLOWDOWN IAW EOP-3**
Critical Task		
	SRO	Enters EOP-1, RPV Control, and directs the following: • Directs the stabilization of RPV Pressure 800 to 1065 psig with Bypass Valves or SRVs. • Directs maintaining RPV Level, Level 3 to Level 8 by using Preferred Injection Systems. Expands Level Band to –30 to +40 inches Wide Range. Enters EOP-8, Secondary Containment Control, and directs the following: • Direct a manual reactor scram before first Max Safe Temperature is exceeded. • Directs actions of CPS 4100.01, Reactor Scram. • Carries out Scram Choreography by performing an Update: 1) Entering EOP-1 and 8 2) Entering Scram Off-Normal 3) Transient Annunciator Response is authorized • **Waits until 2 areas have exceeded Max Safe Values and then performs Blowdown IAW EOP-3**
Critical Task		

Terminus:

- Reactor has been depressurized through BLOWDOWN.
- RPV level stable and under control in required band
- Upon approval of lead examiner

Simulator Operator Instructions

Initial Setup

1. Verify daily lamp test completed
2. Reset to IC #95 for this scenario(Verify/Adjust Power to 73% to match turnover).
3. Place simulator in RUN
4. Verify the AR/PR server is running and stabilize AR/PR
5. Load lesson plan #8 for this scenario
6. Make sure CRD drive water D/P is in the expected range
7. Hotwell levels controllers are set at 50/45
8. Pressure set is at 922 psig.
9. Document rod position is step 32 complete on a CPS 9000.09D002
10. Turn on and advance recorders
11. Hang OOS tags per turnover
12. Identify T/S issues associated with OOS and turnover
13. Verify simulator conditions match the turnover
14. Provide marked up CPS 3005.01 complete to Step 8.1.3.

Event Triggers and Role Play

Event #

1. Start Shutdown Service Water (SX) Pump, 1SX01PC
   a. No Trigger
   b. Role play: **Area Operator:** Stationed in the Pump room to respond to requests from the MCR. If asked to perform inspection of SX Pump 'C' report that pump is running normally, and Area Fan is running.

2. Hydrogen Ignitor Division 1 Power Failure
   a. **Remote Trigger 1** on the signal from the Lead Examiner
   b. Role play: **Area Operator:** report that the 480V breaker for 1HG03JA Transformer is tripped. 1HG03JA appears to be deenergized.

      Booth Operator: if directed to attempt One-Time-Breaker-Closure, report that the breaker will not close.

3. Reduce Power With Flow
   a. No Trigger
   b. Role play: **Booth Operator:** If RR Vibration Data is rquested report that data is good.

~~4. High Generator Field Voltage~~
   ~~a. **Remote Trigger 2** on the signal from the Lead Examiner~~
   ~~b. Role play: None~~

5. Auto Trip of 'C' Shutdown Service Water (SX) Pump, 1SX01PC
   a. **Remote Trigger 3** on the signal from the Lead Examiner
   b. **Remote Triggers for opening 1SX014C**
      - Remote 8: opens breaker
      - Remote 9: manually opens valve to 25%
      - Remote 10: closes breaker.
   c. Role play: **Area Operator:** If sent to Div 3 SX Pump and Breaker, report that Pump appears to be fine but breaker has tripped on overcurrent.

      Electrical Maint: If called report that you will investigate, troubleshooting may take time.

~~6. DCS Component Failure~~
   ~~a. **Remote Trigger 4** on the signal from the Lead Examiner~~
   ~~b. Role Play: **Booth Operator:** BOP Operator may come back to cycle power supplies, report that power supplies hav been cycled.~~

7. Trip of TBCCW Pump 'B'
   a. **Remote Trigger 5** on the signal from the Lead Examiner
   b. Role play: **Area Operator:** when directed to check out Local Panel 1PL10J, report that the alarm is "Alternator Air Temperature High":

      Area Operator: if sent to the 'B' TBCCW Pump Breaker and/or Pump report that breaker is tripped and/or no problem with pump is apparent.

Area Operator: respond to requests to shut and open pump discharge valve.

8. Tornado, Loss of RAT/ERAT, Failure of Div II DG to Auto Start.
   a. Role Play: **Security:** Before initiating Remote Trigger,report that Thunderstorm watch has been upgraded to a Tornado Warning and a tornado was spotted at the south edge of Clinton on an Easterly path. Warning should be for 1 hour from present time.
   b. **Remote Trigger 6** on the signal from the Lead Examiner
   c. **Malfunction Removal:** Make sure the SX Discharge Pressure High is removed before Turbine Trip.
   d. Role play: **Security:** report that a Tornado has been sighted coming across the lake and heading for the Makeup Water Pumphouse.

      Security: Within 1 minute after entering loss of RAT and ERAT notify the MCR that a Tornado has struck the Makeup Water Pumphouse and you can see debris on and around the ERAT and RAT.

      Area Operator: If directed to check out Drywell Chiller, report that it appears to running fine.

9. RCIC Line Break, & Main Steam Line Break
   a. **Remote Trigger 7** on the signal from the Lead Examiner
   e. Role play: **Auxiliary Operator:** If requested to go to RCIC room report that as soon as entered the room you heard loud noise and it was very hot, so you backed out and closed the door.

      Booth Operator: If operator comes for report on rod status at RACCS, report that the "Full In" light is on in both cabinets.

      Booth Operator: 5 minutes after the scram announcement ensure that dedicated individual reports to MCR as IMD.

Operator Actions

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

Description: **Start Shutdown Service Water (SX) Pump, 1SX01PC** (Panel P601, Section 5062)

Initiation: Following Shift Turnover

Cues: Upon direction of the 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
	BOP	o Makes plant announcement on start of SX Pump. o Places Test Prep Switch for Div 3 SX in TEST. o Enters Short Duration Time Clock for Test Prep Switches in Test. Per CPS 3211.01, Shutdown Service Water (SX), place 'C' SX Pump, 1SX01PC in service: • Start SX Pump 1SX01PC. • Verify SX strainer outlet pressure ~ 75 psig. • Verify shut/shut 1SX014C. • Verify running or start 1VH01CC, SX Pump Room Supply Fan. • Verify 1SX006C, DG 1C HX Outlet Vlv opens.
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Contacts Chemistry for RWT manipulations.

Terminus: SX Pump 'C' has been started.

Operator Actions

Event No.(s): 2		**Page** 1 **of** 1
Description **Hydrogen Ignitor Division 1 Power Failure** (P800, Section 5041,Technical Specification Call, No Control Room Action)		
Initiation: Following startup of SX and upon direction of the Lead Examiner.		
Cues: Annunciator CPS 5041-5H, Hyd Ignitor Sys Div 1 Trouble, is received.		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	• Communicates annunciator to SRO • Refers to the ARP. • Dispatches Area Operator to Panel 1HG03JA to investigate cause. • Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Contacts Electrical Maintenance to investigate breaker.
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Monitors containment hydrogen concentration.
	SRO	• Receives report from BOP Operator. o Upon receiving report on system status directs that electrical maintenance be called. • Declares per Technical Specification LCO 3.6.3.2, that division 1 hydrogen ignitors is Inoperable and IAW Action A.1 restore the division to Operable status within 30 days. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts Brief on problem and status. o Directs One-Time-Closure-of-Breaker per OP-CL-108-101-1001.
Terminus: Technical Specification review complete.		

Operator Actions

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

Description: **Reduce Power With Flow**
(Panel P680, Section 5003)

Initiation: Following Technical Specification Call

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 3005.01, Unit Power Changes reduce reactor power. • Reduces power to 65% • Closes the Flow Control Valves individually while maintaining the mismatch within spec. • Monitors paramaters as flow is reduced. (Power, FCV Position, Flow, MWe)
	BOP	• Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.

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

Operator Actions

Event No.(s): 4			**Page** 1 **of** 1
Description: **High Generator Field Voltage** (Panel P680, Section 5008)			
Initiation: After power reduction, and upon direction from the Lead Examiner.			
Cues: Generator Field Voltage increases, #9 Bearing Vibration increases, & Annunciator CPS 5008-3E, Gen/Exciter Field Trouble, is received.			
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	• Communicates annunciator to SRO. • Refers to the ARP • Investigates cause of annunciator and status of Main Generator. o May attempt to control voltage with the AC Regulator. • Depresses MANUAL on the EXCITER FLD TRANSFER switch. • Reduces Generator Field Voltage to within normal band (22.0 –22.1 Kv) with the DC Regulator o May request a Line-In-The-Sand for tripping the Main Turbine on high vibration.	
	BOP	• Monitors plant to ensure operations remain within established bands. • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o May direct that the Main Turbine be tripped at a certain setpoint due to high vibration on #9 bearing. o Conducts brief on problem and status.	
Terminus: Generator Field Voltage has been returned to normal.			

