Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure	**Rev. No.:**	00

Lesson#:	SKL0124826	**SAP BET #**	36606
Prerequisites:	None	**Duration (Hours):**	N/A

Appendix D Scenario Outline Form ES-D-1

Facility Cooper Nuclear Station Scenario No.: NRC 2 Op-Test No.: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Near the End of the Operating Cycle at 95% power and rising power to 100%. EDG 1 running unloaded for break-in run after maintenance.

Turnover: Immediately after shift turnover, the crew will synchronize EDG 1 to 4160 F bus and conduct an 8 hour full load run. Then the crew will raise reactor power to rated using Reactor Recirc.

Event No.	Time line	Event Type*	Event Description
1	0	N	Synchronize and Load EDG 1 per procedure
2	10	R	Raise Power with RR to rated power
3	20	C	Main Turbine Gland Seal regulator fails closed.
4	25	I, TS	APRM B fails at 100%
5	35	C, TS	Condensate Pump A Trip, 'A' RR Pump Fails to run back
6	45	C, TS	HPCI inadvertent Initiation
7	60	M	Main turbine vibration increase resulting in Turbine Trip Required, Reactor Manual Scram (ATWS no rods move). Non Critical Busses fail to fast transfer on Turbine Trip
8	70	C	SLC Pump A starts then trips immediately

Scenario Summary

The scenario begins with Cooper station at 95% power near the end of the current operating cycle. With EDG 1 running unloaded after maintenance to replacing 1 piston.

After shift turnover, the BOP will synchronize and load Diesel 1 to 4000 kW for post maintenance testing following a piston replacement per 2.2.20.1 Diesel Generator Operations, beginning at Step 5.23.

When DG 1 is being loaded the Doniphan Control Center will call to request a main generator load rise to 780 MWe. The crew will raise power IAW 2.1.10 Station Power Changes section 6 to 780MWe.

The next event is a Main Turbine Gland Seal regulator failing closed. The crew will respond per the alarm card, 2.4TURB, and 2.4VAC to address lowering Main Condenser Vacuum. Crew actions from 2.4TURB Attachment 6 Sealing Steam Trouble:

Will restore gland sealing steam and vacuum will begin to recover.

When requested by the lead evaluator the next event will commence.

The next event is APRM B slowly failing upscale over approximately 2 minutes. The crew will respond IAW alarm response procedures. Once the crew has determined the B APRM channel is failed they will bypass the APRM using the alarm card guidance. Tech Spec potential LCOs exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2, TLCO 3.3.1 for Rod Blocks, and TLCO 3.3.3 PAM.

When the Tech Specs have been addressed or as requested by the lead evaluator the next event will commence.

The next event is a Main Condensate Booster Pump 1A trip with a failure of Reactor Recirc Pump A to runback. At this power level the Reactor Recirc pumps should run back towards 45% and stop once Condensate pressure restores. The crew will identify the trip and enter 2.4MC-RF to address the tripped MC Pump B. The RO will identify A RR pump has failed to run back. This will require entry into 2.4RR. The crew must take actions to station a licensed operator at RRMG set A to manually control RR speed. Due to the failure to runback RR flow is mismatched and Tech Spec 3.4.1.1 is applicable and must be entered. This requires matching loop flows within 24 hours.

When the Tech Specs have been addressed or as requested by the lead evaluator the next event will commence.

The next event is a HPCI inadvertent start. The crew will recognize the initiation signal is not valid and will trip HPCI (immediate operator action). The crew will enter 2.4CSCS, for the inadvertent HPCI start. The crew will be required to maintain the HPCI aux oil pump in PTL to maintain HPCI secured. This renders HPCI INOP and the SRO will reference Tech Specs. Tech Spec LCO 3.5.1 condition C is applicable and requires verification that RCIC is operable within one hour and HPCI must be restore within 14 days. HPCI will not auto start for the rest of the scenario, but may be started manually if needed.

When the Tech Specs have been addressed or as requested by the lead evaluator the next event will commence.

The next event is Main Turbine vibrations requiring a Turbine trip. The crew should enter 2.4TURB. Vibrations continue to rise and when the crew attempts to scram the reactor an ATWS occurs. The turbine is tripped and pressure control is hindered by the limited capacity of the bypass valves. The crew starts RCIC for level control and stops and prevents the other feed systems. This action will aid in reducing reactor power.

On the Turbine trip non-vital 4160 buses will not transfer to the Start up transformer. This results in loss of the balance of plant equipment for pressure control and level control. The crew must control these parameters using SRVs and ECCS systems.

When SLC pumps are started, SLC A will trip approximately 1 minute after starting.

The crew is able to insert all control rods by resetting the scram and draining the volume and re-scramming the reactor.

The scenario is terminated when all rods are inserted and reactor level and pressure are being controlled in the assigned bands.

SIMULATOR SETUP

IC 20 EOL

Type	Trigger	Description	State	Delay	Ramp	Final Value
Malf	3	ms05 STEAM SEAL PRESS REGULATOR FAILURE	Delayed			TRUE
Malf	5	rr17a RECIRC A JORDAN FAILURE	Delayed			88
Malf	4	nm09b APRM SIGNAL FAILURE CHANNEL B	Delayed		02:00	100
Malf	5	fw14a CONDENSATE PUMP TRIP CONDENSATE PUMP 1A	Delayed			TRUE
Malf	none	rd02 ATWS	Delayed			35
Malf	6	hp05 HPCI INADVERTANT INITIATION	Delayed			TRUE
Malf	7	tu03c MAIN TURBINE BEARING HIGH VIBRATION BEARING #3 (#1LP	Delayed		05:00	40
Malf	7	tu03d MAIN TURBINE BEARING HIGH VIBRATION BEARING #4 (#1LP)	Delayed		07:00	40
Malf	7	tu03e MAIN TURBINE BEARING HIGH VIBRATION BEARING #5 (#2LP)	Delayed		10:00	40
Malf	None	ed03a 4160V BUS AUTO TRANSFER FAILURE 4160V BUS 1A (52B/1AN)	Active			TRUE
Malf	None	ed03b 4160V BUS AUTO TRANSFER FAILURE 4160V BUS 1B (52B/1BN)	Active			TRUE
Malf	8	sl01a SLC PUMP TRIP SLC PUMP 1A	Delayed	00:03		TRUE
Event	8	ZLOSLCSWS1A(1)==0				

Panel Setup

a. Update Safety Status Panel for DG1 INOP
b. Ensure RR Controllers are not in "S"

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.**:2	**Event No.:** 1
When to initiate:	When the Crew has assumed the watch and at the direction of the lead examiner.	
Event Description: Synchronize and load Diesel 1 to 4000 kW for post maintenance testing following a piston replacement per 2.2.20.1 Diesel Generator Operations		

Time	**Position**	**Applicant's Action or Behavior**
T=0	CRS	Direct BOP to continue with diesel generator Synchronize and loading per 2.2.20.1 Diesel Generator Operations
	BOP	5.23 Place SYNCH SWITCH EG1 OR 1 FE to EG1.
		5 .24 Adjust DG1 speed so SYNCHROSCOPE is rotating slowly in clockwise (FAST) direction.
		5.25 Adjust DG1 voltage slightly higher than voltage of Bus 1 F.
		5.26 When SYNCHROSCOPE is at 11 o'clock, close DIESEL GEN 1 BKR EG1.
		5.27 Raise DG1 load to ~ 1000 kW.
		5.28 Adjust DG1 kVARs to 400 to 600.
		5.29 Place SYNCH SWITCH EG1 OR 1 FE to OFF.
		5 .30 When DG1 has run for ~ 5 minutes at 1000 kW, slowly raise load until desired load reached . (should be close to 4000kW)
		5 .31. Record data on Attachments 1 and 2, 15 minutes after DG1 loaded to desired load, then every 2 hours thereafter. Contact System Engineer if any limits on Attachment 1or 2 are exceeded.
		END OF EVENT
	Notes	
	Examiner Note Proceed to the next event when diesel load is stable at the	
	target load value of ~4000 KW.	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure

Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.**:2	**Event No.:** 1
When to initiate:	When the Crew has assumed the watch and at the direction of the lead examiner.	
Event Description: Synchronize and load Diesel 1 to 4000 kW for post maintenance testing following a piston replacement per 2.2.20.1 Diesel Generator Operations		

Time	Position	Applicant's Action or Behavior

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure

Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** 2 **Event No.:** 2

Event Description: Doniphan Control Center will call to request a main generator load rise to 780 MWe.

Time	Position	Applicant's Action or Behavior
T=10	CRS	Take position of Reactivity Manager Ensure reactivity brief has been completed with involved Control Room personnel. (Is done prior to coming into the Simulator.)
	CRS/RO	Monitor various independent/redundant parameters and power indications for proper plant response during all power changes; utilize the list below (as a minimum) as dictated by plant conditions: • Reactor Water Level. • Reactor Steam Pressure and Flow. • Reactor Power, APRMs, RBMs, IRMs, or SRMs, as required. • Reactor Recirc Speed, Jet Pump, and Loop Flows. • Total Core Flow and Core Support Plate DP. • Reactor Feed Pump Flow and Speed. • Main Generator Output (Gross and Net).
	SRO/RO	Ensure APRM indicated power versus actual power from other indications does not result in non-conservative protective trip setpoints (indicated power + allowable gain adjustment tolerances less than actual power)
	Role Play	**If called to monitor and adjust DEH and Reactor Recirc oil temperature, tell them that you are on your way and will call them when you are ready. In a few minutes call back and tell**

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** 2 **Event No.:** 2

Event Description: Doniphan Control Center will call to request a main generator load rise to 780 MWe.

Time	Position	Applicant's Action or Behavior
		them that you are standing by.
	RO	Ensure RR Subsystem flows are balanced.
	RO	Raise power by raising RR pump flow as follows: Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits.
	RO	Monitor core thermal limits (MFLCPR, MFLPD, and MAPRAT), per Procedure 6.LOG.601, to ensure compliance with Technical Specifications Section 3.2.
	BOP	Monitor plant equipment for power change and peer checks RO.
	RO	Inform CRS of completion of power rise.
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: ___ **Scenario No.:** NRC 2 **Event No.:** 3

Event Description: Main Turbine Gland Seal regulator fails closed.

Time	Position	Applicant's Action or Behavior
T=20	BOP	Announce to crew B-1/B-3 TG Low Vacuum Pre-trip.
	CRS	Announce entry into 2.4VAC and assign to BOP. There are no operator actions in 2.4VAC for the Gland Seal Regulator failure.
	BOP	ARP actions for B-1/B-3 TG Low Vacuum Pre-trip: 1. OPERATOR OBSERVATION AND ACTION **NOTE** – Main turbine trips at 18" to 22" Hgv. 1.1 Check vacuum indication on Panel B to verify alarm is valid. 1.2 **If vacuum cannot be maintained ≥ 23" Hg:** • **If Annunciator 9-5-2/C-4 clear, SCRAM and enter Procedure 2.1.5**. • Trip main turbine. • If reactor was not scrammed, enter Procedure 2.2.77. 1.3 If alarm is valid, take action per Procedure 2.4VAC
	CREW	Will announce Scram action in ARP
	CRS/RO	CRS will assign Scram actions of ARP to RO.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: ___ **Scenario No.:** NRC 2 **Event No.:** 3

Event Description: Main Turbine Gland Seal regulator fails closed.

Time	Position	Applicant's Action or Behavior
	CREW	Will announce Scram action in 2.4VAC: 2. IMMEDIATE OPERATOR ACTIONS 2.1 For lowering condenser vacuum: • Reduce power per Procedure 2.1.10 to maintain vacuum ≥ 23" Hg. • **If vacuum cannot be maintained ≥ 23" Hg:** 2.1..1 **If Annunciator 9-5-2/C-4 clear, SCRAM and enter Procedure 2.1.5.** 2.1..2 Trip Main Turbine. 2.1..3 If reactor not scrammed, enter Procedure 2.2.77. 2.2 If vacuum cannot be maintained ≥ 12" Hg, close MSIVs.
	CRS	Will direct rapidly reduce power per Procedure 2.1.10 to maintain vacuum ≥ 23" Hg if needed.
	CRS/RO	CRS will assign Scram actions of 2.4VAC to RO.
	BOP	Will diagnose turbine indications and determine the Gland Seal regulator has failed. This is an entry into 2.4TURB. The BOP should update the crew of entry into 2.4TURB.
	CRS	Will enter 2.4TURB and assign operator action of 2.4TURB to the BOP.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: ___ **Scenario No.:** NRC 2 **Event No.:** 3

Event Description: Main Turbine Gland Seal regulator fails closed.

