NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Duane Arnold Energy Center** **Revision #:** **0**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **NRC Initial License Exam, Scenario #1**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **~ 90 minutes**

Developed by: *Raymond Keith Walton* *1/28/2015*

Instructor/Developer Date

Reviewed by:

Instructor (Instructional Review) Date

Validated by:

SME (Technical Review) Date

Approved by:

Training Supervision Date

Approved by:

Training Program Owner (Line) Date

SIMULATOR EXERCISE GUIDE REQUIREMENTS

Terminal Objective: Given the specific malfunctions presented in the evaluated scenario guide, the students will be able to protect the public, protect plant personnel and protect plant equipment, in accordance with plant procedures:

Enabling Objectives: There are no formal learning objectives for this evaluation.

Prerequisites: None

Training Resources:
Simulator
Simulator Operator
Phone Talker
Simulator Floor Instructor
Evaluation Team

References:
OI 324, Rev. 113
OI 454, Rev. 65
ARP 1C94, Rev. 48
IPOI 3, Rev. 143
OI 856.1, Rev. 45
AOP 255.1, Rev. 44
ARP 1C05A, Rev. 78
OI 255, Rev. 87
OI 255 QRC 1, Rev. 3
OI 152, QRC 2, Rev. 1
AOP 255.2, Rev. 42

Protected Content: **Identify here and in training material as** {C001}; **See Comment for details.**
None

Evaluation Method: Dynamic Scenario graded in accordance with NUREG 1021 guidance.

Operating Experience: None

Risk Significant
Operator Actions:

TASKS ASSOCIATED WITH SIMULATOR EXERCISE GUIDE	
Task #	**Task Title**
None	None

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER REVIEWER	DATE DATE
0	Initial development for 2015 NRC LOIT examination.	Initial development for 2015 NRC LOIT examination.	N/A	See Cover See Cover	

Facility: Duane Arnold Energy Center Op-Test # 2015-301

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions: The plant is operating at 80% power due to a downpower for maintenance. Thunderstorms are forecast for the area. "B" SBDG was recently returned from maintenance.

Turnover:

- Complete 'B' SBDG Testing per OI 324, SBDG, Section 6.4, synchronize and load.
- Raise Reactor power using control rods to a load line of 94-95%.

Event #	Malf #	Eventy Type*	Event Description
1	None	N BOP	Synchronize and load the 'B' SBDG IAW OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
2	None	C BOP TS SRO	Report from field that 'B' SBDG has a jacket cooling water leak 'B' SBDG declared inoperable per TS 3.8.1
3	None	R ATC	Raise reactor power with control rods
4	rd02 3023	C ATC	Stuck Control Rod
5	rd11b	C RO	CRD Pump trip
6	hp01	C BOP TS SRO	HPCI spurious start requiring manual shutdown/isolation HPCI declared inoperable per TS 3.6.
7	ed01(a-e) rr15b stdg01	M ALL	Loss of Offsite Power with Small break LOCA. Failure of 'A' SBDG to start in AUTO, will start in Manual.
8	hp02	C BOP	HPCI starts in Manual but trips shortly after. Emergency Depressurization required.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

THIS PAGE IS USED FOR THE PRE-SCENARIO BRIEFING. IT CAN BE DELETED IF NOT REQUIRED.

SIMULATOR SET UP INSTRUCTIONS

General Instructions

a. Reset to IC 23 or the Snap
   (1) Raise power to ~80% with Recirc and Rods.
   (2) Load Events
   (3) Load Malfunctions
   (4) Load Remote Functions
b. Verify Events validate FALSE
c. Ensure the following procedure is marked up prior to turnover and being provided to the candidates:
   (1) OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM
      a) Place a checkmark in the placekeeping area for the NOTE at the beginning of the section
      b) Place a checkmark in the first two steps of the section regarding bromination not occurring and the SBDG readiness checklist being completed.
d. Build a schedule file to remove RD021423 on ET 20.
   (1) Verify the schedule file is RUNNING.

EVENT TRIGGERS

Trigger No.	Trigger Logic Statement	Trigger Word Description
1, 5, 7, 10, 11, 12, 13, 14, 15, 17, 30	Manual Trigger	Manual Trigger
20	ZAORDPDI1825 >= .60	Drive Water DP > 295 psig
23	ZLOHPHS2312(2) == 1 & ZDIRPC71AS1(1) == 1	HPCI Inject Valve Opening after mode switch in SHUTDOWN