Operator Actions

Event No.(s): 5		**Page** 1 **of** 1
Description: **Auto Trip of 'C' Shutdown Service Water (SX) Pump, 1SX01PC** (Panel P601, Section 5062)		
Initiation: After Voltage Regulator has been taken to MANUAL, and upon direction of Lead Examiner		
Cues: Annunciator 5064-1A, Auto Trip SSW Pump 1C is received.		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	• Communicates annunciator to SRO • Refers to ARP • Dispatches Area Operator to Pump and Breaker. o Performs Plant Announcement on Pump Trip. Per CPS 5064-1C, Auto Trip SSW Pump 1C: • Place SSW Pump 1C, 1SX01PC control switch in Pull-To-Lock. • IF An Emergency does not exist, • THEN Refer to CPS 3211.01, Shutdown Service Water (SX) to manually reopen 1SX014C, PSW To SSX 1C Hdr Isol Vlv to provide Plant Service Water to the SSW 1C system. Per CPS 3211.01, Shutdown Service Water (SX): • Deenergize the breaker for 1SX014C and manually open the valve no more than 25% until SX system pressure approaches WS system pressure. • Open 1SX014C and demonstrate remote valve control per the following: 1) Energize the breaker for 1SX014C. 2) Electrically open 1SX014C to full OPEN. 3) Verify 1SX014C fully open. 4) Verify SX pressure stabilizes near WS pressure. • Shut 1SX006C.
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Performs Plant Announcement on Pump Trip.
	SRO	• Directs actions listed above. o Contacts Electrical Maintenance to investigate. o May conduct brief. • Enforces OPS expectations and standards • Declares per Technical Specification LCO 3.7.2, that HPCS is Inoperable immediately, and LCO 3.5.1, verify that RCIC is Operable within 1 hour and restore HPCS to Operable status within 14 days. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts brief on problem and status.
Terminus: 'C' Shutdown Service Water system is being supplied from Plant Service Water.		

Event No.(s): 6			**Page** 1 **of** 1
Description: **DCS Component Failure** (Panel P680, Section 5004)			
Initiation: After SX problem has been resolved, and upon direction of the Lead Examiner.			
Cues: Annunciator CPS 5004-2L, DCS Component Failure, is received.			
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	• Communicates annunciator to SRO • Refers to the ARP • Investigates annunciator • Identifies that Display Generator #4 has failed resulting in the loss of #4 & #8 DCS Screens. o May attempt to cycle power supplies. Per CPS 3512.01, DCS & PMS, Step 8.8.4: • Depresses the DG 4 Bypass Pushbutton on P680, Section 5004 to reroute the information and restore the #4 & #8 DCS Screens. • Returns DCS #4 & #8 to original screens. • Re-depresses the DG 4 Bypass Pushbutton to restore it to normal operation.	
	BOP	• Monitors plant to ensure operations remain within established bands. • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.	
	SRO	• Directs actions listed above. o Notifies IMD and requests investigation. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts brief on problem and status.	
Terminus: DG 4 has been bypassed and DCS Screens #4 & #8 have been restored.			

Operator Actions

~~**Event No.(s):** 7~~		~~**Page** 1 **of** 1~~
~~**Description:** **Trip of TBCCW Pump 'B'** (Panel P870, Section 5017)~~		
~~**Initiation:** After DCS Screens have been restored, and upon direction from the Lead Examiner~~		
~~**Cues:** Following Annunciators are received: CPS 5017-1A, Auto Trip Turbine Auxiliary Pump/Motor, CPS 5017-1B, Low Pressure TBCCW HX Outlet Hdr, CPS 5018-2A, Trouble GC System Local Panel 1PL10J.~~		
~~**Time**~~	~~**Position**~~	~~**Applicant's Actions or Behavior**~~
	~~BOP~~	~~• Communicates annunciators to SRO~~ ~~• Refers to the ARPs.~~ ~~o Performs Plant Announcement on Pump Trip~~ ~~Per CPS 5017-1A & 1B~~ ~~• Immediately take action for Loss of TBCCW per CPS 3204.01, Turbine Building Closed Cooling Water – Loss of TBCCW System: Section 8.3.1.~~ ~~Per CPS 3204.01, Turbine Building Closed Cooling Water:~~ ~~• Determines that TBCCW Storage Tank Level is >24".~~ ~~• If attempts are made to restart the tripped pump, it will not start.~~ ~~• Starts Standby Pump (1WT001PA) by:~~ ~~1) Direct Area Operator to shut Pump Discharge Valve, 1WT003A.~~ ~~2) Starts TBCCW Pump 'A'~~ ~~3) Directs Area Operator to slowly open Pump Discharge Valve, 1WT003A.~~ ~~Per CPS 5018-2A, Trouble GC System Local Panel 1PL10J:~~ ~~• Have Area Operator check out Panel 1PL10J.~~
	~~ATC~~	~~• Monitors on DCS TBCCW Storage Tank Level, computer points WT-BA401 & 402.~~ ~~• Monitors reactor to ensure operations remain within established bands~~ ~~• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.~~ ~~o Monitors CD Pump Temperatures.~~ ~~o Performs plant Announcement on Pump Trip.~~
	~~SRO~~	~~• Directs actions listed above.~~ ~~o Directs monitoring CD Pump temperatures.~~ ~~o Directs monitoring TBCCW Storage Tank Level.~~ ~~• Enforces OPS expectations and standards~~ ~~• Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.~~ ~~o Conducts brief on problem and status.~~
~~**Terminus:** 'A' TBCCW Pump has been started and system pressure has returned to normal.~~		

After Terminus is reached:

Security should call SRO and report that Thunderstorm watch has been upgraded to a Tornado Warning and a tornado was spotted at south edge of Clinton on an Easterly path. Warning should be for ~1 hour from present time.

Operator Actions

Event No.(s): 8		**Page** 1 **of** 1
Description: Tornado, Loss of RAT/ERAT, Failure of Div II DG to Auto Start.		
Initiation: After TBCCW Pump has been started, Tornado Warning has been reported, and upon direction of the Lead Examiner.		
Cues: Loss of power annunciators, no bus voltage, and a loss of lighting.		
Time	**Position**	**Applicant's Actions or Behavior**
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Reports Drywell pressure increasing due to loss of Drywell Cooling, if BOP Operator has not started the 'A' Drywell Cooling System. o May dispatch Area Operators due to the BOP Operator workload. Receives Annunciator 5003-5M, Cnmt/DW IA Isol Vlv Closed. • Notifies SRO and BOP of Isolation Valve closure.
Critical Task	BOP	• Reports numerous alarms indicating that power has been lost to the RAT and ERAT. • Determines that Div. II DG has failed to start. • Reports to SRO that Div. II DG has failed to start. • **Takes action to start Div. II DG and reenergize the bus.** • Dispatches Area Operators to assess damage to RAT and ERAT. • Monitors panels and reports loss of other equipment due to loss of bus. • Identifies that 'B' Drywell Cooling has tripped, and emergency starts the 'A' Drywell Cooling System. o Directs Area Operators to check out Drywell Chillers. • Identifies that Div 3 DG has tripped after scram due to loss of cooling water. o Directs Area Operators to check out various plant equipment.
	SRO	• Receives report from Security that a Tornado has been sighted coming across the lake, and heading for the Makeup Water Pumphouse • Reenters CPS 4302.01. Tornado/High Winds and directs Plant Announcements. • Receives report from Security that a Tornado has struck the Makeup Water Pumphouse. • Acknowledge that Div. II DG Output Breaker failed to close. o May direct BOP Operator to start Drywell Mixers. Per CPS 4200.01, Loss of AC Power • Directs actions to reenergize Bus 1B1 • Directs stabilization of RPV Pressure 800 to 1065 psig. • Directs actions related to loss of Drywell Cooling and Cnmt/DW IA Isolation.
Terminus: Actions related to the bus trip have been stabilized.		