Time	Position	Applicant's Action or Behavior
	BOP	Will perform actions of 2.4TURB Attachment 6 Sealing Steam Trouble: 1. Control system pressure between 3 and 5 psig by performing <u>one</u> of the following: 1.1 If sealing steam pressure is high, throttle open MS-MO-BMV4, STEAM UNLOADER BYPASS VLV (PANEL B), to lower pressure. 1.2 If sealing steam pressure is low, throttle open MS-MO-BMV3, STEAM SUPPLY BYPASS VLV (PANEL B), to raise pressure. Opening of MS-MO-BMV3 will restore Sealing steam and vacuum will begin to recover.
	CRS	Will contact WCC for repairs to Gland Seal pressure regulator and the entry into the abnormal procedures.
		END OF EVENT
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure

Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 4

Event Description: APRM B fails upscale over 2 mins.

Time	Position	Applicant's Action or Behavior
T=25	RO	Reports ½ Scram and 9-5-2 Alarms the CRS.
	RO	Diagnoses that APRM "B" has failed upscale causing the ½ scram. Also determine all other APRMs are accurate. Pulls Annunciator cards for the RPS Trip and APRM Upscale and reports the actions to the CRS.
	BOP	Checks the APRM in the back panels and reports finding to the crew.
	CRS	Directs the RO to bypass the APRM and reset the ½ Scram per the appropriate alarm card.
	RO	APRM RPS CH B UPSCALE TRIP OR INOP alarm card states: 1. AUTOMATIC ACTIONS 1.1. RPS B side half scram. 2. OPERATOR OBSERVATION AND ACTION 2.1. If reactor has scrammed, refer to Procedure 2.1.5. 2.2. Determine following : 2.2.1. Which APRM tripped. 2.2.2. Cause of trip from remote lights on Panel 9-5. 2.3. If only one APRM inop, perform following : 2.3.1. Bypass affected channel. 2.3.2. Reset half scram per Procedure 2.1.5. 2.4. If APRM readings exceed or approach setpoint, reduce

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 4

Event Description: APRM B fails upscale over 2 mins.

Time	Position	Applicant's Action or Behavior
		power immediately. 2.5. If only one APRM is upscale and all others are normal: 2.5.1. Bypass affected channel . 2.5.2. Reset half scram per Procedure 2 .1 .5.
	RO	Selects "B" APRM joy stick and places it to the "B" position to bypass the failed APRM. Following the instructions in the APRM Upscale Alarm Procedure, Selects the appropriate Joy Stick and places it to the "B" position.
	BOP	Peer checks bypassing the APRM.
	RO	Selects the Scram Reset switch and places it momentarily in the 1-4, then the 2-3 positions and lets it return to the neutral position.
	RO	Reports that the ½ has been reset and that the alarms have cleared.
	CRS	Evaluates TS and determines that **potential** LCOs exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2, TLCO 3.3.1 for Rod Blocks, and TLCO 3.3.3 PAM
	CRS	Notifies work control of the failures and request repair.
	Role Play	As the work control center, respond to the report and let the CRS know that a work order will be initiated and a team put together to investigate the failure of the APRM.
		END OF EVENT
	Notes	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 4

Event Description: APRM B fails upscale over 2 mins.

Time	Position	Applicant's Action or Behavior
	Proceed to the next event when directed by lead evaluator	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure

Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 5

Event Description: Condensate pump trip and "A" RR RUNBACK failure.

Time	Position	Applicant's Action or Behavior
T=35	BOP	Reports that the 1A Condensate Pump has tripped.
	BOP	Monitor reactor feed pump suction pressure.
	RO or BOP	Sends the Station Operator to investigate the tripping of the 1A Condensate Pump.
	Role Play	**Respond as the Station Operator and tell the Control Room Operator that you will go check the 1A Condensate Pump out and report back that there is overcurrent relay at the breaker.**
	BOP	Update the crew that this is an entry condition into 2.4MC-RF.
	RO	Reports Reactor Recirc Pump runback.
	RO	Reports "A" RR RUNBACK failed to completely runback currently at 80% and entry to 2.4RR.
	RO	Reports mismatched flows between A and B Recirc loops.
	CRS	Ensure requirements of SR 3.4.1.1 are met as soon as practical. LCO 3.4.1 Two recirculation loops with matched flows shall be in operation outside of the Stability Exclusion Region of the power/flow map specified in the COLR. SR 3.4.1.1 Verify recirculation loop flow mismatch with both recirculation loops in operation is: a. ≤ 10% of rated core flow when operating at < 70% of rated core flow; **and** b. ≤ 5% of rated core flow when operating at ≥ 70% of rated core flow.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure

Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 5

Event Description: Condensate pump trip and "A" RR RUNBACK failure.

Time	Position	Applicant's Action or Behavior
	CRS/RO	Announce entry into 2.4RR and assign it to the RO. 1. If scoop tube is locked out, perform following : 1.1. Operate scoop tube locally per Procedure 2.2.68.1; or 1.2. If faster power reduction required, perform following : 1.2.1. Trip affected RRMG; or 1.2.2. Enter Procedure 2.1.5. 2. If RR pump tripped, enter Attachment 1 (Page 3). 3. Ensure requirements of SR 3.4.1.1 are met as soon as practical.
	RO	Will control RR Pump A via communication with extra Operator at the RRMG set A per 2.2.68.1: 15. LOCAL SCOOP TUBE OPERATION NOTE 1 – When in MODE 1 or MODE 2, local scoop tube operation shall be performed by a Licensed Operator. NOTE 2 – Constant communications between Licensed Operator in Control Room and Operator at RRMG Set shall be maintained during performance of this section. 15.1 Establish communications between RRMG Set and Control Room. 15.2 Lock out desired scoop tube electrically by pressing SCOOP TUBE LOCKOUT button on Panel 9-4.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 5

Event Description: Condensate pump trip and "A" RR RUNBACK failure.

Time	Position	Applicant's Action or Behavior
		15.3 Licensed Operator locally press manual engage pushbutton. CAUTION 1 – Operation of RRMG Set at greater than rated speed (100% or 1120 rpm) shall be avoided. CAUTION 2 – Operation with core flow > 77.175 MLBH is prohibited on any indication (PMTS, NBI-DPI/FR-95). 15 .4 Turn hand crank to adjust RRMG Set speed (counter-clockwise to raise speed/clockwise to lower speed). 15 .5 Secure communications when directed by Control Room Operator.
	Role Play	**When requested as a licensed operator to locally adjust "A" RRMG then use remote function RR05 "RRMG A SCOOP TUBE" us directed by the reactor operator.**
	CRS	Announce entry into 2.4MC-RF and assign it to the BOP.
	CRS	Assign critical parameters, scram actions, and subsequent operator actions.
	RO	Monitors reactor parameters and core stabilities.
	BOP	Monitors condensate pressures and flows.
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 5

Event Description: Condensate pump trip and "A" RR RUNBACK failure.

Time	Position	Applicant's Action or Behavior

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 6

Event Description: Component - HPCI inadvertently starts.

Time	Position	Applicant's Actions or Behavior
T=45	BOP/RO	Identifies HPCI initiation by observing the initiation of the system's valve and parameter indications and alarms on Panel 9-3.
	BOP/RO	Observes drywell pressure and reactor water level to determine that it is an inadvertent start. A lack of a high drywell pressure and low level alarms are an appropriate way to quickly verify this is inadvertent.
	BOP/RO	AOP 2.4CSCS states: 3. IMMEDIATE OPERATOR ACTIONS 3.1. If HPCI initiated, perform following : 3.1.1. Ensure AUXILIARY OIL PUMP control switch in START. 3.1.2. Press and hold TURBINE TRIP button. 3.1.3. After turbine stops, place AUXILIARY OIL PUMP in PULL-TO-LOCK. 3.1.4. Release TURBINE TRIP button. UPDATE to crew "HPCI is in PTL" This is an Immediate Operator Action and is to be performed from memory. This action is performed to minimize injection of HPCI at High power which would result in APRM high Neutron Flux Scram.
	CRS	Updates the crew that this is an entry into 2.4CSCS and directs the BOP to ensure all necessary actions are performed.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 6

Event Description: Component - HPCI inadvertently starts.

Time	Position	Applicant's Actions or Behavior
	BOP/RO	Sends Building Station Operator to the area to investigate the initiation.
	Role Play	**As the Station Operator, respond to the report and let the BOP know that you will look around to try to determine what caused the initiation.**
	RO	Monitors for signs that HPCI injected into the vessel. This is done by checking for level swings, power spikes.
	CRS	LCO 3.5.1 Each ECCS injection spray subsystem and the Automatic Depressurization System (ADS) function of six safety relief valves shall be OPERABLE. APPLICABILITY: MODE 1, MODES 2 and 3, except high pressure coolant injection (HPCI) and ADS valves are not required to be OPERABLE with reactor steam dome pressure ≤ 150 psig. Condition C- HPCI System inoperable. Required Actions- C. 1 Verify by administrative means RCIC System is OPERABLE. Completion time- 1 Hour. C.2 Restore HPCI System to OPERABLE status. Completion time- 14 days.
	CRS	Contacts Work Control to confirm that RCIC surveillance was successful and within periodicity.
	Roll Play	As either Work Control or Management, respond to the report about the Inadvertent Initiation of HPCI and the fact that HPCI is inoperable.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 6

Event Description: Component - HPCI inadvertently starts.

Time	Position	Applicant's Actions or Behavior
	CRS	Updates Crew with status of HPCI.
		Event ends with system declared inoperable and RCIC verified operable
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
T=60	BOP	Notes that Turbine Bearing vibrations are rising. Either by seeing the red LEDs on the Bentleys or by the vibration Alarm.
	BOP	Updates the crew that turbine vibrations are rising and that is an entry into 2.4TURB.
	CRS	Enters 2.4TURB and assigns it to the BOP Operator.
	BOP	Updates crew as vibrations rise. Performs Attachment 1 of 2.4TURB NOTE – 7 mils causes the indicator bar on TGI-M-DUA and TGI-M-DUB to turn yellow, 10 mils turns TGI-M-DUA and TGI-M-DUB red. 1. Validate vibration by observing vibration on several bearings as read on TGI-M-DUA, TGI VIB/INST MONITOR CHANNEL A, and/or TGI-M-DUB, TGI VIB/INST MONITOR CHANNEL B. 1.1 Select Turbine Mimic and/or Generator Mimic to determine which bearing is alarming. 1.2 Select alarmed bearing screen, as required. 1.3 If time permits, locally observe turbine for vibration (i.e., visual indication or feeling of abnormal vibration of turbine casing, bearing casing, or attached piping; abnormal sounds; or if local instrumentation is installed, indication of abnormal vibrations indicated). 2. For Bearings 1 through 8, if rotor vibration ≥ 14 mils coincident with changing vibration levels on at least one

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
		other bearing: 2.1 If Annunciator 9-5-2/C-4 is clear, SCRAM and enter Procedure 2.1.5. 2.2 Trip Main Turbine. 2.3 If reactor was not scrammed, enter Procedure 2.2.77. 3. For Bearing 9 only, if rotor vibration ≥14 mils, then reduce power to maintain < 14 mils. 4. If any bearing vibration is ≥ 10 mils, immediately contact Turbine Engineering Group for data analysis and recommendation, and Vendor support. 5. If vibration is ≥ 10 mils on any bearing while operating in DEH MODE 2 (turbine not tied to grid), trip Main Turbine. 6. Review TG parameters to determine if vibration is related to another problem. 7. If vibration is > 7 mils and < 10 mils, contact Turbine Engineering Group for data analysis and action plan.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
	CRS	Briefs crew on action points and responsibilities if the vibrations continue to rise. • Report vibration in 1 mil increments on highest reading bearing. • Alert LED - contact engineering. • Danger LED - reduce power. • 14 mils - Scram Action. • Brief Procedure 2.1.5 and assign responsibilities. • Assign operator to continue Procedure 2.4TURB action post-scram. • Brief power reduction. • Obtain TG/BOP Engineering recommendation on continued operation. • Monitor hotwell conductivity for indications of thrown blade.
	CRS	Directs that Reactor Power be reduced as required by 2.4TURB.
	RO	Makes preparations for power reduction in accordance with Procedure 2.1.10. The vibration increase is at a quick pace. Due to one RRMG set being controlled manually crew will not have time to commence power reduction before reaching the required point to Scram the plant.
	BOP	Updates Vibration 14 Mils which is the Scram Point.
	CRS	Directs the RO to Scram the Reactor.
	RO	Presses the Manual Scram Pushbuttons and announces ATWS conditions.
	CRS	Directs the BOP to trip the Turbine and continue actions of