me	Malf. No.	Malfunction Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	AN1C08B(26)	1C08B (C-02) B DIESEL GEN PANEL 1C 94 TROUBLE			1	Crywolf	ON
Setup	rd023023	CONTROL ROD BLADE STUCK- ROD 30-23				Inactive	Active
Setup	stdg01	TRIP OVERRIDE - 'A' SBDG 1G31 FAILS TO AUTO START				Inactive	Active
Setup	stdg02	TRIP OVERRIDE - 'B' SBDG 1G21 FAILS TO AUTO START				Inactive	Active
Setup	rd070615	CONTROL ROD ACCUMULATOR TROUBLE- ROD 06-15	45 sec		5	Inactive	Active
Setup	Rd073435	CONTROL ROD ACCUMULATOR TROUBLE- ROD 34-35	1 min		5	Inactive	Active
Setup	rd11b	CRD HYDRAULIC PUMP TRIP- PUMP B			5	Inactive	Active
Setup	hp01	HPCI INADVERTANT INITIATION			7	Inactive	Active
Setup	ed01a	LOSS OF OFF-SITE POWER SOURCES- BKR M	60 Sec		21	Inactive	Active
Setup	ed01b	LOSS OF OFF-SITE POWER SOURCES- BKR J	60 Sec		21	Inactive	Active
Setup	ed01c	LOSS OF OFF-SITE POWER SOURCES- BKR K	60 Sec		21	Inactive	Active
Setup	ed01d	LOSS OF OFF-SITE POWER SOURCES- BKR X5960	60 Sec		21	Inactive	Active
Setup	ed01e	LOSS OF OFF-SITE POWER SOURCES- BKR X5940	60 Sec		21	Inactive	Active
Setup	rr15b	RECIRC LOOP RUPT- DESIGN BASES LOCA AT 100%- LOOP B		8 min	21	0	0.7
	rr15b	RECIRC LOOP RUPT- DESIGN BASES LOCA AT 100%- LOOP B		3 min	23	As Is	1
Setup	hp02	HPCI TURBINE TRIP	15 sec		23	Inactive	Active
Setup	rd11a	CRD HYDRAULIC PUMP TRIP- PUMP A			24	Inactive	Active

Schedule File for SEG.

At Time	On Event	Action	Description
None	20	Delete malfunction rd023023	CONTROL ROD BLADE STUCK- ROD 30-23
None	22	Insert malfunction dg03b after 45	1G21 'B' DIESEL GENERATOR TRIP- DG B
None	10	Insert remote dg19 to IDLE	HS-3281B B DG 1G21 IDLE-RATED SWITCH (RATED,IDLE)
None	11	Insert remote dg11 to PARALLEL	'B' DIESEL GEN 1G21 DROOP SWITCH (UNIT,PARALLEL)
None	13	Insert remote dg19 to RATED	HS-3281B B DG 1G21 IDLE-RATED SWITCH (RATED,IDLE)
None	12	Insert remote dg11 to UNIT	'B' DIESEL GEN 1G21 DROOP SWITCH (UNIT,PARALLEL)
None	28	Insert remote rd03 to 5.00000	CRD PUMP 1P-209A DISCHARGE VALVE V-17-08 ISOLATION
None	27	Insert remote rd03 to 100.00000 in 60	CRD PUMP 1P-209A DISCHARGE VALVE V-17-08 ISOLATION
None	14	Delete malfunction rd070615	CONTROL ROD ACCUMULATOR TROUBLE- ROD 06-15
None	15	Delete malfunction rd073435	CONTROL ROD ACCUMULATOR TROUBLE- ROD 34-35
None	17	Insert remote an05 to ACK	REMOTE FUNC FEEDBACK AN05- ACK SWITCH 1C94 (NORM,ACK)
None	17	Insert remote an05 to NORM after 5	REMOTE FUNC FEEDBACK AN05- ACK SWITCH 1C94 (NORM,ACK)

Conduct simulator crew pre-scenario brief using TR-AA-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.

If surrogate operators are to be used, brief them using TR-AA-230-1007-F11, Surrogate Brief Checklist

SHIFT TURNOVER INFORMATION

- Day of week and shift
  - Today
  - Day Shift
- Weather conditions
  - Mild summer morning
- (Plant power levels)
  - Reactor Power Level ≈ 80%
  - Core Flow 41 Mlbm/hr
- Protected train
  - Protected Train is "A"
- Technical Specification Action statements in effect
  - None
- Locked in / failed annunciators and alarms
  - None
- Evolutions in progress or planned for upcoming shift
  - Start and load 'B' SBDG from the Control Room in accordance with OI 324, Section 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM for post maintenance testing. (Ensure reason we are starting using this method is okay)
- Plant PRA/PSA Status including CDF/LERF & color
  - CDF Baseline with one year to YELLOW
  - LERF Baseline with one year to YELLOW
- Existing LCOs, date of next surveillance
  - None.
- Procedures or major maintenance in progress
  - None
- Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
  - Raise Power with Recirculation Flow to 85% Power per RE Direction
- Comments, problems, operator workarounds, etc.
  - None

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Event 1:
Start 'B' ESW IAW OI 454 to support starting "B" SBDG:
 	
When directed to perform "B" ESW pump prestart checks:
	Simulator Operator:
	Inform the control room that time compression is being used and the "B" ESW Pump is ready for start.
		CREW:
		• Implements OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		
		SRO:
		• Directs the operator to start the B SBDG in accordance with OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		
		BOP:
		• Start the B SBDG in accordance with OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		• Start Emergency Service Water Pump 1P-99B per OI 454.
		  ○ Manually start either or both ESW pumps by performing either of the following:
		  ○ Start B ESW PUMP 1P-99B by placing HS-4928B on 1C06 in the START position
		  ○ Verify B ESW PUMP 1P-99B running by observing the following on 1C06:
		  ○ B ESW PUMP 1P-99B red indicating light is ON.
		  ○ B ESW PUMP 1P-99B indicates normal running current of approximately 95-115 amps

One (1) minute after the "B" ESW Pump is started:	**Simulator Operator**
	Inform the control room that the "B"ESW Pump is running satisfactory. The strainer is rotating, auto vents are closed and that there is air flow in the room.
		○ Verify adequate cooling for ESW Pump 1P-99B by observing that FI-4938B B ESW FLOW indicates greater than 300 gpm.
		○ As soon as possible after ESW pump start, perform the following:
		  ○ Inspect the auto vent/vac breaker for evidence of excessive leakage.
		  ○ Verify air flow from 1V-SF-56B, RHRSW/ESW Supply Fan.
		  ○ After air flow is verified, operate 1V-SF-56B as directed by CRS.
		○ Control ESW/RHRSW pit level in accordance with OI 410.