Event No.(s): 9		**Page** 1 **of** 2
Description: RCIC Line Break.		
Initiation: After actions have been taken for Loss of RAT, & ERAT, and upon direction of Lead Examiner.		
Cues: Annunciator CPS 5065-6F, Sec. CNMT. Area High Temp.		
Time	**Position**	**Applicant's Actions or Behavior**

	ATC	Report EOP-8, Secondary Containment Control, Entry Condition on Area Temperature.
		
		Performs EOP actions as directed by SRO.
		Initiates a manual reactor scram before first Max Safe Temperature is exceeded, and performs Scram Choreography.
		
		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
		
		Per CPS 4100.01, Reactor Scram
		• Turn Mode Switch to SHUTDOWN
		  o Verify reactor power is lowering
		  o 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
		• Evacuate the containment.
		
		• Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
		• Coordinates with BOP to monitor and control RPV level and press.

Event No.(s): 9		**Page** 1 **of** 2
Description: RCIC Line Break.		
Time	**Position**	**Applicant's Actions or Behavior**
Critical Task	BOP	Carries out Scram Choreography by: • Making an Announcement 1) Reactor Scram 2) MDRFP may start 3) Evacuate the RCIC room 4) Evacuate the Containment • DetermineRod status and report to CRS Per CPS 5065-6F, Sec. CNMT. Area High Temp. • At 1H13-P678, monitor temperature recorders 1TR-CM326 and 1TR-CM327 and determine which area(s) is in alarm. • Observes on 1TR-CM326; Point 8, Aux Bldg RCIC Pump Room, & Point 9, Aux Bldg RCIC Instr Pnl Rm are alarming and increasing. • Reports that Point 18, Aux Bldg Steam Tunnel is alarming and increasing. o Dispatches an operator to RCIC room to investigate • Attempts to isolate RCIC • Reports that isolation valves did not close. Performs EOP actions as directed by SRO. • Verifies status of Fuel Building Ventilation and SGTS. • **Performs BLOWDOWN IAW EOP-3**
Critical Task	SRO	Enters EOP-1, RPV Control, and directs the following: • Directs the stabilization of RPV Pressure 800 to 1065 psig with Bypass Valves or SRVs. • Directs maintaining RPV Level, Level 3 to Level 8 by using Preferred Injection Systems. Expands Level Band to –30 to +40 inches Wide Range. Enters EOP-8, Secondary Containment Control, and directs the following: • Direct a manual reactor scram before first Max Safe Temperature is exceeded. • Directs actions of CPS 4100.01, Reactor Scram. • Carries out Scram Choreography by performing an Update: 1) Entering EOP-1 and 8 2) Entering Scram Off-Normal 3) Transient Annunciator Response is authorized • **Waits until 2 areas have exceeded Max Safe Values and then performs Blowdown IAW EOP-3**

Terminus:

- Reactor has been depressurized through BLOWDOWN.
- RPV level stable and under control in required band
- Upon approval of lead examiner

Simulator Operator Instructions

Initial Setup

1. Verify daily lamp test completed
2. Reset to IC #95 for this scenario(Verify/Adjust Power to 73% to match turnover).
3. Place simulator in RUN
4. Verify the AR/PR server is running and stabilize AR/PR
5. Load lesson plan #8 for this scenario
6. Make sure CRD drive water D/P is in the expected range
7. Hotwell levels controllers are set at 50/45
8. Pressure set is at 922 psig.
9. Document rod position is step 32 complete on a CPS 9000.09D002
10. Turn on and advance recorders
11. Hang OOS tags per turnover
12. Identify T/S issues associated with OOS and turnover
13. Verify simulator conditions match the turnover
14. Provide marked up CPS 3005.01 complete to Step 8.1.3.

Event Triggers and Role Play

Event #

~~1. Start Shutdown Service Water (SX) Pump, 1SX01PC~~

~~a. No Trigger~~

~~b. Role play: **Area Operator:** Stationed in the Pump room to respond to requests from the MCR. If asked to perform inspection of SX Pump 'C' report that pump is running normally, and Area Fan is running.~~

~~2. Hydrogen Ignitor Division 1 Power Failure~~

~~a. **Remote Trigger 1** on the signal from the Lead Examiner~~

~~b. Role play: **Area Operator:** report that the 480V breaker for 1HG03JA Transformer is tripped. 1HG03JA appears to be deenergized.~~

~~**Booth Operator:** if directed to attempt One-Time-Breaker-Closure, report that the breaker will not close.~~

3. Reduce Power With Flow

a. No Trigger

b. Role play: **Booth Operator:** If RR Vibration Data is rquested report that data is good.

4. High Generator Field Voltage

a. **Remote Trigger 2** on the signal from the Lead Examiner

b. Role play: None

~~5. Auto Trip of 'C' Shutdown Service Water (SX) Pump, 1SX01PC~~

~~a. **Remote Trigger 3** on the signal from the Lead Examiner~~

~~b. **Remote Triggers for opening 1SX014C**~~

- ~~Remote 8: opens breaker~~
- ~~Remote 9: manually opens valve to 25%~~
- ~~Remote 10: closes breaker.~~

~~c. Role play: **Area Operator:** If sent to Div 3 SX Pump and Breaker, report that Pump appears to be fine but breaker has tripped on overcurrent.~~

~~**Electrical Maint:** If called report that you will investigate, troubleshooting may take time.~~

6. DCS Component Failure

a. **Remote Trigger 4** on the signal from the Lead Examiner

b. Role Play: **Booth Operator:** BOP Operator may come back to cycle power supplies, report that power supplies hav been cycled.

~~7. Trip of TBCCW Pump 'B'~~

~~a. **Remote Trigger 5** on the signal from the Lead Examiner~~

~~b. Role play: **Area Operator:** when directed to check out Local Panel 1PL10J, report that the alarm is "Alternator Air Temperature High":~~

~~**Area Operator**: if sent to the 'B' TBCCW Pump Breaker and/or Pump report that breaker is tripped and/or no problem with pump is apparent.~~

~~**Area Operator:** respond to requests to shut and open pump discharge valve.~~

8. Tornado, Loss of RAT/ERAT, Failure of Div II DG to Auto Start.
   a. Role Play: **Security:** Before initiating Remote Trigger,report that Thunderstorm watch has been upgraded to a Tornado Warning and a tornado was spotted at the south edge of Clinton on an Easterly path. Warning should be for 1 hour from present time.
   b. **Remote Trigger 6** on the signal from the Lead Examiner
   c. **Malfunction Removal:** Make sure the SX Discharge Pressure High is removed before Turbine Trip.
   d. Role play: **Security:** report that a Tornado has been sighted coming across the lake and heading for the Makeup Water Pumphouse.

      Security: Within 1 minute after entering loss of RAT and ERAT notify the MCR that a Tornado has struck the Makeup Water Pumphouse and you can see debris on and around the ERAT and RAT.

      Area Operator: If directed to check out Drywell Chiller, report that it appears to running fine.

9. RCIC Line Break, & Main Steam Line Break
   a. **Remote Trigger 7** on the signal from the Lead Examiner
   e. Role play: **Auxiliary Operator:** If requested to go to RCIC room report that as soon as entered the room you heard loud noise and it was very hot, so you backed out and closed the door.

      Booth Operator: If operator comes for report on rod status at RACCS, report that the "Full In" light is on in both cabinets.

      Booth Operator: 5 minutes after the scram announcement ensure that dedicated individual reports to MCR as IMD.

Overview

Makeup/Reject:	All CP's except J are in service. RO train #1 & 2 are in-service in auto to WD
ECCS:	RHR A, B, C, LPCS and HPCS are Operable. RCIC is Operable
SDC:	N/A
Electrical:	6.9 KV 1A & 1B and 4.16 1A &1B on UAT, 4160 Volt Busses 1A1, 1B1 & 1C1 are being supplied by RAT
Ventilation:	
Radwaste:	FP/FP 1B in service. 1WF Evap is in Hot Standby. A and B RT F/D are in service.