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
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Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
		2.4TURB. Even though ATWS conditions exist the turbine must be tripped IAW 2.4TURB to prevent extensive damage.
	BOP/RO	Identifies 4160 A and B non-critical buses failed to transfer and critical bus F is powered from #1 DG and 1G is powered from the emergency transformer.
	CRS	Enters EOPs 1A and transitions to 6A and 7A due to ATWS. (Condition which requires reactor scram, and reactor power above 3%). Announces Entry in to 5.3EMPWR
	CRS	Assigns 5.3EMPWR and sets priorities on restoring SW, Station Service air, and REC cooling
	BOP	Restores SW, Station Service air, and REC cooling using 5.3EMPWR
	RO	Depress both RX scram pushbuttons.
	RO	Place mode switch in Shutdown.
	CRS	Directs the initiation of ARI.
	RO	Initiates ARI and announces that it did not insert the control rods.
	CRS	Directs the Recirc Pumps runback.
	RO	Runback Recirc Pumps.
	CRS	Directs tripping Recirc Pumps.
	RO	Trip Recirc Pumps. Reactor power will be ~30-40% with RR

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
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Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
		Pumps tripped.
	BOP	Ensure RCIC is running.
	CRS	Directs Inhibiting ADS
	CRITICAL TASK	Critical task to INHIBIT ADS. This prevents an unnecessary Reactor depressurization which would allow LP ECCS pumps to inject cold unborated water. This would cause a large power excursion resulting in significant fuel damage.
	BOP	Inhibit ADS
	CRS	May request that someone start defeating low level MSIV closure signal in accordance with 5.8.20
	CRS	Directs the initiation of SLC
	CRITICAL TASK	Critical Task to initiate SLC to prevent exceeding HCTL. SLC pump A will trip (Event 8) but SLC Pump B will inject.
	RO	Initiate SLC and reports initial SLC Tank level. Identifies SLC Pump A has Tripped (Event 8). SLC Pump B is injecting.
	CRS	Directs ARI reset and Control Rods Inserted per 5.8.3 Alternate Rod Insertion
	CRITICAL TASK	During failure to scram conditions, insert control rods using one or more methods contained within Procedure 5.8.3. Manual Insertion is one of these methods.
	RO	RO will reset ARI (will require jumpers when level below -42) and continue in 5.8.3. This procedure has 2 parallel paths one

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
Lesson#:	SKL0124826	**Rev. No.:**	00

Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
		to get Scram reset and re inserting manual Scrams the other is manual rod insertion. The RO should insert rods manually to reduce power initially while pursuing jumpers to allow the scram to be reset.
	CRS	Direct Stop and Prevent injection except for CRD, SLC, and RCIC.
	BOP	Stop and prevent injection except for CRD, SLC, and RCIC. This is performed using EOP support procedure (hard card).
	CRS	When level has lower to -60 inches FZ corrected. Direct Reactor water level band of -60 inches to -183 inches FZ corrected.
	BOP	Re-establish injection to maintain reactor water level in the assigned band. Must coordinate with RO to ensure reactor power does not rise.
	RO	Establishes conditions per 5.8.3 to reset the scram. (installs jumpers) Resets the reactor scram. Once 3 min has elapsed or SDV not Drained alarms clear RO will announce "Scramming the Reactor" Inserts manual Scram by Depressing both RX scram pushbuttons. Announce "All Rods IN"
	CRS	Direct Securing SLC injection.

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
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Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 7

Event Description: Turbine High Vibration/Turbine Trip/ATWS Failure of non-vital 4160 buses to transfer.

Time	Position	Applicant's Action or Behavior
		Exits EOP 6A and EOP 7A. Reenters EOP 1A
	Notes	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
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Op-Test No.: _____ **Scenario No.:** NRC 2 **Event No.:** 8

Event Description: SLC Pump A starts then trips immediately.

Time	Position	Applicant's Action or Behavior
	RO	Starts the 1A and 1B SLC Pumps using the control switches on Panel 9-5.
	RO	Observes that SLC Pumps Started and has developed sufficient discharge Pressure to inject into the vessel that the squib valve continuity light is extinguished and that RWCU isolated. And reports the observations and initial SLC tank level to the CRS.
	RO	Notes that the 1A SLC Pump tripped immediately after starting and reports that to the CRS.
	CRS	Calls WCC and request repair of the SLC system.
	Role Play	As the WCC respond to the report about SLC pump 1A failure and tell the CRS that a team is getting right on it.
	CRS	Directs the RO to concentrate on driving rods and scramming.
		END OF EVENT
	Notes	

Lesson Title:	Synchronize EDG 1, HPCI Inadvertent Initiation, APRM B Fails, Cond Pump Trip, 'A' RR Fails to Runback, MT Vib, ATWS, Non Critical Busses Fail to Transfer, SLC A trips, Seal Regulator Failure		
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CREW CRITICAL TASKS	TECHNICAL BASIS	SAT	UNSAT
Inhibit ADS prior to auto initiation during a failure to Scram.	With a Reactor Scram required, reactor not shutdown, and conditions for ADS blowdown are met, INHIBIT ADS to prevent an uncontrolled RPV depressurization and cold water injection from low pressure sources, to prevent causing a significant power excursion.		
Take action to reduce reactor power by injecting boron and/or inserting control rods, to prevent exceeding the primary containment design limits.	Failure to inject SLC and insert control rods could result in torus water temperature exceeding the HCTL. Exceeding the HCTL unnecessarily would **require** that the RPV be depressurized which substantially changes the mitigation strategy.		
During failure to scram conditions, insert control rods using one or more methods contained within Procedure 5.8.3. (This does not require the Operator to reach the point of Reactor Shutdown, but instead to demonstrate the skills necessary to perform this task.)	Achieving reactor shutdown is one of the primary goals of EOP-6A.		

IX. INITIAL CONDITIONS

A. Plant Status:

1. 95% power End of Cycle.

2. Rod Sequence Information:

Page:

Rod:

Notch:

B. Tech. Spec. Limitations in effect:

Day 5 of 7 LCO 3.8.1B for EDG-1. 6.EE.610 is not due again for 7 hours.

C. Significant problems/abnormalities:

DG1 in running unloaded, currently at step 5.23 of procedure 2.2.20.1

D. Evolutions/maintenance for the on-coming shift:

1. Synchronize DG-1 to 4160 1F and complete an 8 hour full load run for post maintenance testing.

2. Restore Reactor power to 100% per 2.1.10 using Reactor Recirculation as directed by Doniphan Load Dispatcher.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power	Rev. No.:	00
Lesson#:	SKL0124831	**SAP BET #**	37002
Prerequisites:	None	**Duration (Hours):**	N/A

Appendix D | Scenario Outline | Form ES-D-1

Facility Cooper Nuclear Station Scenario No.: NRC 3 Op-Test No.: ____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Near the End of the Operating Cycle at 75% power and lowering power to 70%.

Turnover: Immediately after shift turnover, the crew will shift DEH Pumps for scheduled maintenance. Following the shifting of the DEH pumps commence a power decent to 70% using Reactor Recirc flow to accommodate Doniphan's request for load. .

Event No.	Time Line	Event Type*	Event Description
1	0	N	Shift DEH Pumps
2	5	R	Decrease reactor power from 75% to 70% using RR.
3	15	I, TS	APRM B fails downscale
4	20	I, TS	"A" RR flow instrument fails downscale
5	40	C,TS	"A" RR Pump Trip
6	45	M	Medium Steam Leak in Drywell / Loss of off-site power on Scram/ Emergency Depressurize
7	50	C	RCIC Trips on Over-speed

Scenario Summary

The scenario begins with Cooper station at 75% power near the end of the current operating cycle with a power decent in progress.

After shift turnover, the BOP will shift DEH pumps for scheduled maintenance, the standby pump is started and the running pump is secured in accordance with Operating Procedure 2.2.20 Section 5.

When the DEH pumps have been shifted the crew will continue the power decent from 75% to 70% power using Reactor Recirculation flow in accordance with Operating Procedure 2.1.10.

The next event is APRM B failing downscale. The crew will respond IAW alarm response procedures. Once the crew has determined the B APRM channel is failed they will bypass the APRM using the alarm card guidance. Tech Spec potential LCOs exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2, TLCO 3.3.1 for Rod Blocks, and TLCO 3.3.3 PAM.

The next event is an “A” Reactor Recirc Flow Instrument failure upscale. The crew will recognize the flow comparator mismatch and that the APRMs on the “A” side are now non-conservative with regards to APRM Flow Bias Scram setpoints. Tech Spec LCO exists for T.S. 3.3.1.1 Required Action A.1 and C.1 Trip capability is not maintained for function 2.b. requiring the crew to place a manual half scram in on the A Channel in accordance with procedure 4.5 section 5.

The next event is a Reactor Recirc pump “A” Shaft Binding with Pump Trip. The crew will respond per the alarm card and enter Abnormal Procedure 2.4RR. With the rod line set in the initial conditions, this trip will not cause the plant to enter the stability exclusion region of the power to flow map. There will be a flow mismatch between the pumps requiring the tripped pump to be declared inoperable in accordance with Tech Spec 3.4.1 B.1

The next event is the Major Event where a medium steam leak develops in the Drywell, requiring a reactor scram on high drywell pressure. When the plant scrams the Main Turbine will trip and when it does the Emergency and Startup Transformers will trip as well, resulting in a loss of all off-site power until the Diesel Generators start and automatically re-energize the Emergency Busses. The Crew will use HPCI and RCIC to control Reactor water level and SRVs to control Reactor Pressure. The steam leak in containment will require the crew to monitor and control PC Pressure using first Torus Sprays and then Drywell Sprays. The crew will have to Emergency Depressurize the vessel because HPCI will not be able to maintain level.

RCIC turbine will trip 3 seconds after RCIC is started (manual or automatically). The operator will report the RCIC trip to the CRS and dispatch a building operator to

investigate the turbine trip.

Because the Startup Transformer is lost on the turbine trip the Condensate and Circ Water Systems will be unavailable for use for cooldown and pressure and level control. The crew must control these parameters using SRVs and ECCS systems.

The scenario is terminated when Drywell Sprays are being used to control Primary Containment Pressure and temperatures and a Reactor Cooldown has been commenced to limit the amount of heat rejected to primary containment. Also Reactor water level should be maintained within the assigned band.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

SIMULATOR SETUP

IC 20 EOL

Type	Event	Description	State	Delay	Ramp	Value
Malf	3	NM09B APRM “B” fails D/S	N/A	0	120	0
Malf	4	NM16A “A” RR Flow instrument fails U/S	N/A	0	30	100
Malf	5	RR03A Recirc Pump Shaft Binding “A” RR Pump Trip	False	0	0	True
Malt	6	ED06 Loss of Emergency Transformer	False	0	0	True
Malf	6	RR31a Steam leak in Drywell	False	0	5:00	1.5
Malf	6	ED05 Loss of Startup Transformer (Loop)	False	2	0	True
Rem	7	RC17 RCIC Turbine Trip on Overspeed	False	3	0	True
Trigger	7	zlorcicsws5(2)==11	Goes active when RCIC Injection Valve starts to Open.			

Panel Setup

1. Ensure BOL Start Up Book at 9-5 marked up to next rod to pull. (Rod group 10/3 Rod 26-19 at 00)
2. Ensure Reactor Recirc Controllers Selected to “P” or “V”
3. Adjust Main Generator to +50 to +100 MVAR
4. Ensure APRM AGAF +/- 2%
5. Ensure “A” RRMG is aligned to Startup Transformer and “B” RRMG aligned to NSST

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 1
When to initiate:	When the Crew has assumed the watch and at the direction of the lead examiner.	
Event Description: Shift DEH Pumps due a small leak on B DEH pump.		