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

After the "B" SBDG Prelube pump is operating:	**Simulator Operator**
	Inform the control room that the "B" SBDG Prelube Pump is running satisfactory.
		CREW:
		• Implements OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		
		SRO:
		• Directs the operator to start the B SBDG in accordance with OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		
		BOP:
		• Start the B SBDG in accordance with OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		  • If starting the Standby Diesel Generator **from the Control Room on 1C08** perform the following: If starting the Standby Diesel Generator **from the Control Room on 1C08** perform the following:
		  • Set Prelube Timer KS-3238B to 2.0 minutes.
		  • Start the B DIESEL GENERATOR 1G-21 PRELUBE pump by depressing the prelube pushbutton.
		  • After the Prelube Pump has been running for 1 minute, place B DIESEL GENERATOR 1G-21 CONTROL handswitch HS-3231B momentarily in the START position, and then return it to the AUTO position.
		  • Verify 1V-SF-21 Diesel Generator Supply Fan is running (verify red running light ON at 1C23).

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Paralleling the "B" SBDG to 1A4:		**CREW:**
		• Implements OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		SRO:
		• Directs the operator to load the B SBDG in accordance with OI 324, Sect 6.6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		BOP:
		• Load the B SBDG in accordance with OI 324, Sect 6. 6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		  • Verify SBDG 1G-21 started per Sections **Error! Reference source not found.**, **Error! Reference source not found.**, **Error! Reference source not found.** or **Error! Reference source not found.**.
		  • At 1C94, verify HS-3281B, IDLE-RATED SWITCH, in <u>IDLE.</u>
		  • Perform the following on 1C08:
		  ○ Adjusts "B" DIESEL GENERATOR 1G-21 VOLTAGE ADJUST control to maintain "B" DIESEL GENERATOR 1G-21 VOLTS meter at approximately 4160 volts.
		  ○ Adjusts "B" DIESEL GENERATOR 1G-21 SPEED ADJUST control to maintain "B" DIESEL GENERATOR 1G-21 FREQUENCY meter at approximately 60 hertz.
		  • Place the GOVERNOR MODE SWITCH (DROOP) HS-3234B on 1C94 in the PARALLEL position.

When directed to place HS-3281, IDLE-RATED Switch in IDLE:	**Simulator Operator** Acknowledge the request.	
One (1) minute after the request to place HS-3281 in IDLE:	**Simulator Operator** **Activate ET 10.** Inform the control room that HS-3281, IDLE-RATED SWITCH is in IDLE.	
When requested to place HS-3234B, GOVERNOR MODE SWITCH in PARALLEL:	**Simulator Operator** Acknowledge the request.	
One (1) minute after the request to place HS-3234B in PARALLEL:	**Simulator Operator** **Activate ET 11.** Inform the control room that HS3234B, GOVERNOR MODE SELECT SWITCH is in PARALLEL	

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Event 1:
Starting the "B" SBDG IAW OI 324 (cont):
	Simulator Operator
	Activate ET 17.
	This will acknowledge the 1C94 Annunciator Alarms and clear the Control Room Annunciator on 1C08. This must occur prior to the next event.
		CREW:
		• Implements OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		SRO:
		• Directs the operator to load the B SBDG in accordance with OI 324, Sect 6.6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		• Enters AC Sources and SBDG LCOs.
		  • TS LCO 3.8.1 Condition A- One Offsite Circuit INOPERABLE.
		  • TS LCO 3.8.1. Condition B- One DG INOPERABLE
		BOP:
		• Load the B SBDG in accordance with OI 324, Sect 6. 6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		  • Verifies AC Sources and SBDG LCOs have been entered.
		  • At 1C08, place BUS 1A4 Transfer handswitch to MANUAL.
		  • Place the SYNCHRONIZE switch for 4KV BREAKER 1A411 "B" DIESEL GENERATOR 1G-21, to ON.
		  • Using the B DIESEL GENERATOR 1G-21 VOLTAGE ADJUST, raise INCOMING VOLTS SYNCHRONIZE to slightly more than RUNNING VOLTS SYNCHRONIZE.
		  • Using the B DIESEL GENERATOR 1G-21 SPEED ADJUST, adjust diesel generator speed to a slow, clockwise synchroscope rotation.
		  • When the synchroscope is at the 12 o'clock position, momentarily place the control switch for 4KV BREAKER 1A411 B DIESEL GENERATOR 1G-21 in the CLOSE position.
		  • Confirms the red (breaker closed) and white (closing spring charged) indicating lights are ON.