Plant Status

On Line Risk Green

Reactor

Operational Condition:	Mode 1
Total Core Flow:	_mlb/hr
FCV Position:	A: _____% B: _____%
Reactor Power	_73___% (<=100%) _2593__ MWt (<=3473) _859__ Mwe
Xenon:	Stable
RPV Level	_33__ in Narrow Range
RPV Pressure	_____ psi (< 1045)
In service SDC loop	None MODE 1

Containment

Suppression Pool Temperature:	_74.1_ F	(<=93.1 F)
Suppression Pool Level	_19.2_ ft	(19 ft 0 to 19 ft 5 in)
Drywell Pressure	_0.5__ psi	(0 to 1 psig)
Drywell to Containment dp:	_0.5__ psi	>=-.02 psid to <=1.0 psid
Drywell Avg Air Temperature:	_101__ F	(<=146.53 F)
Secondary Containment:	_0.45_ in WG	(>= 0.25 in WG vacuum)

BOP

Condenser Vacuum:	_27.1_ in Hg
Off – Gas Flow:	_____ scfm
Condensate Temperature:	_106_ F
Generator Reactive Load:	_264_MVARS

Plant Chemistry

CPI (goal < 1.1):	**1.00**
Reactor Sulfates (goal < 2)	1.31 ppb
Reactor Chlorides:	0.51 ppb
FW Iron (goal < 2.1)	0.85 ppb

Protected Equip:
Comments:

From "Excellence in Human Performance"

Leaders reinforce desired jobsite behaviors (Handbook page 17)
Participate in training program activities.

Leaders monitor and provide feedback to improve training program quality as well as to coach and reinforce individuals who meet or exceed behavior expectations and Standards of performance. During training activities, leaders guide workers on how actions or inactions influence reactor safety and on the potential consequences of mistakes. They give particular attention to recognizing error-likely situations and flawed defenses during tasks important to nuclear safety

Turnover

This page contains the Turnover information not found in the Overview page.

1. Power, xenon and time in life
   Power has been reduced from 84% with rods to a current power level of 73%. Plant shutdown is in progress.

2. Status of Tagged Out Equipment
   Service Air Compressor 1SA01C is OOS for bearing replacement

3. Shift conditions
   Day Shift Today

4. Weather Conditions
   Thunderstorm watch is in effect, In CPS 4302.01, Tornado/High Winds, Reporting is not being done.

5. Thermal Limit Problems or concerns

6. LCO's in effect

7. Surveillances in progress

8. Evolutions planned for the shift
   - *First: Run SX Pump C for 1 hour for EMD to obtain hot oil sample. Chemical Injection has been secured in preparation for starting SX Pump.*
   - *Second: Continue power reduction with flow to 65% power. Taking RR Pump vibration data at this flow line.*

9. Risk Levels

10. Other

Facility: Clinton Power Station Scenario No.: 2 A Operating Test No.: **NRC 2005**

Examiners: _____ Operators: _____

Initial Conditions:
73% power, Plant Shutdown in progress.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Continue normal plant shutdown and prepare to downshift RR Pumps after control rod pattern is verified.
- Start and run SX Pump 'C' for 1 hour to obtain hot oil sample.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	N-BOP/SRO	Start SX Pump 'C'
2	Annunc	TS-SRO	Hydrogen Ignitor Division 1 Power Failure
3	N/A	R-ATC/SRO	Reduce power with flow
~~4~~	~~EG03 Override~~	~~I-ATC/SRO~~	~~High Generator Field Voltage requiring Manual Control of Voltage Regulator.~~
5	CW04C Override	C-BOP TS-SRO	SX Pump 'C' trips requiring manually opening 1SX014C. HPCS Inoperable.
~~6~~	~~DC02D~~	~~C-ATC/SRO~~	~~DCS Component Failure~~
7	RM01A	C-BOP/SRO	Trip of TBCCW Pump
8	ED02A ED02B	M-ALL C-BOP	Tornado, Loss of RAT & ERAT, Failure of DG Div II Diesel to Auto Start.
9	Override	M-ALL	RCIC Line Break that results in leakage into 2 rooms..

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

Scenario No.: 2 Operating Test No.: ILT0401-1

Narrative Summary

Event # Description

1. The BOP operator will start SX 1C Pump IAW CPS No. 3211.01, Section 8.1.2 to perform PMT.
2. Annunciator CPS 5041-5H, Hyd Ignitor Sys Div 1 Trouble, is received. Technical Specifications will be evaluated and LCO 3.6.3.2, Action A1 will require the Hydrogen Ignitor Division to be restored to Operable status within 30 days.
3. Power reduction with flow will commence. Power reduction can be halted upon direction from the Lead Examiner by initiating next event.
4. ~~Generator field voltage will start to increase requiring the ATC Operator to take manual control of the voltage regulator and adjust voltage. Annunciator CPS 5008-3E, Gen/Exciter Field Trouble, will also initiate alerting the operator to the problem.~~
5. The Shutdown Service Water (SX) pump, which is running for PMT, will trip. The BOP operator will need to open the 1SX014C valve to restore cooling water to the SX components. Technical Specifications LCO 3.7.2, Action A. will be evaluated which will require that HPCS be declared Inoperable immediately.
6. ~~Annunciator 5004-2L, DCS Component Failure, causing a loss of the #4 and #8 DCS screens. This will require the RO to reroute the information by operating the DG 4 Bypass pushbutton on the P680 panel.~~
7. A trip of TBCCW Pump 'B' will require the BOP Operator to start the standby pump.
8. Security will report that the Thunderstorm Watch has been upgraded to a Tornado Warning and that a Tornado has been sighted on the South edge of Clinton. A Tornado will tear through the RAT and ERAT causing a loss of off-site power. The Div II DG will fail to auto start.
9. A RCIC line break. will develop that simulates leakage into both the RCIC romm and the Steam Tunnel. This will cause entry into EOP-8, Secondary Containment Control as temperatures exceed Max Safe Values.

EOP
1, 8, 3

Critical tasks:

- Perform actions to re-energize 4160V Bus 1B1.
- Performs Blowdown when two or more areas are above the Max Safe Value.

Facility: Clinton Power Station Scenario No.: 2 B Operating Test No.: **NRC 2005**

Examiners: _____ Operators: _____

Initial Conditions:
73% power, Plant Shutdown in progress.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Continue normal plant shutdown and prepare to downshift RR Pumps after control rod pattern is verified.
- Start and run SX Pump 'C' for 1 hour to obtain hot oil sample.

Event No.	Malf. No.	Event Type*	Event Description
~~1~~	~~N/A~~	~~N-BOP/SRO~~	~~Start SX Pump 'C'~~
~~2~~	~~Annunc~~	~~TS-SRO~~	~~Hydrogen Ignitor Division 1 Power Failure~~
3	N/A	R-ATC/SRO	Reduce power with flow
4	EG03 Override	I-ATC/SRO	High Generator Field Voltage requiring Manual Control of Voltage Regulator.
~~5~~	~~CW04C Override~~	~~C-BOP TS-SRO~~	~~SX Pump 'C' trips requiring manually opening 1SX014C. HPCS Inoperable.~~
6	DC02D	C-ATC/SRO	DCS Component Failure
~~7~~	~~RM01A~~	~~C-BOP/SRO~~	~~Trip of TBCCW Pump~~
8	ED02A ED02B	M-ALL C-BOP	Tornado, Loss of RAT & ERAT, Failure of DG Div II Diesel to Auto Start.
9	Override	M-ALL	RCIC Line Break that results in leakage into 2 rooms..

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

Scenario No.: 2 Operating Test No.: ILT0401-1

Narrative Summary

Event # Description

1. ~~The BOP operator will start SX 1C Pump IAW CPS No. 3211.01, Section 8.1.2 to perform PMT.~~
2. ~~Annunciator CPS 5041-5H, Hyd Ignitor Sys Div 1 Trouble, is received. Technical Specifications will be evaluated and LCO 3.6.3.2, Action A1 will require the Hydrogen Ignitor Division to be restored to Operable status within 30 days.~~
3. Power reduction with flow will commence. Power reduction can be halted upon direction from the Lead Examiner by initiating next event.
4. Generator field voltage will start to increase requiring the ATC Operator to take manual control of the voltage regulator and adjust voltage. Annunciator CPS 5008-3E, Gen/Exciter Field Trouble, will also initiate alerting the operator to the problem.
5. ~~The Shutdown Service Water (SX) pump, which is running for PMT, will trip. The BOP operator will need to open the 1SX014C valve to restore cooling water to the SX components. Technical Specifications LCO 3.7.2, Action A. will be evaluated which will require that HPCS be declared Inoperable immediately.~~
6. Annunciator 5004-2L, DCS Component Failure, causing a loss of the #4 and #8 DCS screens. This will require the RO to reroute the information by operating the DG 4 Bypass pushbutton on the P680 panel.
7. ~~A trip of TBCCW Pump 'B' will require the BOP Operator to start the standby pump.~~
8. Security will report that the Thunderstorm Watch has been upgraded to a Tornado Warning and that a Tornado has been sighted on the South edge of Clinton. A Tornado will tear through the RAT and ERAT causing a loss of off-site power. The Div II DG will fail to auto start.
9. A RCIC line break. will develop that simulates leakage into both the RCIC romm and the Steam Tunnel. This will cause entry into EOP-8, Secondary Containment Control as temperatures exceed Max Safe Values.