Time	Position	Applicant's Action or Behavior
T=0	CRS	Direct BOP to place A DEH pump in service and secure B DEH pump per 2.2.80, TURBINE HIGH PRESSURE FLUID SYSTEM section 5.
	BOP	Shifts DEH Pumps in accordance with 2.2.80 section 5 5 SHIFTING DEH PUMPS 5.1 At Panel B, ensure both DEH pumps are in AUTO. 5.2 Start idle DEH pump. 5.3 Stop previously running pump.
	BOP	Monitors Turbine parameters and valves to ensure stable conditions remain following the shifting of the pumps.
		END OF EVENT
	Notes	
	Examiner Note Proceed to the next event when DEH pumps have been shifted.	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power

Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 2
When to initiate:	When the Crew has completed shifting DEH pumps continue power reduction to 70% using RR Flow.	
Event Description: Power reduction to 70% using RR Flow.		

Time	Position	Applicant's Action or Behavior
T= 5	CRS	Take position of Reactivity Manager Ensure reactivity brief has been completed with involved Control Room personnel. (Is done prior to coming into the Simulator.)
	CRS/RO	Monitor various independent/redundant parameters and power indications for proper plant response during all power changes; utilize the list below (as a minimum) as dictated by plant conditions: • Reactor Water Level. • Reactor Steam Pressure and Flow. • Reactor Power, APRMs, RBMs, IRMs, or SRMs, as required. • Reactor Recirc Speed, Jet Pump, and Loop Flows. • Total Core Flow and Core Support Plate DP. • Reactor Feed Pump Flow and Speed. • Main Generator Output (Gross and Net).
	CRS/RO	Ensure APRM indicated power versus actual power from other indications does not result in non-conservative protective trip setpoints (indicated power + allowable gain adjustment tolerances less than actual power)

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power

Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 2
When to initiate:	When the Crew has completed shifting DEH pumps continue power reduction to 70% using RR Flow.	
Event Description: Power reduction to 70% using RR Flow.		

Time	Position	Applicant's Action or Behavior
	Role Play	**If called to monitor and adjust DEH and Reactor Recirc lube oil temperature, tell them that you are on your way and will call them when you are ready. In a few minutes call back and tell them that you are standing by.**
	RO	Ensure RR Subsystem flows are balanced.
	RO	Lower power by lowering RR pump flow as follows: Maintain rate of power change consistent with system capabilities as determined by Load Dispatcher and TG limits.
	RO	Monitor core thermal limits (MFLCPR, MFLPD, and MAPRAT), per Procedure 6.LOG.601, to ensure compliance with Technical Specifications Section 3.2.
	BOP	Monitor plant equipment for power change and peer checks RO.
	RO	Inform CRS of completion of power drop.
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 3

Event Description: APRM B fails Downscale over 1 minute

Time	Position	Applicant's Action or Behavior
T= 15	RO	Reports Rod Block and 9-5-1 Alarms the CRS.
	RO	Diagnoses that APRM "B" has failed downscale causing the Rod Block. Pulls Annunciator cards for the Rod Block and APRM Downscale and reports the actions to the CRS.
	BOP	Checks the APRM in the back panels and reports finding to the crew.
	RO	ROD WITHDRAWAL BLOCK alarm card states: 1. AUTOMATIC ACTIONS 1.1 Rod withdrawal is inhibited. 2. OPERATOR OBSERVATION AND ACTION 2.1 Observe the white Rod Out Permit light is off. 2.2 Determine from the REACTOR MODE switch position and setpoints which rod block is alarming. APRM DOWNSCALE alarm card states: 1. AUTOMATIC ACTIONS 1.1 Rod block. 2. OPERATOR OBSERVATION AND ACTION 2.1 Determine which APRM(s) is affected.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 3

Event Description: APRM B fails Downscale over 1 minute

Time	Position	Applicant's Action or Behavior
		2.2 Bypass affected APRM.
	CRS	Directs the RO to bypass the APRM per 9-5-1/C-8 alarm card.
	RO	Bypass APRM B Downscale in accordance with 9-5-1/C-8 alarm card. 1. AUTOMATIC ACTIONS 1.1 Rod block. 2. OPERATOR OBSERVATION AND ACTION 2.1 Determine which APRM(s) is affected. 2.2 Bypass affected APRM.
	RO	Selects "B" APRM joy stick and places it to the "B" position to bypass the failed APRM. Following the instructions in the APRM Upscale Alarm Procedure, Selects the appropriate Joy Stick and places it to the "B" position.
	BOP	Peer checks bypassing the APRM.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power

Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 3

Event Description: APRM B fails Downscale over 1 minute

Time	Position	Applicant's Action or Behavior
	CRS	Evaluates TS and determines that **potential** LCOs exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2, TLCO 3.3.1 for Rod Blocks, and TLCO 3.3.3 PAM
	CRS	Notifies work control of the failures and request repair.
	Role Play	**As the work control center, respond to the report and let the CRS know that a work order will be initiated and a team put together to investigate the failure of the APRM.**
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 4

Event Description: "A" RR Flow instrument fails Upscale over 1 minute

Time	Position	Applicant's Action or Behavior
T=20	RO	Reports Rod Block and 9-5-1 Alarms the CRS.
	RO	Diagnoses that "A" RR Flow Reference off normal. Pulls Annunciator cards for the Rod Block and Flow REF OFF Normal reporting the actions to the CRS.
	BOP	Checks the RR Flow at panel 9-14 in the back panels and reports finding to the crew.
	ROLE PLAY	When contacted as WCC about A" RR Flow instrument failing Upscale and need for a CAUTION order per IOP 4.5. Respond with; Estimate 2 hours for I&C will develop a trouble shooting guide and the Tag Desk Operator will develop the CAUTION Order per IOP 4.5.
	RO	ROD WITHDRAWAL BLOCK alarm card states: 1. AUTOMATIC ACTIONS 1.1 Rod withdrawal is inhibited. 2. OPERATOR OBSERVATION AND ACTION 2.1 Observe the white Rod Out Permit light is off. 2.2 Determine from the REACTOR MODE switch position and setpoints which rod block is alarming. FLOW REF OFF NORMAL alarm card state: 1. AUTOMATIC ACTIONS 1.1 Rod block. 2. OPERATOR OBSERVATION AND ACTION

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 4

Event Description: "A" RR Flow instrument fails Upscale over 1 minute

Time	Position	Applicant's Action or Behavior
		2.1 If core flow > 73.5 x 106 lbs/hr, reduce core flow.
	CRS	Evaluates TS determines that LCO exists for T.S. 3.3.1.1 (RPS Instrumentation) Table 3.3.1.1-1 Function 2b. LCO 3.3.1.1 The RPS instrumentation for each Function in Table 3.3.1.1-1 shall be OPERABLE. A. One or more required channels inoperable. REQUIRED ACTION A.1 Place channel in trip within 12 hours. OR A.2 Place associated trip system in trip within 12 hours. C. One or more Functions with RPS trip capability not maintained. C.1 Restore RPS trip capability within 1 hour.
	CRS	Evaluates TRM determines that **Potential** TLCO 3.3.1 for Rod Blocks
	CRS	Directs manual ½ Half SCRAM on "A" RPS Channel per IOP 4.5 section 5 Manual RPS Half Scram

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 4
Event Description: "A" RR Flow instrument fails Upscale over 1 minute		

Time	Position	Applicant's Action or Behavior
	RO	Inserts a manual SCRAM in accordance with IOP 4.5 section 5 5. MANUAL RPS HALF SCRAM 5.1 If inserting HALF SCRAM on "A" CHANNEL, perform following: 5.1.1 (Checked By) Ensure SCRAM INDICATIONS GROUP B lights (Panel 9-5) or SCRAM GROUP lights (Panel 9-17) are on. 5.1.2 Press RX SCRAM CH A button (Panel 9-5) and check following: 5.1.2.1 Annunciator 9-5-2/A-1, RX SCRAM CHANNEL A, is in alarm. 5.1.2.2 Alarm CRT displays 2650 RX SCRAM (MANUAL) CHAN A3 TRIP. 5.1.2.3 SCRAM INDICATIONS GROUP A lights (Panel 9-5) or SCRAM GROUP lights (Panel 9-15) are off. 5.1.2.4 Light in RX SCRAM CH A button turns on. 5.1.2.5 PMIS indicates D528 MANUAL SCRAM CHANNEL A TRIP.
	BOP	Peer checks selecting "A" RX SCRAM CH A button.
	RO	Reports that the ½ has been inserted on "A" RPS.
	CRS	Notifies work control of the failures and request repair.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power

Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 4

Event Description: "A" RR Flow instrument fails Upscale over 1 minute

Time	Position	Applicant's Action or Behavior
	Role Play	**As the work control center, respond to the report and let the CRS know that a work order will be initiated and a team put together to investigate the failure of the A" RR Flow instrument failing.**
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 5

Event Description: Reactor Recirculation Pump A Trip

Time	Position	Applicant's Action or Behavior
T=40	RO/BOP	Identifies A RRMG TRIP by observing the RRMG breakers and parameter indications and alarms on Panel 9-4.
	CRS	Directs the RO to monitor for instabilities, Updates the crew that this is an entry condition into 2.4RR and assigns it to the RO.
	RO	Updates the crew with Scram Actions of 1.1 If both RR pumps are tripped and reactor power > 1% rated thermal. • **SCRAM**. • Enter Procedure 2.1.5. 1.2 If abnormal neutron flux oscillations are observed while operating in the Stability Exclusion Region: • **SCRAM**. • Enter Procedure 2.1.5.
	CRS/RO	Monitor various independent/redundant parameters and power indications for proper plant response during all power changes; utilize the list below (as a minimum) as dictated by plant conditions: • Reactor Water Level. • Reactor Steam Pressure and Flow. • Reactor Power, APRMs, RBMs, IRMs, or SRMs, as required. • Reactor Recirc Speed, Jet Pump, and Loop Flows. • Total Core Flow and Core Support Plate DP. • Reactor Feed Pump Flow and Speed. • Main Generator Output (Gross and Net).

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 5

Event Description: Reactor Recirculation Pump A Trip

Time	Position	Applicant's Action or Behavior
	BOP	AOP 2.4RR attachment 1 States: 2. If <u>one</u> RR pump trips, perform following: **<u>NOTE</u> 1 –** Core flow may indicate higher than actual if an RR pump is tripped and reverse core flow summer is not operating; the following indicate summer is operating: • Annunciator 9-4-3/E-3 (9-4-3/E-7), RECIRC LOOP A (B) OUT OF SERVICE, alarming. • Indicated core flow is approximately equal to difference between NBI-FI-92A and NBI-FI-92B, JP LOOP FLOW. **<u>NOTE</u> 2 –** It takes ~ 1 minute from time pump has tripped for indicated core flow to stabilize. 1.1 If operation in Stability Exclusion Region, concurrently enter Attachment 3. 1.2 For tripped RR pump, ensure RRMG Set A(B) GEN FIELD BKR open. 1.3 For tripped RR pump, close RR-MO-53A(B), PUMP DISCHARGE VLV. 1.4 Continue with remaining steps in this attachment while waiting to open RR-MO-53A(B). 1.5 After RR-MO-53A(B) has been closed for 5 minutes, open valve. 1.6 Ensure operating RRMG is transferred to Startup Transformer, if available, per Procedure 2.2.18. 1.7 Throttle REC-49(51), MG SET A(B) OIL HX OUTLET (R-931-NW), to maintain oil outlet temperature 90°F to 130°F on RRLO-TI-2626A(B), MG SET HX A(B) OUTLET TEMPERATURE (R-931-NW NEAR HXs), for tripped

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:1	**Scenario No.:** 3	**Event No.:** 5
Event Description: Reactor Recirculation Pump A Trip		