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Event 1:
Starting the "B" SBDG IAW OI 324 (cont):
 	
When directed to perform SBDG Operating Checklist OI 324A9 (Attachment 9):
	Simulator Operator
	Acknowledge the request.
		CREW:
		• Implements OI 324, Sect 6.4, FAST MANUAL STARTUP OF THE B SBDG SYSTEM.
		SRO:
		• Directs the operator to load the B SBDG in accordance with OI 324, Sect 6.6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		  • Exits LCOs 3.8.1.A and 3.8.1.B when the 1A4 Transfer handswitch is taken to AUTO.
		BOP:
		• Load the B SBDG in accordance with OI 324, Sect 6. 6, PARALLELING THE "B" SBDG SYSTEM TO ESSENTIAL BUS 1A4.
		  • Loads the Diesel Generator to 250-300 KW using 1G21 speed adjust
		  • Place the SYNCHRONIZE switch for 4KV BREAKER 1A411 B DIESEL GENERATOR 1G-21 to OFF.
		  • Place BUS 1A4 TRANSFER handswitch in AUTO.
		  • Use B DIESEL GENERATOR 1G-21 SPEED ADJUST to load B DIESEL GENERATOR 1G-21 to ≥ 1,500 KW, observing B DIESEL GENERATOR 1G-21 KILOWATTS meter at 1C08
		  • Adjust 'B' SBDG speed and voltage, as necessary to attain desired loading and power factor (0.9 power factor per Appendix 1).
		  • Complete the SBDG Operating Checklist OI 324A9 (Attachment 9).

EXAMINER NOTE: After initially loading the 'B' SBDG, wait ~5 minutes then insert Event 2.		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 2: Five (5) minutes after initially starting to load the "B" SBDG and at the direction of the Examiner:	**Simulator Operator:** **Activate ET 1.** This will cause 1C08B (C-02), B Diesel Gen Panel 1C-94 Trouble to annunciate.	**Crew:** • Responds to 1C08B (C-2), B Diesel Gen Panel 1C-94 Trouble Alarm • Responds to 1C94 (A-3), Jacket Coolant Level Low • Responds to 1C94 (A-4), Jacket Coolant Temperature Hi/Lo

When directed to investigate the 1C94 Trouble Alarm:	**Simulator Operator**
	
	Acknowledge the request.
		BOP:
		• Send an Operator to 1C94 to determine the cause of the TROUBLE Alarm and take corrective action per ARP 1C-94.
		• At 1C92 monitor TI-3258B to determine if Jacket Coolant temperature is high or low
		• IF SBDG 1G-21 is running and <u>NO</u> LOOP or LOOP/LOCA emergency exists AND IF Jacket coolant temperature is above 195°F on TI-3258B THEN Unload and trip SBDG and notify CRS.
		  • Unloads the 'B' SBDG (CRITICAL)
		  • Trips the 'B' SBDG (CRITICAL)

Three (3) minutes after being directed to investigate 1C94 Trouble Alarm:	**Simulator Operator:**
	
	Inform the control room of the following:
	• **Coolant is on the floor around the SBDG, the expansion tank is empty.**
	• **Annunciators in ALARM:**
	  1C94 (A-3), Jacket Coolant Level Low
	  1C94 (A-4), Jacket Coolant Temperature Hi/Lo
	• **Jacket coolant temp is 195°F, rising slowly.**	

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Event 2:
Jacket Coolant Leak on the 'B' SBDG.
(cont'd)
	Floor Instructor
	The crew may elect to unload and remove the SBDG from service using OI 324. The steps documented to the left are the expected student response using OI 324.
		Crew:
		• Responds to 1C94 (A-4), Jacket Coolant Temperature Hi/Lo
		SRO:
		• Directs the operator to unload the B SBDG in accordance with OI 324, Sect 8.3, UNLOAD THE "B" SBDG.
		  • Enters LCOs 3.8.1.A and 3.8.1.B when the 1A4 Transfer handswitch is taken to MANUAL and exits 3.8.1.A when taken back to AUTO.
		BOP:
		• Implements OI 324, Sect 8.3, UNLOAD THE "B" SBDG
		  • If the SBDG is in PARALLEL OPERATION, then reduce the load on the Diesel Generator to 1500-1600 KW by using the DIESEL GENERATOR 1G-21 SPEED ADJUST CONTROL.
		  • Adjust A[B] DIESEL GENERATOR 1G-1G-21 VOLTAGE ADJUST to maintain 0.9 power factor per Appendix 1.
		  • Operate at 1500-1600 KW for 10 minutes to allow for cooldown. (Based on the current conditions, the 10 minute cooldown may be waived).
		  • Verify AC Sources LCO has been entered if applicable.
		  • Place the BUS 1A4 TRANSFER breaker mode selector switch is in MANUAL. (Critical for this evolution)
		  • Reduce the load on the Diesel Generator to 50 KW by using the DIESEL GENERATOR 1G-21 SPEED ADJUST CONTROL.
		  • Place the control switch for 4KV BREAKER 411 B DIESEL GENERATOR 1G-21 in the TRIP position. (Critical for this evolution)
		  ○ Observe that the green (breaker tripped) and the white (closing spring charged) indicating lights are ON.
		  • Place the BUS 1A4 TRANSFER breaker mode selector switch in the AUTO position. (Critical for this evolution)
		  • At 1C08, confirm annunciator 4KV BUS AUTO TRANSFER INOP (1C08A, D-7) is reset.