EOP
1, 8, 3

Critical tasks:

- Perform actions to re-energize 4160V Bus 1B1.
- Performs Blowdown when two or more areas are above the Max Safe Value.

Overview

Makeup/Reject:	All CP's except J are in service. RO train #1 & 2 are in-service in auto to WD
ECCS:	RHR A, B, C, LPCS and HPCS are Operable. RCIC is Operable
SDC:	N/A
Electrical:	6.9 KV 1A & 1B and 4.16 1A &1B on UAT, 4160 Volt Busses 1A1, 1B1 & 1C1 are being supplied by RAT
Ventilation:	
Radwaste:	FP/FP 1B in service. 1WF Evap is in Hot Standby. A and B RT F/D are in service.

Plant Status

On Line Risk Green

Reactor

Operational Condition:	Mode 1
Total Core Flow:	____ mlb/hr
FCV Position:	A: _____% B: _____%
Reactor Power	_73___% (<=100%) _2593__ MWt (<=3473) _859__ Mwe
Xenon:	Stable
RPV Level	_33__ in Narrow Range
RPV Pressure	_____ psi (< 1045)
In service SDC loop	None MODE 1

Containment

Suppression Pool Temperature:	_74.1_ F	(<=93.1 F)
Suppression Pool Level	_19.2_ ft	(19 ft 0 to 19 ft 5 in)
Drywell Pressure	_0.5__ psi	(0 to 1 psig)
Drywell to Containment dp:	_0.5__ psi	>=-.02 psid to <=1.0 psid
Drywell Avg Air Temperature:	_____ F	(<=146.53 F)
Secondary Containment:	_0.45_ in WG	(>= 0.25 in WG vacuum)

BOP

Condenser Vacuum:	_27.1_ in Hg
Off – Gas Flow:	_____ scfm
Condensate Temperature:	_106_ F
Generator Reactive Load:	_264_ MVARS

Plant Chemistry

CPI (goal < 1.1):	**1.00**
Reactor Sulfates (goal < 2)	1.31 ppb
Reactor Chlorides:	0.51 ppb
FW Iron (goal < 2.1)	0.85 ppb

Protected Equip Comments: .

From "Excellence in Human Performance"

Leaders reinforce desired jobsite behaviors (Handbook page 17)

Participate in training program activities.

Leaders monitor and provide feedback to improve training program quality as well as to coach and reinforce individuals who meet or exceed behavior expectations and Standards of performance. During training activities, leaders guide workers on how actions or inactions influence reactor safety and on the potential consequences of mistakes. They give particular attention to recognizing error-likely situations and flawed defenses during tasks important to nuclear safety

Turnover

1. Power, xenon and time in life
   Plant startup in progress power level is currently 73%. Holding at this power level. Target rod pattern is not yet established, no CRAM Sheet is available.

2. Status of Tagged Out Equipment
   Service Air Compressor 1SA01C is OOS for bearing replacement.

3. Shift conditions
   Day Shift Today

4. Weather Conditions
   Thunderstorm watch is in effect, In CPS 4302.01, Tornado/High Winds, Announcements are not being made.

5. Thermal Limit Problems or concerns

6. LCO's in effect

7. Surveillances in progress

8. Evolutions planned for the shift
   Shift Plant Service Water (WS) Pumps to 'A' in service and 'C' secured.
   Startup will recommence later in shift after engineering resolution of condensate pump vibration issues. All condensate pumps are available.

9. Risk Levels

10. Other

Facility: Clinton Power Station Scenario No.: 3 Operating Test No.: **ILT0401-1**

Examiners: _____ Operators: _____

Initial Conditions:
73% Reactor Power, steady state, waiting on surveillance testing to complete.
Thunderstorm Watch is in effect.
Service Air Compressor 1SA01C is OOS for Motor Bearing Replacement.

Turnover:

- Shift Plant Service Water (WS) Pumps to 'A' in service and 'C' secured.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	TS-SRO	SLC Pump 'A' Oil Sightglass Empty
2	N/A	N-BOP/SRO	Shift WS Pumps
3	Annunc	C-BOP	Low Flow CW Pump 1C Brg Seal Water
4	CU01A	C-ATC/SRO	Loss of 'A' RT Filter Demin.
5	TU02	I-BOP	Turbine LO Temp Controller Failure
6	Annunc	C-ATC	Low Pressure RFP 1A Seal Water.
7	N/A	R-ATC/SRO	Power Reduction to remove RFP 1A from service.
8	Override	TS-SRO	LPCS/RHR A Water Leg Pump trip
9	Annunc RP01	M-ALL C-BOP	Seismic Event, Main Turbine High Vibration, with Scram and ATWS, SLC Squib Valves fail to fire.

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

Scenario No.: 3 Operating Test No.: ILT0401-1

Narrative Summary

Event # Description

1. A report will be made by the Area Operator stating that the Oil Sightglass for the 'A' SLC Pump is empty and there is oil on the skid. This will require entry into Technical Specification 3.1.7, Action A.1, which requires restoring the SLC Pump to Operable status within 7 days.
2. The BOP Operator will shift Plant Service Water Pumps, placing 'A' WS Pump in service and securing 'C' WS Pump.
3. Annunciator 5041-3G, Low Flow CW Pump 1C Brg Seal Water, is received. This will require the BOP operator to secure the 1C CW Pump.
4. Annunciator CPS 5000-2C, F-D System Trouble will be received. The ATC Operator will then need to analyze system conditions and lineup system for 2 pump /1 filter operation.
5. The BOP operator will need to diagnose the problem with the temperature controller and take manual control to stabilize temperature.
6. Annunciator 5002-2A, Low Pressure Reactor Feed Pump 1A Seal Water, will be received. The RO will determine that seal pressure cannot be restored and will remove the RFP from service.
7. A power reduction to <65% will be initiated to allow RFP 1A to be removed from service.
8. Annunciator 5063-3H, LPCS/RHR A Water Leg Pump Auto Trip, is received. BOP operator will determine that the Water Leg Pump has tripped. This will require entry into Technical Specification 3.5.1, Action A.1, which requires restoring the low pressure subsystem to Operable status within 7 days.
9. A seismic event exceeding an SSE condition will be received. This will require an orderly plant shutdown. The Main Turbine will experience high vibration which will require a manual scram with ATWS. The SLC Squib Valves will not fire preventing SLC Pump 'B' from injecting into the reactor. This will require Alternate Boron Injection.

EOP
6, 1A, (Alternate Boron Injection)

Critical tasks:

- Inhibit ADS
- Insert Control Rods to Shutdown the Reactor.
- Terminate and Prevent Injection to reduce power.

Operator Actions

Event No.(s): 1			**Page** 1 **of** 1
Description	**SLC Pump 'A' Oil Sightglass Empty** (Technical Specification Call, No Control Room Action)		
Initiation: Completion of turnover.			
Cues: Information from turnover.			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Receives call from Area Operator that the Oil Sightglass for SLC Pump 'A' is empty and there is oil on the skid. • Communicates information to SRO o Recommends opening the breaker for SLC Pump 'A'. o Recommends removing the key for SLC Pump 'A'. • Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.	
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Recommends opening the breaker for SLC Pump 'A'. o Recommends removing the key for SLC Pump 'A'.	
	SRO	• Receives report from BOP Operator o Directs the opening of the breaker for SLC Pump 'A'. o Directs the removal of the key for SLC Pump 'A'. • Reviews Technical Specifications for applicabilty due to isolation of SLC Pump 'A'. • Declares per Technical Specification LCO 3.1.7, that SLC Pump 'A' is inoperable and IAW Action A.1 restore SLC to Operable status within 7 days. • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.	
Terminus: Technical Specification review complete.			