Time	Position	Applicant's Action or Behavior
		RRMG. 1.8 Monitor loop cooldown rate on RR-TR-165, RR SUCTION & FEEDWATER TEMP. If loop cooldown rate exceeds 100°F/hr, initiate Condition Report and evaluate excessive cooldown rate prior to restoration of system normal operation. 1.9 Enter Single Loop Operation per Procedure 2.2.68.1. 2. Dispatch Operators to R-976-W and Non-Critical Switchgear Room to record lockout relays and targets for tripped pump. 3. Align RRMG H&V System per Procedure 2.2.85.
	Role Play	**If dispatched to R-976-W and Non-Critical Switchgear Room to record lockout relays and targets for tripped pump., tell them that you are on your way. In a few minutes call back and tell them that you have OVERLOAD GROUND targets.** **If called to monitor and adjust Reactor Recirc lube oil temperature, tell them that you are on your way and will call them when you are ready. In a few minutes call back and tell them that you are standing by.**
	RO	Displays the Power to Flow map on the CRT and evaluates the location of operation. It will take approximately 1 minute for the screen to update real time data.
	RO	Determines that the plant is not operating in the Stability Exclusion Region of the Power to Flow Map.
	CRS	Address Tech Specs and finds that with one RR Pump out of service,

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.: 1	**Scenario No.:** 3	**Event No.:** 5

Event Description: Reactor Recirculation Pump A Trip

Time	Position	Applicant's Action or Behavior
		LCO 3.4.1 Condition B Required Action B.1 Satisfy the requirements of the LCO within 24 hours. That will required entry into LCOs 3.2.1 APLHGR Single Loop limits, 3.2.2 MCPR single loop operation limits, 3.3.1.1 RPS APRM reset for single loop settings and T 3.3.2 Single Loop Operation LHGR Limits. If missed, this should be asked as a follow-up question of the CRS.
	CRS	Notifies work control of the RR pump failure and need to contact Reactor Engineering inserting GARDEL thermal limits for single loop operation.
	Role Play	**As the work control center, respond to the report and let the CRS know that a work order will be initiated and a team put together to investigate RR pump and Reactor Engineering will be informed of the need to insert GARDEL thermal limits for single loop operation.**
		END OF EVENT
	Notes	
	Proceed to the next event at the direction of the lead examiner	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:	**Scenario No.:** 3	**Event No.:** 6

Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize

Time	Position	Applicant's Action or Behavior
T= 45	RO	Will identify loss of B RR pump, Update the Crew on loss of both RR pumps.
	RO	Performs 2.4RR Immediate Operator Actions. 3. IMMEDIATE OPERATOR ACTIONS 3.1 If both RR pumps are tripped and reactor power > 1% rated thermal. 3.1.1 SCRAM. 3.1.2 Enter Procedure 2.1.5.
	BOP	Will identify loss of Start-up Transformer and Update the Crew.
	CRS/ RO/BOP	One of the crew will notice an increase in Drywell pressure from the indicators on the control board or PMIS
	BOP	Updates the crew that this is an entry into 2.4PC.
	CRS	The CRS will enter EOP 1A and 3A at 1.84 psig in Primary Containment.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:	**Scenario No.:** 3	**Event No.:** 6

Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize

Time	Position	Applicant's Action or Behavior
	RO	Inserts a manual scram by depressing the red manual scram push buttons on panel 9-5. And performs the MITIGATING TASK SCRAM ACTIONS of Procedure 2.1.5 Place REACTOR MODE switch to REFUEL. Announce reactor scram and reactor status to Control Room including controlling systems for critical parameters.
	CRS	Directs the BOP to monitor Primary Containment Parameters. Directs the BOP to secure all Core Spray and RHR (LPCI) pumps from injecting unless needed for adequate core cooling.
	BOP	Updates the Crew that the Startup Transformer has been lost and "F" and "G" Emergency Busses are powered by the Emergency Diesel Generators.
	RO	Secures the RHR and CS Pumps that have started. By placing them in the Pull to Lock position.
	CRS	Directs the RO to stabilize Reactor Pressure below 1050 psig.
	BOP	Dispatches a Station Operator to the Diesel Rooms to monitor the Diesel operation.
	RO	Monitors Vessel level and pressure and reports them periodically to the CRS

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:	**Scenario No.:** 3	**Event No.:** 6

Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize

Time	Position	Applicant's Action or Behavior
	BOP	Reports the loss of Off-site Power and required entry into 5.3EMPWR.
	CRS	Directs the BOP to Enter 5.3EMPWR and restore SW, REC and Instrument Air as needed then to concentrate on the other portions of the procedures when he was available.
	CRS	Directs the RO or the BOP to maintain Reactor Water level between +3 to +54 inches
	RO	Using HPCI and RCIC systems, attempts to maintain reactor water level within the desired level band.
	CRS	Enters EOP 3A Primary Containment Control and directs the BOP to operate all available RHR pumps not needed for adequate core cooling in Suppression Pool cooling.
	Note	**The RO will respond to the next event during this event. (RCIC Turbine Trip)**
	BOP	5.3EMPWR 1.2 If REC System has isolated, perform following: 1.2.1 Ensure two REC pumps are running. 1.2.2 Place DRYWELL REC ISOL VALVE CONTROL switch to OPEN. 1.2.3 Throttle open REC HX outlet valve for a HX that was in service to maintain REC-PI-452, REC HEADER

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
		PRESSURE, in green band. 1.2.3.1 REC-MO-712, HX A OUTLET VLV; or 1.2.3.2 REC-MO-713, HX B OUTLET VLV. 1.2.4 Start third REC pump, if necessary. 1.2.5 Throttle open REC HX outlet valve to maintain REC HEADER PRESSURE in top of green band. 1.2.5.1 REC-MO-712; or 1.2.5.2 REC-MO-713. 1.2.6 Ensure following valves are closed: 1.2.6.1 REC-AO-701, RRMG SET OIL HX INLET. 1.2.6.2 REC-AO-710, RWCU NON-REGEN HX INLET. 1.2.7 Perform following concurrently: 1.2.7.1 Open REC-MO-700, NON-CRITICAL HEADER SUPPLY. 1.2.7.2 Continue throttling open REC HX outlet valve to maintain REC HEADER PRESSURE in green band. a. REC-MO-712; or b. REC-MO-713. 1.2.8 Ensure REC HX outlet valve full open. 1.2.8.1 REC-MO-712; or 1.2.8.2 REC-MO-713. 1.2.9 Place DRYWELL REC ISOL VALVE CONTROL switch to AUTO.	
	BOP	Starts one loop of RHR in Suppression Pool Cooling by using the Hard Card located on the panel.	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
		1. SUPPRESSION POOL COOLING 1.1 Place RHR SW System in service: 1.1.1 Start SWBP(s). 1.1.2 Adjust SW-MO-89A(B) to maintain flow between 2500 and 4000 gpm. 1.2 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 1.3 If required, place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL. 1.4 Open RHR-MO-39A(B). 1.5 If reactor pressure ≤ 300 psig and injection not desired, close RHR MO 27A(B), OUTBD INJECTION VLV. NOTE – If directed by EOP 3A, maximize cooling. 1.6 Ensure RHR PUMP running. 1.7 Throttle RHR-MO-34A(B), as required to obtain desired cooling flow. 1.8 Throttle RHR-MO-66A(B), as required to obtain desired cooling rate. 1.9 If PCIS Group 6 lights lit on Panel 9-5, ensure one of following open: 1.9.1 REC-MO-711; or 1.9.2 REC-MO-714. 1.10 If additional cooling required, initiate cooling in non-running RHR Loop and start additional pumps.	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
	BOP	Restoring Station Air in accordance with 5.3EMPWR 1.6 If SAC(s) not running: 1.6.1 Place COMPRESSOR 1A control switch to OFF (PANEL A). 1.6.2 At 480V, SUBSTATION 1F, press TRIP button on Breaker 4C, SAC 1A (Critical Switchgear Room F). 1.6.3 Place COMPRESSOR 1A control switch to AUTO (PANEL A). NOTE – Upon loss of air or power, TEC/REC isolation valves fail such that SAC 1A and 1B align to REC. 1.6.4 At LRP-PNL-710, COMPRESSORS A, B, C COOLANT SELECTOR PANEL (Control Building Basement), place "B" COMPRESSOR COOLANT switch to REC. 1.6.5 Check REC supply and return AOVs open (above SAC). 1.6.6 Check TEC supply and return AOVs closed (above SAC). 1.6.7 Place COMPRESSOR 1B control switch to OFF (PANEL A). 1.6.8 At 480V, SUBSTATION 1G, press TRIP button on Breaker 2C, SAC1B (Critical Switchgear Room G). 1.6.9 Place COMPRESSOR 1B control switch to AUTO (PANEL A).	
	CRS	Directs the RO to place one loop of RHR in Torus Sprays before torus pressure reaches 10 psig.	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
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Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
	RO	Starts one loop of RHR in Torus Sprays by using the Hard Card located on the panel. 2. CONTAINMENT SPRAYS 2.1 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 2.2 If required, place CONTMT COOLING VLV CONTROL PERMISSIVE switch to MANUAL. 2.3 Ensure RHR-MO-39A(B) open. 2.4 If reactor pressure ≤300 psig and injection not desired, close RHR MO 27A(B), OUTBD INJECTION VLV. 2.5 Ensure RHR PUMP(s) running. 2.6 Throttle RHR-MO-38A(B) to maintain desired containment pressure. 2.7 Throttle RHR-MO-66A(B) to obtain desired cooling rate.	
	CRS	Directs the BOP to place one loop of RHR in Drywell Sprays when torus pressure exceeds 10 psig.	
	Critical Task	Initiate drywell sprays when torus pressure exceeds 10 psig (or before drywell temperature reaches 280°F).	
	RO	2. CONTAINMENT SPRAYS 2.1 If required, with CRS permission, place CONTMT COOLING 2/3 CORE VALVE CONTROL PERMISSIVE switch to MANUAL OVERRD. 2.2 If required, place CONTMT COOLING VLV CONTROL	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
		PERMISSIVE switch to MANUAL. 2.3 Ensure RHR-MO-39A(B) open. 2.4 If reactor pressure ≤ 300 psig and injection not desired, close RHR MO 27A(B), OUTBD INJECTION VLV. 2.5 Ensure RHR PUMP(s) running. 2.6 Throttle RHR-MO-38A(B) to maintain desired containment pressure. 2.7 Throttle RHR-MO-66A(B) to obtain desired cooling rate. 2.8 If Drywell Spray required: 2.8.1 Open RHR-MO-31A(B). 2.8.2 Throttle RHR-MO-26A(B) to maintain desired containment pressure.	
	RO	Updates the Crew that Reactor Water level cannot be maintained within the designated band using high pressure systems only.	
	CRS	Directs the BOP to Inhibit ADS	
	BOP	Places both ADS Inhibit Switches to the Inhibit position.	
	CRS	Directs the BOP and RO to Make two or more injections available for injection	
	RO/BOP	Report that two or more injection systems are lined-up for injection.	

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

Op-Test No.:	**Scenario No.:** 3	**Event No.:** 6

Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize

Time	Position	Applicant's Action or Behavior
	BOP	Updates Crew as water level continues to lower
	BOP	Updates the crew when Reactor Water Level is at the top of active fuel (0" FZ)
	BOP	Updates the Crew when Reactor Water level restored and maintained above -25" FZ
	CRS	Updates the crew and directs the RO to open 6 SRVs and inform him when Vessel pressure is within 50 psig of Torus pressure
	Critical Task	When RPV level cannot be restored and maintained > -183", Emergency Depressurize per EOP 2A.
	RO	Uncovers and opens the six SRVs designated for ADS. Observing the Red and Amber lights and falling RPV Pressure.
	RO	Updates the Crew when RPV pressure is within 50 psig of Torus pressure.
	BOP	As RVP pressure lowers he controls the injection from the Low Pressure Injection by either securing pumps or throttling the injection valves.