IF directed to place HS3234B in UNIT:
 	
If directed to place HS3281B in RATED:
	Simulator Operator
	Acknowledge the request.
	Activate ET 12
	This will insert RF dg11 to UNIT
	Inform the control room that HS3234B, B Governor Mode Switch is in UNIT.
	
	Simulator Operator
	Acknowledge the request.
	Activate ET13
	This will insert RF dg19 to RATED.
	Inform the control room that HS3281B, IDLE-RATED SWITCH is in RATED.
		Crew:
		• Responds to 1C94 (A-4), Jacket Coolant Temperature Hi/Lo
		SRO:
		• Directs the operator to unload the B SBDG in accordance with OI 324, Sect 8.3, UNLOAD THE "B" SBDG.
		  • Place the B GOVERNOR MODE SWITCH (DROOP) HS-3234B at 1C94 in UNIT.
		• Directs placing the B DIESEL GENERATOR 1G-21 CONTROL handswitch HS-3231B on 1C08 in the PULL TO LOCK position.
		• Declares the "B" SBDG INOPERABLE (already INOP potentially due to not exiting when 1A4 transfer switch was in MANUAL)
		  • TS LCO 3.8.1 Condition B- One DG INOPERABLE
		  ○ Perform SR 3.8.1.1 for operable offsite circuits within 1 hour and every 12 hours thereafter.
		  ○ Determine that the fault is not a common cause failure within 24 hours.
		  ○ Perform SR 3.8.1.2 for the operable EDG once per 72 hours
		  ○ Restore the inoperable EDG to operable within 7 days
		BOP:
		• Implements OI 324, Sect 8.3, UNLOAD THE "B" SBDG
		  • At 1C94, place HS-3281B, IDLE-RATED SWITCH, in RATED.

EXAMINER NOTE: After the applicants shutdown the 'B' SBDG and after declaring the 'B' SBDG inoperable, the crew should proceed to withdrawing control rods.		

Event 3 Increase Reactor Power with control rods If the crew does not transition to raising reactor power after the SBDG event: If called as organizational personnel to support the power rise:	**Simulator Operator**: **Contact the control room as the Shift Manager and inform them that raising reactor power is a priority.** **Simulator Operator** **Acknowledge the requests and provide needed support.**	**SRO** Directs Operators to increase power IAW IPOI and RE guidance **RO:** Continues control rod withdrawal IAW OI 856.1 following the sequence. • Monitor neutron monitoring instrumentation during control rod movements. • Verifies the following indications: ○ White backlight on the Rod Select pushbutton turns ON ○ On the Full Core Display, the white "XX-XX" select light corresponding to the rod selected turns ON ○ On the Four Rod Group Display, the white SELECT light turns ON denoting the position display for the selectred rod. • Momentarily places the ROD MOVEMENT CONTROL in the OUT-NOTCH position and verifies: ○ The green ROD IN light turns ON momentarily and then turns OFF ○ The red ROD OUT light turns ON after the green ROD IN light turns OFF. ○ The red ROD OUT light turns OFF ○ The amber ROD SETTLE light turns ON and then turns OFF ○ The rod has been with drawn as indicated on the Four Rod Group Display **BOP:** • Provides Peer checks to RO during rod withdrawls. • Monitors balance of plant equipment /plant status.
Examiner Note: Prior to moving 3rd control rod, rod will stick. Go to Event 4.		

Event 4: Stuck Control Rod		**CREW** Diagnoses control rod 14-23 is stuck **SRO**
When CRD drive water pressure is greater than 295 psig:	**Simulator Operator** **Verify ET 20 actuates.** This will remove MF RD021423. This will allow rod 14-23 to move.	• Directs entry to AOP 255.1, Control Rod Movement/Indication Abnormal, when informed of stuck control rod. • Determines that the TS 3.3.2.1, Control Rod Block Instrumentation, requirements are met. • Contacts RE and/or Duty Manager. **RO** • While pulling control rods, recognizes 14-23 stuck and informs the SRO.

If contacted as organizational personnel:	**Simulator Operator**
	Acknowledge the information.
		• Implements AOP 255.1, takes actions to address the stuck rod as follows:
		  • Verify power is available to RMCS.
		  • Verify the rod is actually selected.
		  • Demand a Rod Position Log and verify control rod positions.
		  • Verify the following parameters indicate approximately their normal values at 1C05
		  ○ CRD Pump flow at FC-1814 CRD System Flow Control (40 gpm)
		  ○ CRD Charging Water header pressure at PI-1816A (CRD Pressure) Charging Water Press (1450 psi)
		  ○ CRD Drive Water pressure at PDI-1825A (CRD Pressure) Drive Water ΔP (260 psid)
		  • Raises drive water pressure to 310-350 psid by adjusting MO1830 until drive water pressure PI-1825A is 310-350 psid.
		  • Attempts to move the rod
		  • Recognizes rod movement and reports success to SRO
		  • Returns drive water pressure to its normal band

Event 4: When directed to the HCU to perform local actions:	**Simulator Operator** **Acknowledge the request.**	**BOP:** • Monitors balance of plant equipment/plant status. • Contacts SANSOE to inspect control rod 14-23 HCU for abnormalities.
Two (2) minutes after initial direction to verify condition at the HCU:	**Simulator Operator** **Inform the control room that the HCU lineup is normal and HCU pressure is normal.**	
If contacted to monitor HCU during control rod movement after RD021423 is removed:	**Simulator Operator** **Inform the control room that the HCU looked and sounded normal during the move.**	
EXAMINER NOTE: Continue to next event at examiner's direction.		