Operator Actions

Event No.(s): 2			**Page** 1 **of** 1
Description: **Shift Plant Service Water Pumps (WS)** (Panel P800, Section 5041)			
Initiation: Following Shift Turnover			
Cues: Upon direction of the SRO			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	o Makes a plant announcement for shifting WS pumps as directed. Per CPS 3212.01, Plant Service Water (WS), Section 8.1.3, shift WS Pumps: • Verifies that a liquid discharge is not in progress. • Notifies Chemistry of pending WS system changes. • Direct an Area Operator to perform prestart checks per step 3. • Start 'A' WS Pump, 1WS01PA. • Verify that 1WS002A, WS Pump A Disch Vlv opens. • Direct an Area Operator to verify proper operation of WS Pump 'A'. • Stop 'C' WS Pump. • Return Control Switch to AUTO. • Verify that 1WS002C, WS Pump C Disch Vlv shuts.	
	ATC	o Makes a plant announcement for shifting WS pumps as directed. • Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts an Update on WS Pump shift.	
Terminus: 'A' WS Pump has been started and 'C' WS pump has been secured.			

Operator Actions

Event No.(s): 3			**Page** 1 **of** 1
Description: **Low Flow CW Pump 1C Brg Seal Water** (Panel P800, Section 5041)			
Initiation: Following Shift of WS Pumps, and upon direction from the Lead Examiner.			
Cues: Annunciator CPS 5041-3G, Low Flow CW Pump 1C Brg Seal Water, is received.			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Communicates annunciator to SRO • Refers to the ARP. Per, CPS 5041-3G, Low Flow CW Pump 1C Brg Seal Water: • Directs Area Operator to flush CW Pump C TW supply strainer 1TW01MC. • Monitor CW pump bearing temperatures. • Trips 1C CW Pump. o Makes a plant announcement on shutting down CW Pump 1C as directed.	
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Makes a plant announcement on shutting down CW Pump 1C as directed.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts a brief on shutting down CW Pump 1C. o Enters CPS 4004.02, Loss of Vacuum. (Vacuum should not substantially change) o Directs a followup to complete shutdown of the pump per CPS 3113.01, Circulating Water (CW).	
Terminus: CW Pump 1C has been tripped.			

Operator Actions

Event No.(s): 4			**Page** 1 **of** 1
Description: **'A' Reactor Water Cleanup Filter Demin Trips** (Panel P680, Section 5000)			
Initiation: After Circ Water system has stabilized and upon direction of the Lead Examiner.			
Cues: Annunciator CPS 5000-2C, F-D System Trouble			
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	• Communicates Annunciator to SRO. • Refers to the ARP. Per CPS 5000-2C, F-D System Trouble • Investigate the cause of the alarm at instrument rack 1G36-P001 and control panel 1G36-P002. Per CPS 3303.01, Reactor Water Cleanup (RT), Section 8.3.2.1 or 8.1.3. • **IF** RWCU pump(s) did not trip on low flow • **THEN** Throttle 1G33-F044, RWCU Filter/Demin Bypass to maintain ~300 gpm flow with two pumps.	
	BOP	• Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Dispatches Area Operator to Filter Demin Panel.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.	
Terminus: Reactor Water Cleanup has been restored to normal operation.			

Operator Actions

Event No.(s): 5			**Page** 1 **of** 1
Description: **Turbine LO Temperature Controller Failure** (Panel P870, Section 5017 & 5018)			
Initiation: After the RT system is restored, and upon direction of the Lead Examiner.			
Cues: Annunciator CPS 5018-3A, High Temp Turb-Gen Lube Oil			
Time	**Position**	**Applicant's Actions or Behavior**	
	BOP	• Communicates the Annunciator to the SRO. • Refers to the ARP. Per CPS 5018-3A, High Temp Turb-Gen Lube Oil: • Direct an Area Operator to check the Lube Oil Coolers. • 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.	
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Checks for excessive temperatures across the turbine bearings.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.	
Terminus: Turbine LO Temperature Controller has been placed in MANUAL and temperature has returned to normal.			

Operator Actions

Event No.(s):	6	**Page** 1 **of** 2	
Description:	**Low Pressure Reactor Feed Pump (RFP) 1A Seal Water & Removal of RFP 1A From Service.** (Panel P680, Section 5002)		
Initiation:	Turbine LO Temperature has been stabilized, and upon direction of Lead Examiner		
Cues:	Annunciator CPS 5002-2A, Low Press RFP 1A Seal Water		
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	• Communicates the Annunciator to the SRO. • Refers to the ARP. Per CPS 5002-2A, Low Press RFP 1A Seal Water: • Verify condensate booster pump discharge header pressure > 350 psig. • Direct an Area Operator to swap seal water inlet filter to the standby filter. • Determines that seal water pressure is still low after the filter swap and prepares to remove RFP 1A from Service.	
NOTE		See next step for lowering power to remove RFP from service.	
		Per CPS 3103.01, Feedwater: • Discuss with the SRO the need to lockout the RR FCVs during the TDRFP S/D. • Transfer control of 1A RFP to MANUAL on the RFP A Flow Controller (Preferred). 1) Ensure the non-operating feed pump is selected on the Start Mode Actuator Selector. 2) Depress the RFP Flow Controller MANUAL push-button. Or • Manual Speed Control Potentiometer (Alternate). 1) Adjust the Manual Speed Control potentiometer until a zero milliamp signal is indicated on the deviation meter. 2) Transfer control to the Manual Speed Control Potentiometer by pressing the MAN XFR push-button. • Reduce off-going turbine speed as necessary, to transfer all flow to the operating feed pump. • Reduce TDRFP speed to minimum. If the "Preferred Method" was used then before going below 2370 rpm transfer must be made to the Manual Speed Control Potentiometer to reduce speed to minimum. • Press the RFPT 1A trip push-button and verify the HP & LP Stop Valves close. • Shut the RFP 1A Discharge Valve, 1FW002A. • Direct Area Operator to shut CB009A/FW038A	

Event No.(s): 6		**Page** 2 **of** 2
Description: **Low Pressure Reactor Feed Pump (RFP) 1A Seal Water & Removal of RFP 1A From Service.** (Panel P680, Section 5002)		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	• Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. o Verifies the 1A RFP Turning Gear engages when the TDRFP stops.
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures.
Terminus: 'A' TDRFP has been secured.		

Operator Actions

Event No.(s): 7			**Page** 1 **of** 1
Description: **Power Reduction To Remove RFP 1A From Service** (Panel P680, Section 5001)			
Initiation: Upon direction of the SRO			
Cues: Upon determination that RFP needs to be removed from service.			
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	Per, CPS 3005.01, Unit Power Changes. • Reduces power to at least 65% with Recirc Flow. • Closes the Flow Control Valves individually while maintaining the mismatch within spec. • Monitors parameters as flow is reduced. (Power, FCV Position, Flow, MWe) o Conduct Plant Announcement on power reduction as directed. o Evaluates Power to Flow Map.	
	BOP	• Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions o Conduct Plant Announcement on power reduction as directed.	
	SRO	• Directs actions listed above. • Enforces OPS expectations and standards • Ensures operations are conducted within the bounds of Tech Specs and IAW Operations standards and approved procedures. o Conducts a brief on the power reduction. o Institutes Transient Annunciator Response during the power reduction. o Calls RP & Chemistry about power reduction. o Contacts Reactor Engineer for concurrence on power reduction.	
Terminus: Power reduction to at least 65% has been completed.			