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
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Op-Test No.:		**Scenario No.:** 3	**Event No.:** 6
Event Description: Medium Steam Leak in Drywell / Loss of off-site power on Scram. Emergency Depressurize			
Time	**Position**	**Applicant's Action or Behavior**	
	BOP/RO	Restore Reactor Water level using Low Pressure Injection sources to a band of +3 to +54 inches.	
		END OF EVENT	
	Notes		
	Proceed to the next event at the direction of the lead examiner		

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
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Op-Test No.:		**Scenario No.:** 3	**Event No.:** 7
Event Description: RCIC Trips on Overspeed			
Time	**Position**	**Applicant's Action or Behavior**	
T= 50	RO	While monitoring Reactor water level, notes that RCIC has tripped and updates the crew.	
	RO	Notes that the RCIC-MO-131 is cycling and dispatches a Station Operator to open the breaker.	
	RO	Updates the Crew that RCIC is unavailable for use as an injection or Pressure control system.	
		END OF EVENT	
	Notes		
	End of Scenario		

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

CREW CRITICAL TASKS	TECHNICAL BASIS	SAT	UNSAT
When RPV level cannot be restored and maintained > -183", Emergency Depressurize per EOP 2A.	The MSCRWL is the lowest RPV water level at which the covered portion of the reactor core will generate sufficient steam to preclude any clad temperature in the uncovered portion of the core from exceeding 1500°F. When water level decreases below MSCRWL with injection, clad temperatures may exceed 1500°F.		
Initiate drywell sprays when torus pressure exceeds 10 psig (or before drywell temperature reaches 280°F).	Drywell sprays are initiated in two legs of EOP-03A: Temperature and Pressure control. Regarding drywell temperature, if operation of all available drywell cooling is unable to terminate increasing drywell temperature before the structural design temperature limit of 280°F is reached, drywell sprays are initiated to affect the required drywell temperature reduction status of the DSIL and adequate core cooling permitting. Spray operation effects a drywell pressure and temperature reduction through the combined effects of evaporative cooling and convective cooling. Regarding drywell pressure, Operation of drywell sprays reduces primary containment pressure by condensing any steam that may be present and by absorbing heat from the containment atmosphere through the combined effects of evaporative and convective cooling. Drywell sprays are initiated when torus pressure exceeds the torus Spray Initiation Pressure (10# torus		

Lesson Title:	Shift DEH Pumps, RR flow instrument fails, RR Pump Trip, Steam Leak in Drywell, Loss of Off-Site Power		
Lesson#:	SKL0124831	**Rev. No.:**	00

CREW CRITICAL TASKS	TECHNICAL BASIS	SAT	UNSAT
	pressure) to preclude chugging the cyclic condensation of steam at the downcomer openings of the drywell vents. When a steam bubble collapses at the exit of the downcomers, the rush of water drawn into the downcomers to fill the void induces stresses at the junction of the downcomers and the vent header in Mark I containments and at the junction of the downcomers. Repeated application of such stresses could cause fatigue failure of these joints; thereby, creating a direct path between the drywell and torus. When drywell sprays are initiated, the resulting pressure reduction opens the vacuum breakers, drawing non-condensable from the torus back into the drywell. This condition defines the Torus Spray Initiation Pressure. As the drywell atmosphere is purged to the Torus and replaced by steam, torus pressure increases. The SCSIP is the lowest torus pressure which can occur when 95% of the non-condensable in the drywell have been transferred to the torus. Since, the failure mode is based on fatigue failure, a precise time limit or pressure cannot be provided. Therefore, prompt initiation of drywell sprays is required based on existing EOP priorities.		

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open	Rev. No.:	00

Lesson#:	SKL0124832	SAP BET #	37003
Prerequisites:	None	Duration (Hours):	N/A

IX. INITIAL CONDITIONS

E. Plant Status:

1. 75% power End of Cycle.

2. Rod Sequence Information:

Page: 3
Rod: 10-27
Notch: 48

F. Tech. Spec. Limitations in effect:

None

G. Significant problems/abnormalities:

Small leak on the in service DEH pump

H. Evolutions/maintenance for the on-coming shift:

1. Shift DEH Pumps per 2.2.80 Section 5 due to a small leak on B DEH Pump.
2. Reduce Reactor Power to 70%.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open	**Rev. No.:**	00

Lesson#:	SKL0124832	**SAP BET #**	37003
Prerequisites:	None	**Duration (Hours):**	N/A

Facility: Cooper Nuclear Station Scenario No.: NRC 4 Op-Test No: _____

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: The plant is operating at ~60% power during Start up.

Turnover: After the crew has assumed the watch, Complete RFP B startup (Pump is Idling at 1250 RPM), continue pulling rods to achieve 550 MWe for start up when requested by load dispatcher.

Event No.	Timeline	Event Type*	Event Description
1	T=0	N	Complete RFP B startup to automatic
2	T=30	R	Raise Reactor Power with Control Rods
3	T=40	I	RBM Failure
4	T=50	C	CRD Pump A trip
5	T=60	C	Loss of Power to RWCU-MO-15
6	T=70	M	RWCU Leak in RB (Can not Isolate)
7	T=75	C	All MT Bypass Valves fail closed
8	T=80	C	1 ADS Valve fails to open on ED

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Scenario Description

The plant is operating at ~60% power.

After the Crew assumes the watch the crew will complete start up of RFP B from IDLE to automatic.

Load dispatcher will contact the control room requesting power increase to 500 MWe. During control rod withdrawal the A RBM will fail upscale resulting in a Rod Block. The RBM will be required to be bypassed to continue rod withdrawal. CRS will declare RBM A INOP which results in a potential LCO for 3.3.2.1.

After the RBM is bypassed and TS call has been made CRD pump A trips. The crew will respond per the alarm card and manually shut the CRD Flow Control Valves. Once the CRD FCVs are shut they will start CRD pump B and manually restore CRD flow. If an accumulator alarm is received Tech Spec 3.1.5 would be applicable. If the crew takes actions in a timely manner no accumulator alarms will be received and no Tech Specs are applicable.

When requested by the lead evaluator the next event will commence.

Shortly after the crew completes actions for restoring CRD system, RWCU pump A trips on low flow and RWCU-MO-15 looses power. CRS will evaluate TS and determine LCO 3.6.1.3 Condition A and TS 3.3.3.1 Condition A applies.

After the crew has addressed RWCU system and TS, a leak will develop on RWCU in the Reactor Building. RWCU-MO-18 will not shut and RWCU-MO-15 has no power so the leak is not isolable. This will result in the crew entering EOP-5A, and since the leak can not be isolated EOP-1A.

When the crew scrams the Reactor the Main turbine bypass valves will fail closed this prevents the crew from being able to anticipate Emergency Depressurization.

When required by EOP-5A to Emergency Depressurize (ED) one SRV (ADS valve) will fail to open. The operator will identify this and open an additional SRV to ensure 6 are open.

The scenario may be terminated when ED is complete and reactor water level is being controlled in the assigned band.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Simulator Setup

Type	Event	Description	State	Delay	Ramp	Value
Malf	None	RP12 Group 3 Isolation failure	TRUE	0	0	TRUE
Malf	3	NM01A Rod Block monitor failure Rod Block Channel	Current	0	30 sec	TRUE
Malf	4	rd08a CRD Hydraulic Pump TRIP CRD Pump 1A	Current	0	0	TRUE
Malf	6	CU09 Cold Water CU leak	0	0	0	100
Malf	None	TC07a Bypass Valve #1 Failure	0	0	0	0
Malf	None	TC07b Bypass Valve #2 Failure	0	0	0	0
Malf	None	TC07c Bypass Valve #3 Failure	0	0	0	0
Malf	None	AD06H Reactor Pressure relief valve complete	0	0	0	0
Malf	6	CU01b RWCU Pump Seal Failure Pump B	0	0	6 Min	100
Malf	7	RP16a Spurious PCIS Group 6 Isolation Signal	FALSE	5sec	0	TRUE
Malf	7	RP16b Spurious PCIS Group 6 Isolation Signal	FALSE	5sec	0	TRUE
Malf	7	RP16c Spurious PCIS Group 6 Isolation Signal	FALSE	0	0	TRUE
Malf	7	RP16d Spurious PCIS Group 6 Isolation Signal	FALSE	0	0	TRUE
Rem	5	CU07 RWCU Pump 1A isolation	Open	0	0	Close
Rem	6	SW28 REC outlet from NRHX (REC-V-56)	60	0	3 min	0
Rem	6	CU13 Regen HX Bypass valve (V-39)	Close	0	0	Open
Rem	6	CU02 RWCU pump 1B minipurge PCV-FREG-1B	Open	0	0	Close
Ovrd	None	ZDIPCISSWS15(2) 02S18 Inboard Isolation valve MO-15	OPEN	0	0	OPEN
Ovrd	None	ZDIPCISSWS16(2) 02S40 CU-MO18 outboard isolation control switch	OPEN	0	0	OPEN
Ovrd	5	ZLOPCISSWS15(1) 02DS033	OFF	0	0	OFF

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Type	Event	Description	State	Delay	Ramp	Value
		Inboard isolation valve MO 15				
Ovrd	5	ZLOPCISSWS15(2) 02DS034 Inboard isolation valve MO 15	ON	0	0	OFF
Ovrd	5	ZLOPCMISWS15(2) 01A05DS54 Inboard isolation valve MO 15	ON	0	0	OFF

Event	Event Action	Command
7	1A Scram White light OFF	ZLORPSDS1A==0

Panel setup:

6. Ensure BOL Start Up Book at 9-5 marked up to next rod to pull. (Rod group 10/3 Rod 26-19 at 00)
7. Ensure Reactor Recirc Controllers Selected to “P” or “V”
8. Adjust Main Generator to +50 to +100 MVAR
9. Ensure APRM AGAF +/- 2%

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
T=0	CRS	Directs the BOP to complete RFP B startup and place the pump in automatic control.
	BOP	Reviews and continues 2.2.28.1 Section 6 currently at step 6.4. 6.3 Ensure second RFPT is at IDLE SPEED per Procedure 2 .2 .28. 6 .4 For on-coming RFP, at a RFPT/RVLC HMI, perform following : 6.4.1 Select RFPT-1A (1B) System. 6.4.2 Select MIN FLOW screen. 6.4.3 Select MAN for FCV-11A (FCV-11 B) controller and verify it backlights. 6.4.4 Ensure minimum flow valve RF-FCV-11A (RF-FCV-11 B) is fully OPEN. 6.5 Ensure RVLC System in Single Element Control. If required, transfer from AUTO (3 element) to Single Element Control as follows : 6.5.1 At Panel 9-5, place RFC-SW-S2, LEVEL CONTROL SELECT switch, to 1 ELEMENT CONT position. 6.5.2 At RVLC/RFPT HMI, select RVLC System. 6.5.3 Select CONTROL screen and verify SINGLE ELEMENT ball is yellow. 6.6 At a RFPT/RVLC HMI, perform following : 6.6.1 Select RFPT-1A (1B) System. 6.6.2 Select FEEDPUMP 1A (1B) screen.