Event 5:
 	
After the crew has performed AOP 255.1, raised power and at the direction of the examiner:
 	
When directed to investigate the cause of the "A" CRD pump trip.
 	
Two (2) minutes after being directed to investigate "B" CRD Pump breaker:
 	
Three (3) minutes after being directed to investigate "B" CRD pump locally:
	Simulator Operator
	
	ACTIVATE ET 5.
	
	This will cause a trip of the "B" CRD pump and an accumulator alarms for 06-15 and 34-35.
	
	Simulator Operator
	
	Acknowledge the request.
	
	Simulator Operator
	
	Inform the control room that 1A410, "B" CRD pump breaker tripped on inverse time delay overcurrent.
	
	Simulator Operator
	
	Inform the control room that "B" CRD pump motor is abnormally hot.
		CREW:
		• Responds to annunciator 1C05A (A-7) "B" CRD PUMP TRIP OR MOTOR OVERLOAD
		
		SRO:
		• Directs starting "A" CRD pump in accordance with OI 255.
		• If HPCI is required to be operable, verify HPCI suction is aligned to the CSTs
		• Contacts organization for support.
		RO:
		• Implement actions of ARP 1C05A (A-7) "B" CRD PUMP TRIP OR MOTOR OVERLOAD
		  • Determine the cause of CRD 1P-209B trip as follows
		  ○ Monitor alarm "B" CRD PUMP 1P-209B LO SUCT PRESSURE (1C05A, B-7).
		  ○ If necessary send an Operator to Bus 1A4 to check targets on Breaker 1A410
		  ○ As soon as practical, monitor computer points W092 and W093 for any bearing temperature > 180°F
		  • If due to CAUSES 1.1 through 1.5, start CRD Pump 1P-209A per OI 255 (CRD Hydraulic System).
		  • If 1P-209B tripped due to any electrical fault, initiate a Work Request to have the pump checked, meggered, and repaired as necessary.

Event 5:
 	
When directed to verify adequate oil level and close V-17-8 to ½ turn open:
	Simulator Operator
	
	Activate ET 28.
	
	This will position V-17-8 ½ turn open.
	
	Inform the control room that there is adequate oil level in the "A" CRD pump motor and speed changer and the V-17-8, "A" CRD Pump Discharge Valve is ½ turn open.
		If the crew elects to start the CRD pump in accordance with OI 255 here are the expected student responses.
		
		CREW:
		• Implements OI 255, Sect regarding Startup of a CRD Pump
		SRO:
		• Directs starting "A" CRD pump in accordance with OI 255, Section regarding Startup of a CRD Pump.
		RO:
		• Prepare to start CRD Pump 1P-209A as follows:
		  • Verify adequate oil level in CRD Pump 1P-209A motor and speed changer
		  • Close 1P-209A Pump Discharge Isolation V-17-8 to approximately 1/2 turn open.
		  • Adjust CRD SYSTEM FLOW CONTROL FC-1814 to 0 gpm in MANUAL.
		• At 1C05, verify MO-1833, INLET TO CRD RETURN LINE, is fully open
		• Start CRD PUMP 1P-209A by momentarily placing handswitch HS-1807A on 1C05 in the START position
		• Slowly open Discharge Isolation V-17-8 to pressurize downstream piping and to prevent CRD pump from tripping on low suction pressure.

When contacted as the Reactor Engineer and informed of the High CRD Temperatures,	**Simulator Operator** **Acknowledge the request for support**.	
When directed to slow open V-17-8, "A" CRD Pump Discharge Valve:	**Simulator Operator** **Acknowledge the request**. **AND** **Activate ET 27** This will position V-17-8 full open in 60 seconds.	
After the ramp is complete and V-17-8 is full open:	**Simulator Operator** **Inform the control room that V-17-8 is full open.**	

When directed to vent both CRD Discharge Filters:	**Simulator Operator** **Acknowledge the request.** **Inform the control room that time compression is being used and that both CRD Discharge Filters have been vented.**	**CREW:** • Implements OI 255, Sect regarding Startup of a CRD Pump **SRO:** • Directs starting "A" CRD pump in accordance with OI 255, Section regarding Startup of a CRD Pump. **RO:** • Vent both CRD Discharge Filters 1F-201A and B • At 1C05, verify charging header pressurized > 1200 psig on PI-1816A CHARGING WATER PRESSURE • Slowly adjust CRD SYSTEM FLOW CONTROL FC-1814 to obtain approximately 40 gpm on FI-1814 CRD SYSTEM FLOW • When FC-1814 is properly controlling flow, then shift to AUTO • Slowly adjust DRIVE WATER ΔP CONTROL MO-1830 to obtain approximately 260 psid on PDI-1825A DRIVE WATER ΔP