Operator Actions

Event No.(s): 8		**Page** 1 **of** 1
Description: LPCS/RHR A Water Leg Pump Trip		
Initiation: After A TDRFP has been secured, and upon direction of the Lead Examiner.		
Cues: Annunciator 5063-3H, LPCS/RHR A Water Leg Pump Auto Trip		
Time	**Position**	**Applicant's Actions or Behavior**
	BOP	• Communicates annunciators to the SRO. • Refers to ARPs • Determines that LPCS/RHR A Water Leg Pump has tripped. • Dispatches Area Operators to check the pump and breaker. • Dispatches Area Operator to pull control power fuses on LPCS and RHR A Pumps.
	ATC	• Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions.
	SRO	• Reviews Technical Specifications for applicabilty due to the Water Leg Pump trip. • Declares the following Technical Specification LCOs are affected: 1) 3.5.1, Action A.1, ECCS 1 subsystem inoperable, requires restoring low pressure subsystem to Operable status within 7 days. 2) 3.5.1, Action C.1, ECCS 2 subsystems inoperable, requires restoring one low pressure subsystem to Operable status within 72 hours. 3) 3.6.1.7, Action A.1, Containment Spray, requires restoring subsystem to Operable status within 7 days. 4) 3.6.1.9, Action A.1, FW Leakage Control, requires restoring subsystem to Operable status within 30 days. 5) 3.6.2.3, Action A.1, Suppression Pool Cooling, requires restoring subsystem to Operable status within 7 days. • Directs pulling the control power fuses for LPCS and RHR A. o Pursues 1 time fuse replacement for the Water Leg Pump per OP-CL-108-101-1001,Section 3.8.1. o Conducts a brief on problem and status.
Terminus: Actions related to the Water Leg Pump trip have been completed.		

Operator Actions

Event No.(s):	9, & 10	**Page** 1 **of** 3	
Description: Seismic Event, Main Turbine High Vibration, ATWS, and SLC Squib Valves Fail to Fire.			
Initiation: After Tech Spec call for Water Leg Pump trip, and upon direction of Lead Examiner.			
Cues: Seismic Event Annunciators are received			
Time	**Position**	**Applicant's Actions or Behavior**	
	ATC	• Acknowledges Seismic Event Annunciators and reports to the SRO. • Refers to the ARPs • Monitors reactor to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Upon direction from the SRO checks the following key parameters: 1) Reactor power 2) RPV pressure 3) RPV level 4) Feed flow 5) Steam flow 6) Generator load 7) Turbine vibration	
CUE		**PROVIDE CUE SHEET APPROPRIATE TO THE EVENT. IF ONLY OBE ANNUNCIATORS ARE IN, PROVIDE OBE CUE SHEET. IF SSE ANNUNCIATORS ARE IN PROVIDE SSE CUE SHEET.**	
		Receives annunciator 5007-4D, High Vibr Turb Shaft (Pre Trip), or notices increasing turbine vibrations while monitoring panels. • Refers to CPS 3105.01, Turbine (TG, EHC, TS) 1) If vibration reaches 10 mils, immediately trip the turbine. 2) Verify turbine oil cooler outlet temperature 100°F to 120°F (may not do if decision is made to trip turbine earlier) 3) Places mode switch in shutdown and manually trips the Main Turbine. Per CPS 4100.01, Reactor Scram: • Performs Scram Choreography 1) Mode Switch in Shutdown, Power is…(Still above 5%) 2) Rod status is…(rods still out) 3) Reactor power is…and trend 4) Reactor pressure is…and trend 5) Reactor level is…and trend • Stabilize Reactor pressure 800 to 1065 psig or per directed band. • Calls Area Operator to bypass the CRD Pump Suction Filters. Per EOP-1A, ATWS RPV Control:	
Critical Task		• **Inhibit ADS.(May be done by BOP)** • Arm and Depress the Manual Scram Pushbuttons • Initiate ARI	
Critical Task		• **Carry out actions to insert control rods per 4411.08** 1) Inserts control rods until locked out by Rod Pattern Controller	

Terminate and Prevent	2) Directs that Rod Pattern Controller be bypassed. 3) Continues rod insertion • **Terminate and Prevent injection from Condensate/Feedwater.** ☞*Recommended step sequence only - may be performed in any order based on existing plant conditions.* *1.Place RFPT Flow Controller A/B, C34-R601A/B in MANUAL/min.* *2 Shut 1FW004, MDRFP Feed Reg Valve by placing:* *Flow Control RFPT C, C34-R601C in MANUAL/min.* *and* *Start-Up Level Control, C34-R602 in MANUAL/min.* ☞*1FW004 may not fully shut due to a loss of hydraulics. Verify status via annunciator 5002-1M and DCS.* *3. Shut 1FW002A/B, RFP 1A/1B Disch Vlvs.* *4.Shut 1FW003A/B, RFP Discharge Bypass Valves, by placing Flow Controller, FC-FW231 in minimum.* *5.**IF** Feedwater flow cannot be terminated as above,* ☞*Valve leakage which will not result in a significant delay in the lowering of RPV level does not require any further flow termination attempts.* ***THEN** Using as necessary for plant conditions:* *Shut 1B21-F065A/B, RPV Inlet Vlvs.* ☞*OK to use RPV inlet Vlv 1B21-F065A(B) Stop push-button to re-initiate feed.* *Stop running FW/CD/CB pumps.* • Holds RPV Level in prescribed band (Band B: -162 in.(TAF) and –60 in.)

Event No.(s):	9, & 10	**Page** 2 **of** 3

Description: Seismic Event, Main Turbine High Vibration, ATWS, and SLC Squib Valves Fail to Fire.

Time	Position	Applicant's Actions or Behavior
	BOP	Upon receiving the Seismic Event Annunciators: o Makes Plant Announcement as directed. • Monitors plant to ensure operations remain within established bands • Monitors control room panels and notifies the SRO of any unusual or unexpected conditions. • Upon direction from the SRO checks the following key parameters: 1) Electrical distribution system integrity 2) Off-gas, Area Radiation & Process Radiation Monitors 3) Leak detection systems 4) Balance of plant annunciators
CUE		**PROVIDE CUE SHEET APPROPRIATE TO THE EVENT. IF ONLY OBE ANNUNCIATORS ARE IN, PROVIDE OBE CUE SHEET. IF SSE ANNUNCIATORS ARE IN PROVIDE SSE CUE SHEET.**
		Per CPS 4100.01, Reactor Scram: • Performs Scram Choreography by: 1) Making an announcement • Reactor Scram • MDRFP may start • Evacuate the RCIC room • Evacuate the Containment 2) Determine rod status and report to CRS
Critical Task		**Inhibit ADS (May be Done by ATC)**
		Per EOP-1A, ATWS RPV Control: • Starts SLC and identifies that squib valves have not fired. 1) Per SRO direction initiates actions for Alternate Boron Injection per CPS 4411.10
Critical Task		• **Terminate and Prevent injection of HPCS, RCIC, LPCS, & LPCI to lower level**
Terminate and Prevent		***Removal of 'QS' Relay*** *[HARD CARD at P601]* *[Prevents TB MCC 1M shunt trip which maintains MDRFP availability.]* ***IF*** *Div 2 LPCI B/C initiation has not occurred, [Manual or Automatic (Level 1/HiDW pressure)],* ***THEN*** *At backpanel 1H13-P851 (Div 2), Bay B:* *Remove relay 1UAY-AP567B (QS).(Third row from bottom, Second relay from the left.)* ***HPCS - Initiation Signal NOT Present*** *[HARD CARD at P601]* *1 While holding control switch in CLOSE for 1E22-F004, HPCS To CNMT Outbd Isln Valve:* *Arm and Depress HPCS MANUAL INITIATION push-button.*

Terminate and Prevent	*2 After starting current has decayed, stop HPCS Pump, 1E22-C001.* ***HPCS*** *- **Initiation Signal Present** [HARD CARD at P601]* *1 Stop HPCS Pump, 1E22-C001.* *2 Shut 1E22-F004, HPCS To CNMT Outbd Isln Valve.* ***RCIC*** *[HARD CARD at P601]* *1 Depress RCIC TURBINE REMOTE TRIP push-button.* *2. Shut 1E51-C002, RCIC Turbine Trip Valve Stem.* *3.Shut 1E51-F013, RCIC Pump Disch To Rx Outbd Isol Valve.* ***LPCI B/C*** *- **Initiation Signal NOT Present*** *[HARD CARD at P601]* *1. Verify/remove relay 1UAY-AP567B (QS) per step 2.1.* *2. Arm and Depress LPCI FM RHR B & C MANUAL INITIATION push-button.* *3. Provide a CLOSE signal to 1E12-F042B, LPCI Fm RHR B Shutoff Valve.* *4. Provide a CLOSE signal to 1E12-F042C, LPCI Fm RHR C Shutoff Valve.* *5. Shut 1E12-F053B, RHR B To Feedwater S/D Cooling Rtrn Vlv.* *6. Shut 1E12-F023, RHR B Supp To Rx Head Spray Valve.* *7. Start DW/CNMT Mixing Compressors per P800 HARD CARD or 4411.11.* ***LPCI B/C*** *- **Initiation Signal Present** [HARD CARD at P601]* *1. Provide a CLOSE signal to 1E12-F042B, LPCI Fm RHR B Shutoff Valve.* *2. Provide a CLOSE signal to 1E12-F042C, LPCI Fm RHR C Shutoff Valve.* *3. Shut 1E12-F053B, RHR B To Feedwater S/D Cooling Rtrn Vlv.* *4. Shut 1E12-F023, RHR B Supp To Rx Head Spray Valve.* *5.Start DW/CNMT Mixing Compressors per P800 HARD CARD or 4411.11.* • Holds RPV Level in prescribed band (Band B: -162 in.(TAF) and –60 in.)