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Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		6.6.3 Verify IDLE box is selected. 6.6.4 Verify following in the IDLE box : 6 .6 .4.1 START TYPE is as selected. 6 .6.4.2 TIME REMAINING is equal to zero. 6.6.4.3 CONTINUE button is highlighted green. **NOTE — Step 6.6.5 will raise RFPT speed from IDLE SPEED to MINIMUM GOVERNOR speed (2000 rpm) at a ramp rate consistent with selected start type (see Attachment 1).** 6.6.5 In IDLE box, press green CONTINUE button and verify following : 6 .6 .5.1 ACCELERATE TO MIN GOVERNOR box selects. 6 .6.5.2 In ACCELERATE to MIN GOVERNOR box, verify following : a. TURBINE SPEED is rising . b. TARGET SETPOINT = 2000. 6.6.6 When turbine speed reaches — 2000, verify following : 6.6.6.1 MINIMUM GOVERNOR box selects. 6.6.6.2 In MINIMUM GOVERNOR box, TIME REMAINING commences count down as required by START TYPE selected (see Attachment 1). **NOTE — Screen changes in following step occur rapidly.** 6.6.7 When TIME REMAINING is zero, at MINIMUM GOVERNOR box, select green CONTINUE button and verify following: 6.6.7.1 ON-LINE box selects.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		6.6.8 Ensure MIN FLOW screen selects for FEEDPUMP 1A(1B). **NOTE 1 — Enabling DISCH PRESS FOLLOW Mode will raise speed of on-coming RFP until pump discharge pressure is matched to combined discharge header pressure.** **NOTE 2 — RFP combined discharge header pressure can be viewed in RFPT-1A or RFPT-1B System on FEEDWATER MIMIC screen under PT10 or RF-PI-10 (Panel A).** 6 .7 Match on-coming RFPT discharge pressure with combined discharge header pressure by one of following methods : 6 .7.1 (Preferred) Using DISCHARGE PRESSURE FOLLOW method, perform following at a RFPT/RVLC HMI : 6.7.1.1 Select RFPT-1A (1B) System. 6.7.1.2 Select MIN FLOW screen. 6.7.1.3 Verify DISCH PRESS FOLLOW button is green. a. If button is not green, go to Step 6 .7 .2. 6.7.1.4 Verify in DISCH PRESS FOLLOW box, TARGET SPEED is less than operating RFP speed. **NOTE — Ramp rate for DISCH PRESS FOLLOW is 500 rpm/min.** 6.7.1.5 Press ENABLE button for DISCH PRESS FOLLOW and verify it backlights yellow. 6.7.1.6 When TARGET SPEED is reached, select MDEM and verify it backlights yellow. 6.7.2 Select RFPT-1A (1B) System; N/A if 6 .7 .1 was performed.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		6.7.2.1 Select MIN FLOW screen. 6.7.2.2 Ensure MDEM selected. 6.7.2.3 Select desired ramp rate. 6.7.2.4 Raise SPEED TARGET and speed of RFPT being placed in service using UP/DOWN arrows until its discharge pressure is equal to or slightly lower than RFP combined discharge header pressure. 6.8 Slowly Jog open following RFP discharge valve for RFP being placed in service: 6.8.1 RFP A - RF-MO-29, RFP A DISCHARGE VLV. 6.8.2 RFP B - RF-MO-30, RFP B DISCHARGE VLV. 6.9 Perform following at a RFPT/RVLC HMI : 6.9.1 Select MAIN CONTROL screen and ensure null bias for in service RFPT set to 0 by using one of following methods: **NOTE 1 – Ramp rate can be set at any of following values; HIGH (180 rpm/min), MED (120 rpm/min), or LOW (60 rpm/min).** **NOTE 2 – Do not adjust either bias control to > 0.** 6.9.1.1 To use BIAS SET, perform following : a. Select BIAS SET and verify it backlights yellow. b. Select BIAS TARGET (pop-up box appears). c. Input desired value and select OK. d. Select HIGH, MED, or LOW ramp rate and verify it backlights yellow. e. Press GO button (outline flashes yellow until

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		setpoint reached) . 6 .9.1.2 Use UP/DOWN arrows to change bias . 6.9.2 For on-coming RFPT, perform following concurrently: 6.9.2.1 Slowly raise speed of on-coming RFPT using UP/DOWN arrows on MAIN CONTROL until on-coming RFPT speed is within 600 rpm of in service RFPT. 6.9.2.2 Check operating RFPT speed drops to maintain RPV level. 6.9.3 When on-coming RFPT is within 600 rpm of in service RFPT, perform following: 6.9.3.1 Verify AUTO PERMISSIVE light (below DOWN arrow) is green. 6.9.3.2 Select AUTO button on on-coming RFPT controller and verify it backlights yellow. **NOTE – Do not adjust either bias control to > 0.** 6.9.4 Select MAIN CONTROL screen and adjust bias of on-coming RFP to – 0 using one of following methods : **NOTE – Ramp rate can be set at any of the following values ; HIGH** **(180 rpm/min), MED (120 rpm/min), or LOW (60 rpm/min).** 6.9.4.1 Use UP/DOWN arrows to change bias. 6.9.4.2 To use BIAS SET, perform following : a. Select BIAS SET and verify it backlights yellow. b. Select BIAS TARGET (pop-up box appears). c. Input desired value and select OK. d. Select HIGH, MED, or LOW ramp rate and verify it

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		backlights yellow. e. Press GO button (outline flashes yellow until setpoint reached). 6.9.5 When feedflow on on-coming RFP is > 1 .5 Mlbm/hr, ensure on-coming RFP, minimum flow valve (RF-FCV-1 1A/RF-FCV-1 1 B) is closed and in AUTO as follows: 6.9.5.1 Select RFPT-1A (1B) System. 6.9.5.2 Select MIN FLOW screen. **CAUTION – Closing on-coming minimum flow valve too fast could cause extreme level fluctuations.** 6.9.5.3 Using DOWN arrow, slowly close on-coming RFP minimum flow valve (RF-FCV-1 1A/RF-FCV-11 B). 6.9.5.4 Select AUTO. 6.9.6 If required, select MAIN CONTROL screen and adjust bias on RFPT-1A and RFPT-1 B to balance pump flows as close as possible using one of following methods: **NOTE – Ramp rate can be set at any of the following values ; HIGH (180 rpm/min), MED (120 rpm/min), or LOW (60 rpm/min).** 6.9.6.1 Use UP/DOWN arrows to change bias. 6.9.6.2 To use BIAS SET, perform following: a. Select BIAS SET and verify it backlights yellow. b. Select BIAS TARGET (pop-up box appears). c. Input desired value and select OK.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		d. Select HIGH, MED, or LOW ramp rate and verify it backlights yellow. e. Press GO button (outline flashes yellow until setpoint reached) . 6.10 Ensure RFPT TURNING GEAR control switch for oncoming RFPT is in AUTO. 6.11 Ensure both RFPs are operating properly and controlling RPV level. 6.12 Close following RFPT drains for RFPT being placed in service: 6.12.1 RFPT-A 6.12.1.1 RF-DRV-9A, RFP A HP STOP VLV ABOVE SEAT DRAIN. 6.12.1.2 RF-DRV-11A, RFP ALP STOP VLV ABOVE SEAT DRAIN. 6.12.1.3 RF-DRV-10A, RFP A FIRST STAGE DRAIN. 6.12.2 RFPT-B 6.12.2.1 RF-DRV-9B, RFP B HP STOP VLV ABOVE SEAT DRAIN. 6.12.2.2 RF-DRV-11 B, RFP B LP STOP VLV ABOVE SEAT DRAIN. 6.12.2.3 RF-DRV-10B, RFP B FIRST STAGE DRAIN. 6.13 When directed by SM/CRS, place RVLC System in AUTO (3 element) as follows: 6.13.1 At RVLC/RFPT HMI, select RVLC System. 6.13.2 Select CONTROL screen and verify on Master Controller that PERMISSIVE ball is yellow. 6.13.3 If PERMISSIVE ball is not YELLOW, ensure following

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
		conditions are met: 6.13.3.1 Master Level Controller is in AUTO. 6.13.3.2 Each FW flow element in each loop is valid, if both RFPs are in AUTO. 6.13.3.3 At least two steam flow elements are valid. 6.13.3.4 Turbine 1st stage flow is valid if less than four steam flow elements are valid. 6.13.3.5 At least one individual RFP controller is in AUTO. 6.13.3.6 Total steam flow > 1 Mlbm/hr. 6.13.3.7 At least one Reactor Vessel Level indicator is valid. 6.13.4 If PERMISSIVE ball is still not YELLOW, contact System Engineer. **NOTE – RFC-SW-S2, LEVEL CONTROL SELECT switch (Panel 9-5), must be in or taken to 1 position prior to returning RVLCS to AUTO (3 element) control.** 6.13.5 Ensure RFC-SW-S2, LEVEL CONTROL SELECT switch, is in 1 ELEMENT CONT position (Panel 9-5). 6.13.6 Place RFC-SW-S2, LEVEL CONTROL SELECT switch, to AUTO position. 6.13.7 At CONTROL screen, verify THREE ELEMENT ball is yellow .

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: ___ **Scenario No.:** NRC 4 **Event No.:** 1

Event Description: Complete Start up and place RFP B in automatic.

Time	Position	Applicant's Action or Behavior
	Role Play	**As the Station Operator report RFP B is running normally.**
	RO	Supplies Peer Checks and monitor plant for changes due to placing RFP in service.
	BOP	Report that RFP B is in service and RVLC is in automatic 3 element control.
		END OF EVENT
	Notes	
	Proceed to next event at the direction of the lead examiner.	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 2

Event Description: When requested by load dispatcher raise Reactor power by pulling control rods to establish 500MWe net.

Time	Position	Applicant's Action or Behavior
	CRS	Directs RO to raise Reactor Power with control rods to establish 500 MWe net.
	RO	Reviews Rod Package, 2.1.10, and 10.13 in preparation for Rod Pulls.
	CRS/RO	Withdraws Control Rods as directed by the Rod Package to establish 500 MWe net.
	BOP	Peer checks control rod selection and withdrawal IAW 2.1.10 and 2.0.3 guidance.
		END OF EVENT
	Notes	
	DURING ROD WITHDRAWAL WHEN EXAMINER HAS EVALUATED RECTIVITY MANIPULATIONS MOVE TO NEXT EVENT.	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 3

Event Description: RBM fails upscale

Time	Position	Applicant's Action or Behavior
	RO	Reports the following Annunciators 9-5-1/A-4 Rod Withdrawal Block; 9-5-1/D-4 RBM Upscale or INOP.
	CRS	Acknowledges Annunciator report and stops power change.
	RO	Diagnosis RBM A has failed upscale.
	BOP	Addresses actions in the ARPs: 9-5-1/A-4 Rod Withdrawal Block 1. AUTOMATIC ACTIONS 1.1 Rod withdrawal is inhibited. 2. OPERATOR OBSERVATION AND ACTION 2.1 Observe the white Rod Out Permit light is off. 2.2 Determine from the REACTOR MODE switch position and setpoints which rod block is alarming. 9-5-1/D-4 RBM Upscale or INOP 1. AUTOMATIC ACTIONS 1.1 Rod block. 2. OPERATOR OBSERVATION AND ACTION 2.1 Check white ROD OUT PERMIT light is off . 2.2 Determine from Panel 9-5 which trip has been generated . 2.3 For upscale trip, perform following : 2.3.1 Verify correct control rod is selected per Procedure 10 .13. 2.3.2 If correct control rod is selected, deselect control rod to clear rod block alarm.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 3

Event Description: RBM fails upscale

Time	Position	Applicant's Action or Behavior
		2.3.3 If control rod selected is not correct per Procedure 10.13, perform following : 2.3.3.1 Verify no thermal limits have been exceeded. 2.3.3.2 Deselect control rod to clear rod block alarm. 2.3.3.3 Recover mispositioned control rod per Procedure 10.13. 2.3.4 If additional control rod withdrawal is required, perform following : 2.3.4.1 Reselect control rod. 2.3.4.2 Continue control rod withdrawal per Procedure 10.13. 2.4 For inoperable trip, perform following : 2.4.1 Check alarm lights on Panel 9-14 to determine cause of alarm. 2.4.2 If NO BALANCE light is on, attempt to clear light by performing following : 2.4.2.1 Place MODE switch to ZERO 2. 2.4.2.2 Place MODE switch to STANDBY. 2.5 Check following if alarm lights do not indicate cause of inoperable trip: 2.5.1 MODE switch is in OPERATE. 2.5.2 All modules and cards securely installed. 2.5.3 Check for blown fuses in drawer. 2.6 **Bypass monitor and ensure following requirements are met:** 2.6.1 Technical Specifications. 2.6.2 Procedure 10.10.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 3

Event Description: RBM fails upscale

Time	Position	Applicant's Action or Behavior
	CRS	CRS will evaluate **potential** TS and determine LCO 3.3.2.1 Condition A applies. LCO 3.3.2.1 The control rod block instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE. APPLICABILITY: According to Table 3.3.2.1-1. CONDITION A. One rod block monitor (RBM) channel inoperable. REQUIRED ACTION A.1 Restore RBM channel to OPERABLE status. COMPLETION TIME 24 hours
	CRS	Contact Work control to investigate.
		END OF EVENT
	Notes	
	Proceed to next event at the direction of the lead examiner.	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 4