		If the crew elects to start the CRD pump in accordance with OI 255 QRC 1 here are the expected student responses.
		CREW:
		• Implements OI 255, QRC 1, CRD Rapid Start
		SRO:
		• Directs starting "A" CRD pump in accordance with OI 255, QRC 1, CRD Rapid Start.
		RO:
		• If one CRD Pump is running, proceed to step (2), otherwise start CRD Pump as follows:
		  • Close MO-1830, Drive Water ΔP Control
		  • Verify FC-1814, CRD System Flow Control in Manual and Closed
		  • Start 1P-209A[B], CRD Pump
		  • Throttle MO-1830, Drive Water ΔP Control partially open.
		  • Adjust FC-1814, CRD System Flow Control and throttle MO-1830, Drive Water ΔP Control to achieve desired pressure and flow.
		• Verify operating CRD Pump motors above 9 amps
		• Restore FC-1814, CRD System Flow Control to Auto

Accumulator Trouble annunciator response
 	
If contacted to determine if there are any "slow" control rods based on last scram time testing:
	Simulator Operator
	
	Inform the control room that there are NO slow control rods.
		CREW:
		• Responds to annunciator 1C05A (F-7), CRD ACCUMULATOR LO PRESSURE OR HI LEVEL
		
		SRO:
		• Comply with Technical Specification requirements for Control Rod Scram Accumulators.
		  • TS LCO 3.1.5.Condition A (twice)- One control rod scram accumulator inoperable with reactor steam dome pressure ≥900 psig.
		  ○ Declare the associated control rod scram time "slow" within 8 hours OR
		  ○ Declare the associated control rod inoperable within 8 hours.
		  • TS LCO 3.1.5 Condition B- Two or more control rod scram accumulators inoperable with reactor steam dome pressure ≥900 psig.
		  ○ Restore charging water header pressure to ≥ 940 psig within 1 hour of discovery of Condition B concurrent with charging header pressure < 940 psig. AND
		  ○ Declare the associated control rod scram time "slow" within 1 hour OR
		  ○ Declare the associated control rod inoperable within 1 hour.
		  • Must verify less than 6 control rods have been declared "slow"
		  • Must verify separation criteria for both "slow" control rods declaration and/or inoperable control rod declaration.

When directed to investigate accumulator trouble alarms:	**Simulator Operator**
	Acknowledge the request.
		CREW:
		• Responds to annunciator 1C05A (F-7), CRD ACCUMULATOR LO PRESSURE OR HI LEVEL
		SRO:
		• Directs recharging the accumulators in accordance with OI 255.
		RO:
		• Implement actions of ARP 1C05A (F-7), CRD ACCUMULATOR LO PRESSURE OR HI LEVEL
		  • Check the Full Core Display on 1C05 to determine which accumulators are in the trouble condition.
		  ○ Determines that 06-15 and 34-35 are in trouble condition.
		  • Send an Operator to the accumulators to determine the cause of the alarm.
		• Recharge accumulator per OI 255 (CRD HYDRAULIC SYSTEM).

Three (3) minutes after being directed to investigate accumulator trouble alarms:	**Simulator Operator** **Inform the control room that the alarms are due to low pressure. Control rod accumulator 06-15 is indicating 935 psig and 34-35 is indicating 930 psig.** **I will recharge the two accumulators in accordance with OI 255.**	
Ten (10) minutes after being directed to recharge the accumulators:	**Simulator Operator** **Activate ET 14** This will remove MF RD070615. **Inform the control room that accumulator 06-15 has been recharged. Final accumulator pressure is 1200 psig.**	
Ten (10) minutes after recharging 06-15:	**Simulator Operator** **Activate ET 15** This will remove MF RD073435. **Inform the control room that accumulator 34-35 has been recharged. Final accumulator pressure is 1170 psig.**	

Continue to next event at examiner's direction.		

Event 6:
 	
When directed by the examiner:
 	
When contacted as organizational personnel to support HPCI auto initiation:
 	
If the operator checks status of relay E41A-K6:
	Simulator Operator:
	
	Activate ET 7.
	
	This causes an auto initiation of HPCI.
	
	Simulator Operator
	
	Acknowledge the information.
	
	Floor Instructor
	
	Inform the operator that the relay appears the same as C71A-K3D.
	
	This relay is energized to demonstrate the understanding of what it should look like.
		Crew
		
		• Respond to auto initiation of HPCI.
		• Implement OI 152, QRC 2, Tripping HPCI.
		
		SRO
		
		• Directs tripping HPCI after verifying that HPCI operation is not required by assuring that by 2 independent indications adequate core cooling is assured.
		• Enters AOP 255.2, Power/Reactivity Abnormal Change
		• Comply with Technical Specification requirements for HPCI.
		  • TS LCO 3.5.1.Condition F- HPCI System INOPERABLE
		  ○ F.1.- Verify by administrative means RCIC System is OPERABLE immediately
		  ○ F.2.- Restore HPCI System to OPERABLE status within 14 days.
		
		BOP
		
		• Implements actions of OI 152 QRC 2 to trip HPCI.
		  • Depresses and hold HS-2259, Remote Turbine Trip PB
		  • Verify HV-2201, HPCI Turbine Stop Valve Closes
		  • When HPCI speed is zero rpm, places 1P-218, Aux Oil Pump, in PTL.
		  • Verify HV-2200, HPCI Turbine Control Valve, closes
		  • Verify annunciator 1C03-3C (A6) is activated.
		  • Release HS-2259, HPCI Remote Turbine trip PB
		
		RO:
		
		• Continues to monitor reactor power, pressure and level
		• May need to control level adjusting level setpoint.