Event No.(s):	9, & 10	**Page** 3 **of** 3
Description: Seismic Event, Main Turbine High Vibration, ATWS, and SLC Squib Valves Fail to Fire.		

Time	Position	Applicant's Actions or Behavior
	SRO	Seismic Event Annunciators are received, directing entry into CPS 4301.01, Earthquake o Conducts brief on Seismic Event o Directs Plant Announcement o Enters Transient Annunciator Response Enters CPS 4301.01, Earthquake, and directs the following: • Determines that is is a valid seismic event. • Directs the ATC & BOP Operators to check the parameters IAW procedure (steps located in ATC/BOP sections). Receives annunciator 5007-4D, High Vibr Turb Shaft (Pre Trip), or receives report from ATC Operator of increasing turbine vibrations. Enters CPS 3105.01, Turbine (TG, EHC, TS) • Determines setpoint that turbine will be tripped. • Directs the ATC Operator to scram the reactor and trip the turbine at the determined setpoint. Enters CPS 4100.01, Reactor Scram • Carries out Scram Choreography by performing an Update: 1) Entering EOP-1 2) Entering Scram Off-Normal o Transient Annunciator Response is authorized
Critical Task		Enters EOP-1A, ATWS RPV Control and directs: • **Inhibit ADS**
Critical Task		• **insertion of control rods per CPS 4411.08**
Critical Task		• initiation of SLC per CPS 4411.10 • initiation of Alternate Boron Injection per CPS 4411.10 • **terminate & Prevent Injection to lower level to reduce subcooling.** • maintain RPV level in prescribed band (Band B: -162 in.(TAF) and –60 in.) • stabilization of RPV Pressure 800 to 1065 psig with Bypass Valves or SRVs. o Directs starting SLC Pump A to fire the Squib Valves.

Terminus:
- RPV level stable and under control in required band
- Reactor power is below 5%
- Upon approval of lead examiner

Simulator Operator Instructions

Initial Setup

1. Verify daily lamp test completed
2. Reset to IC #95 for this scenario(Verify/Adjust Power to 73% with flow to match turnover).
3. Place simulator in RUN
4. Verify the AR/PR server is running and stabilize AR/PR
5. Load lesson plan #9 for this scenario
6. Make sure CRD drive water D/P is in the expected range
7. Hotwell levels controllers are set at 50/45
8. Pressure set is at 922 psig.
9. Turn on and advance recorders
10. Hang OOS tags per turnover
11. Identify T/S issues associated with OOS and turnover
12. Verify simulator conditions match the turnover
13. **REMOVE ANY EXISTING CRAM SHEETS FROM P680.**

Event Triggers and Role Play

Event #

1. SLC Pump 'A' Oil Sightglass Empty
   a. No Trigger
   b. Roll play: **Area Operator:** Reports that inspection of A SLC Pump has revealed that the oil sightglass is empty and there is oil on the skid.

      Area Operator: Responds to request to de-energize the breaker.

2. Shift Plant Service Water Pumps (WS)
   a. No Trigger
   b. Role play: **Area Operator** report Prestarts as being done, and 2 minutes after starting the pump that cooling water and seal water flows, and bearing oil levels are normal.

      Area Operator: report 2 minutes after starting the pump that cooling water and seal water flows, and bearing oil levels are normal with normal leakoff.

3. Low Flow CW Pump 1C Brg. Seal Water
   a. **Remote Trigger 1** on the signal of Lead Examiner
   b. Role play: **Area Operator:** when directed to investigate the problem, report back that the upper and lower motor bearing flow is 0 gpm and 0 psig with a marked vibration increase on CW Pump 1C. Other CW Pumps appear to be fine.

      Area Operator: if directed to flush CW Pump C TW supply strainer 1TW01MC, report back in ~ 2 minutes that supply strainer has been flushed, but flows and pressure are still the same.

4. 'A' Reactor Water Cleanup Filter Demin Trips
   a. **Remote Trigger 2** on the signal of lead examiner
   b. Role play: **Area Operator:** when directed to investigate the cause of the F-D System Trouble report back that the 'A' filter demin is off service and the hold pump did not start.

5. Turbine LO Temperature Controller Failure
   a. **Remote Trigger 3** on the signal from lead examiner
   b. Role play: **Area 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).

6. Low Pressure Reactor Feed Pump (RFP) 1A Seal Water
   a. **Remote Trigger 4** on the signal from lead examiner
   b. Role Play: **Area Operator:** when directed to swap RFP 1A seal water inlet filter to the standby filter report back in ~3 minutes that filters have been shifted.
      Area Operator: if seal water pressure is requested report that it is 300 psig and filter Δp is 40 psig, before and after the filters have been shifted.

7. Power Reduction To Remove RFP 1B From Service
   a. No Trigger
   b. Role play: **Area Operator: i**if directed to close the suction warming valve report that you will enlist support to get the valve shut.

      Booth Operator: If contacted, report that CPS 9014.01 was completed 38 days ago.

8. LPCS/RHR A Water Leg Pump Trip
   a. **Remote Trigger 5** on the signal of the lead examiner.
   b. Role play: **Area Operator:** when directed to check the breaker report back that the control power fuses have blown.

      Area Operator: if directed to pull the control power fuses for the LPCS and RHR A Pumps report back after the override is put in that the fuses have been pulled.

      Booth Operator: if called about 1 time fuse replacement,report that fuse will be changed.

9. Seismic Event, Main Turbine Trip, ATWS, and SLC Squib Valves Fail to Fire.
   a. **Remote Trigger 6** on the signal of the lead examiner, for seismic event.
   b. **Remote Trigger 7** on the signal of the lead examiner, for Main Turbine High Vibration.
   c. Role play: **Area Operator:** if directed to perform a plant walkdown, no damage should be seen.

      Booth Operator: if called, report that ground motion has been felt.

      Booth Operator: if requested, show the seismic data sheet to the student, but do not allow him to take it. Show the sheet appropriate for the event (OBE, SSE). If they do not request the data until after the SSE then only show the SSE data.

      Booth Operator: 5 minutes after the scram announcement ensure that dedicated individual reports to MCR as IMD.

10. Main Turbine High Vibration
    a. **Remote Trigger 7** on the signal of the lead examiner.
    b. Role play: None

11. SLC Squib Valves Fail to Fire.
    a. No Trigger.
    b. Role play: None

Seismic Data for OBE

Detector EIN		Peak Value
1VT-EM001	Vert	0.1673
	E/W	0.1679
	N/S	0.1688
1VT-EM002	Vert	0.1543
	E/W	0.1567
	N/S	0.1603
1VT-EM003	Vert	0.0879
	E/W	0.0905
	N/S	0.0932
1VT-EM004	Vert	0.0764
	E/W	0.0787
	N/S	0.0815
1VT-EM005	Vert	0.1625
	E/W	0.1631
	N/S	0.1634

OBE RED LIGHT IS LIT

Seismic Data for SSE

Detector EIN		Peak Value
1VT-EM001	Vert	0.2663
	E/W	0.2669
	N/S	0.2678
1VT-EM002	Vert	0.2543
	E/W	0.2567
	N/S	0.2603
1VT-EM003	Vert	0.1879
	E/W	0.1905
	N/S	0.1932
1VT-EM004	Vert	0.1764
	E/W	0.1787
	N/S	0.1815
1VT-EM005	Vert	0.2635
	E/W	0.2641
	N/S	0.2644

OBE RED LIGHT IS LIT

SSE RED LIGHT IS LIT