Event Description: CRD Pump A trip

Time	Position	Applicant's Action or Behavior
T=45	RO	Identifies CRD parameters changing and alarm for CRD Pump A trip on 9-5.
	CRS	Updates crew on entry into 2.4CRD
	BOP	CRD PUMP A BREAKER TRIP alarm card states: 1. OPERATOR OBSERVATION AND ACTION 1.1. Restore CRD as follows : 1.1.1. Place CRD-FC-301 in MAN. 1.1.2. Adjust CRD-FC-301 to minimum. 1.1.3. Start CRD Pump B. 1.1.4. Slowly adjust CRD-FC-301 to obtain flow of 50 gpm. 1.1.5. Balance CRD-FC-301. 1.1.6. Place CRD-FC-301 to BAL.
	RO	Monitor for HCU accumulator alarms
		END OF EVENT
	Notes	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
T=15	BOP	Updates the Crew that Annunciator 9-4-2/B-4 RWCU PUMP A LOW FLOW and 9-4-2/E5 RWCU FILTER DEMIN FAILURE are in and RWCU-MO-15 has no power.
	BOP	Sends SO to investigate.
	ROLE PLAY	**As SO report back no obvious reason for pump trip. Breaker for RWCU-MO-15 is tripped on MCC-R can not determine flag need E-shop support.**
	CRS	Contacts work control to investigate.
	CRS	Evaluates TS and determines LCO 3.6.1.3 Condition A and 3.3.3.1 Condition A applies: LC0 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE. APPLICABILITY: MODES 1, 2, and 3, When associated instrumentation is required to be OPERABLE per LC0 3.3.6.1, "Primary Containment Isolation Instrumentation." CONDITION A. *-NOTE- Only applicable to penetration flow paths with two PCIVs.* One or more penetration flow paths with one PCIV inoperable except for MSIV leakage not within limit. REQUIRED ACTION

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
		A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured. COMPLETION TIME 4 hours except for main steam 1 line 8 hours for main steam line. <u>AND</u> REQUIRED ACTION A.2 - *NOTES - 1. Isolation devices in high radiation areas may be verified by use of administrative means. 2. Isolation devices that are locked, sealed, or otherwise secured may be verified by use of administrative means.* A.2 Verify the affected penetration flow path is isolated. COMPLETION TIME Once per 31 days for isolation devices outside primary containment AND Prior to entering MODE 2 or 3 from MODE 4, if primary containment was de-inerted while in MODE 4, if not performed within the previous 92 days, for isolation devices inside primary For TS 3.3.3.1: 3.3 INSTRUMENTATION

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
		3.3.3.1 Post Accident Monitoring (PAM) Instrumentation LC0 3.3.3.1 The PAM instrumentation f o r each Function in Table 3.3.3.1-1 shall be OPERABLE. APPLICABILITY: MODES 1 and 2. ACTIONS **NOTES** 1. LC0 3.0.4 is not applicable. 2. Separate Condition entry is allowed for each Function. For Function 5, separate Condition entry is allowed for each penetration flow path. CONDITION A. One or more Functions with one required channel inoperable. REQUIRED ACTION A.1 Restore required channel to OPERABLE status. COMPLETION TIME 30 days
	BOP	ARP 9-4-2/B-4 RWCU PUMP A LOW FLOW 3. OPERATOR OBSERVATION AND ACTION **NOTE –** RWCU Pump A trips at 50 gpm.

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
		3.1 If RWCU F/D(s) in service, check for proper system operation. 3.2 If RWCU F/D(s) are <u>NOT</u> in service and the RWCU Pump A is running, perform following: • Dispatch Operator to check RWCU-DPIS-125A, RWCU PUMP DISCHARGE FLOW (R-931-NW on LR 25-2-1), reading and report to Control Room if > 2" Wg. • If RWCU-DPIS-125A is ≤ 2" Wg, throttle appropriate valve to raise to > 2" Wg. 3.2..1 RWCU-MO-74, DEMIN SUCTION BYPASS VLV. 3.2..2 RWCU-MO-68, RETURN LINE TO RX VLV. 3.2..3 RWCU-RMC-143, BD VLV 55 FLOW CONTROL. 3.2..4 RWCU-11, RWCU-FPC CROSS-TIE FIRST ISOLATION (RWCU Valve Room). 3.3 If RWCU Pump A tripped, perform following: • If RWCU-MO-15 or RWCU-MO-18 closed, throttle RWCU-MO-74, DEMIN SUCTION BYPASS VLV, until pressure indicated on RWCU-PI-131, REGEN HX IND, is equivalent to reactor pressure. • If RWCU-MO-74 could not be opened, close CRD-

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
		189, RWCU MINIPURGE ISOLATION. • If core flow < 20% of rated, enter Procedure 2.4RR. • If RWCU System cannot be placed in service within 15 minutes from time of low flow condition, ensure RWCU-395, SUBCOOLING LINE ISOLATION (RWCU HX Room), is closed.© • Monitor reactor water conductivity. TLCO 3.4.1 requires reactor water sampling more frequently: 3.3..1 When continuous conductivity monitor is inoperable. 3.3..2 When conductivity is > 0.7 μmho. • If low flow from half or full Group 3 Isolation, enter Procedure 2.1.22. • Place system in service per Procedure 2.2.66. • Place RWCU PUMP A switch to STOP to clear pump low flow alarm. ARP 9-4-2/E5 RWCU FILTER DEMIN FAILURE 4. OPERATOR OBSERVATION AND ACTION 4.1 Check RWCU filter demineralizer control Panel 12-4 for alarms.
	Role	**As the Reactor Building Station Operator respond to the**

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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 5

Event Description: Loss of power to RWCU-MO-15.

Time	Position	Applicant's Action or Behavior
	Play	**request and report back 12-4 Alarm is Effluent Low Flow A and RWCU A Hold pump is running. No indications of cause of low flow still investigating.**
	Role Play	**When called, as the Chemistry department acknowledge the sample point will need to be shifted to sample point #1.**
		END OF EVENT
	Notes	
	Proceed to next event at the direction of the lead examiner.	

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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 6

Event Description: RWCU System Leak in Reactor Building.

Time	Position	Applicant's Action or Behavior
	BOP/RO	Update crew on Annunciator 9-3-1/E-10 Area High Temperature
	BOP	From Ronan screen determines leak is in RWCU room.
	RO/BOP	Diagnose PCIS Group 3 failed to occur and attempts to manually Isolate RWCU.
	CRS	Announces Entry into EOP-5A due to RB temperatures.
	BOP	Takes actions from 9-3-1/E-10 Area High Temp 5. OPERATOR OBSERVATION AND ACTION 5.1 Dispatch Operator to alarming area to determine cause. 5.2 Attempt to isolate leaks. 5.3 If a leak is identified to be from through-wall leakage in a Class 1 System (Reactor Coolant Pressure Boundary) and leak cannot be isolated, then enter Condition and Required Actions of Technical Specifications LCO 3.4.4. 5.4 Start additional HVAC coolers, as required, to maintain normal building temperatures and humidity. 5.5 Enter Procedure 2.4MC-RF for feedwater line break. 5.6 If high area temperature due to leaks and source cannot be determined or Reactor Building is inaccessible, perform following within 1 hour:Ⓟ • Rapidly remove RWCU from service per Procedure 2.2.66.

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Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 6

Event Description: RWCU System Leak in Reactor Building.

Time	Position	Applicant's Action or Behavior
		• Close AS-11, AUXILIARY STEAM SUPPLY HEADER ROOT (HEATER BOILER ROOM) Dispatches SO to attempt to manually close RWCU-MO-18.
	BOP	Updates the crew that RB temperatures are approaching max safe in one area.
	ROLE PLAY	**As RB when dispatched inform control room large amount of steam from RWCU area exiting RB.**
	CRS	Announces Entry into EOP-1A and orders the plant removed from service
	CRITICAL TASK	When a primary system is discharging into the secondary containment through an unisolable break, scram the reactor per EOP-5A and EOP-1A prior to commencing Emergency Depressurization.
	RO	Pushes the manual scram pushbuttons and performs the scram actions. Places the Reactor Mode Switch to the Shutdown Position, and makes a scram report – Reactor Shutdown, APRMs Downscale.
	NOTE	**On the reactor scram Event 7 is active**
	CRS	Will establish level and pressure bands for the crew post scram
	RO/BOP	Determines a spurious Group 6 occurred upon Reactor Scram. This isolates RB ventilation crew can verify the Group but can not reset it.
	CRS	Directs the RO to maintain RPV Level +3 to +54 inches

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Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 6

Event Description: RWCU System Leak in Reactor Building.

Time	Position	Applicant's Action or Behavior
	RO	Monitors level and pressure and adjust the level control system to control level within the desired band of +3 to +54 inches.
	CRS	Directs BOP to maintain RPV pressure 800 to 1050 psig.
	BOP	Identifies Turbine Bypass Valves have failed closed (**Event 8**). This requires use of SRVs to control pressure.
	BOP	Updates crew when Max safe has been exceeded in 2 areas.
	CRS	Enters EOP-2A Emergency Depressurization and orders BOP to Open 6 SRVs
	CRITICAL TASK	When a primary system is discharging into the secondary containment through an unisolable break, execute Emergency Depressurization when maximum safe operating values are exceeded in two or more areas for the same parameter.
	BOP	Opens 6 SRVs one at a time and verifies that the amber light illuminates to indicate that the valves are actually open. (This triggers **EVENT 9**)
	BOP	Updates that RPV Pressure is dropping rapidly.
	BOP	Monitors for RPV Pressure of 50 psig above Torus Pressure, and updates that Emergency Depressurization is completed.
	RO	Monitors and controls injection into the vessel as pressure lowers.
		END OF EVENT
	Notes	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 6

Event Description: RWCU System Leak in Reactor Building.

Time	Position	Applicant's Action or Behavior

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
Lesson No.:	SKL0124832	Rev No.:	00

Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 7

Event Description: All Main turbine bypass valves failed closed.

Time	Position	Applicant's Action or Behavior
	BOP	Diagnose Main Turbine Bypass can not be open manually to anticipate ED.
	CRS	Orders pressure control shifted to the SRVs and HPCI.
	BOP	Uses SRVs to maintain pressure (pressure will be going down due to the leak)
		END OF EVENT
	Notes	

Lesson Title:	Place B RFP in Auto, Loss Power RWCU Isolation Valve, Raise Power with Rods, RBM Fails, CRD Pump Trip, RWCU Leak in RB, Bypass Fail Closed, 1 SRV Fails to Open		
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Op-Test No.: _____ **Scenario No.:** NRC 4 **Event No.:** 8

Event Description: SRV-71H fails to open during Emergency Depressurization

NO TRIGGER-OVERRIDE ACTIVE ENTIRE SCENARIO

Time	Position	Applicant's Action or Behavior
	BOP	Identifies SRV-71H failed to open when conducting Emergency Depressurization.
	BOP	Opens additional SRVs until 6 SRVs can be verified Open.
	BOP	Informs CRS that SRV-71H failed to open and that 6 SRVs are open.
		END OF EVENT
	Notes	

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CREW CRITICAL TASKS	TECHNICAL BASIS	SAT	UNSAT
When a primary system is discharging into the secondary containment through an unisolable break, scram the reactor per EOP-5A and EOP-1A prior to commencing Emergency Depressurization.	A primary system leak could result in exceeding maximum safe operating values without generating an automatic scram signal. EOP-5A specifies that EOP-1A be entered before a maximum safe operating value is exceeded.		
When a primary system is discharging into the secondary containment through an unisolable break, execute Emergency Depressurization when maximum safe operating values are exceeded in two or more areas for the same parameter.	Should secondary containment parameters exceed their maximum safe operating values in more than one area, the RPV must be depressurized to preclude further degradation. RPV depressurization places the primary system in its lowest possible energy state, rejects heat to the suppression pool in preference to outside the containment, and reduces the driving head and flow of primary systems that are unisolated and discharging into the secondary containment. The criteria of "*two or more areas"* specified identifies the rise in secondary containment parameters as a wide-spread problem which may pose a direct and immediate threat to secondary containment integrity, equipment located in the secondary containment, and continued safe operation of the plant.		

IX. INITIAL CONDITIONS

I. Plant Status:

1. ~60% Reactor Start up in progress.

2. Rod Sequence Information:

RWM Group 10/3
Page: Attch. 2 page 3
Rod: 26-19
Notch:00

J. Tech. Spec. Limitations in effect:

None.

K. Significant problems/abnormalities:

None

L. Evolutions/maintenance for the on-coming shift:

1. Complete placing RFP B in service and RVLC in Auto (3 element) Control.
2. RFP B is IDLE at 1250 rpm per 2.2.28, ready to commence Sectio0n 6 of 2.2.28.1.
3. Continue pulling control rods for start up to 500 MWe when contacted by load dispatcher.