AOP 255.2 due to HPCI auto start When contacted as organizational personnel to support HPCI auto initiation:	**Simulator Operator** **Acknowledge the information.**	**Crew** • Respond to auto initiation of HPCI. • Implement AOP 255.2, Power/ Reactivity Abnormal Change. **SRO** • Directs AOP 255.2, Power/ Reactivity Abnormal Change. • Establish critical parameter monitoring of Reactor Power, Reactor Pressure, and RPV Water Level, as priorities allow. • Notify the Reactor Engineer and Operations Manager. • After the cause has been determined and corrected, return to normal operation. **BOP** • Take any necessary steps to bring the reactor power/reactivity transient under control, including, but not limited to: • Assuming manual control of a malfunctioning system (completed when HPCI was tripped) • Verify proper operation/indication of systems and/or indications. • Monitor the Off-Gas System radiation levels on Panel 1C02 for any change in Off-Gas activity. **RO:** • Place one APRM recorder in each trip system to fast speed to monitor for APRM undamped oscillations greater than normal • Verify control rod positions are correct for the established sequence, by using Rod Position Log • Verify thermal limits on the Official 3D Case • When power is stabilized, plot location on the Stability Power / Flow Map.

Event 7: LOOP, A DG Fails To Auto Start. (Will start in manual.) Small Recirc Leak	**Simulator Operator:** **Activate ET 21** This will result in a Small Break LOCA immediately on a ramp and a LOOP after 60 seconds **Simulator Operator:**	**LOSS OF POWER EVENT** **Crew** Responds to Loss of Offsite Power Indications **SRO** • Directs Reactor pressure control using SRVs • Enters AOP 304.1 “LOSS OF 4160V NON-ESSENTIAL ELECTRICAL POWER” • Enters AOP 301 “LOSS OF ESSENTIAL ELECTRICAL POWER” **Directs starting the A DG and verifying it loads the Bus** **(CRITICAL TASK #1)** • Directs RPV level band 170” to 211” using available systems **RO** Provides RPV level and pressure status **BOP** • May report MSIV closure (Group I Isolation) • Diagnoses that the “A” DG started but did not pick up the bus • Diagnoses that the “A” DG is running with output breaker open. • Acknowledges that the “B” DG failed will not start **STARTS A DG and verifies it loads BUS 1A3** **(CRITICAL TASK #1)**

Event 7: (Cont) LOOP, A DG Output BKR FAILS and will not close. B DG Fails To Start but CAN be manually started. Small Recirc Leak		**CREW:** Responds to annunciator 1C05B-B1 – Primary Containment Pressure Hi/Lo Diagnoses rising containment pressure and lowering RPV water level. **SRO:** Directs a reactor scram due to lowering RPV water level from SBLOCA. • Direct the operator to Insert a manual reactor scram, and carry out IPOI 5 (Reactor Scram procedure) • Confirms that the reactor is shutdown • Direct the operator performance of the IPOI 5 immediate actions **RO:** • Perform the immediate operator responses to a reactor scram. Actions of IPOI 5 QRC-1: ○ Initiate a backup manual scram ○ Place the Mode Switch in SHUTDOWN ○ Verify all control rods fully inserted (single rod permissive) ○ Verify condenser backpressure is stable ○ If all control rods are not fully inserted, use the RIPs per CRS ○ Restore and maintain RPV level +170 to +211 (setback) ○ Verify recirc runback to 20% ~~○ If forced circulation is lost, enter AOP 264~~ ○ Monitor RPV pressure ○ Verify Turbine/Generator trip ○ Verify neutron flux lowering ○ Insert SRM/IRM detectors ○ Announce scram via plant page ○ Proceeds to IPOI 5

Event 7: (Cont)
 	
LOOP, A DG Output BKR FAILS and will not close. B DG Fails To Start but CAN be manually started.
 	
Small Recirc Leak
		SRO:
		Enters AOP 573 – Primary Containment Control
		• Directs operators to monitor containment parameters
		• Enters EOP-1 – RPV Control due to RPV low level (was entered when the scram occurred).
		• IF EOP-1 Alternate Level Control Leg is entered may direct:
		  ○ Lockout of ADS
		  ○ Start of CRD pump. **(A CRD Pump unavailable)**
		  ○ Start of SBLC pump
		Directs Reactor Water level band of 170" to 211" using available systems – (HPCI unavailable, will lead to ED)
		• Directs Defeat 4 - This results DW Cooling Fans in FAST
		• Enters EOP-2 - Primary Containment Control when containment pressure reaches 2 psig.
		• Directs initiation of Torus Spray prior to Torus Pressure exceeding 11 psig
		• IF Torus Pressure exceeds 11 psig, directs initiation of Drywell Spray.
		• Directs Defeat 4 - This results DW Cooling Fans in FAST
		• Enters EOP-2 - Primary Containment Control when containment pressure reaches 2 psig.
		• Directs initiation of Torus Spray prior to Torus Pressure exceeding 11 psig
		• IF Torus Pressure exceeds 11 psig, directs initiation of Drywell Spray.

Event 8: HPCI starts but trips	Booth Operator: After HPCI runs for <1 minute, insert Malfunction XXFF, Trips HPCI.	**BOP:** Starts HPCI to maintain RPV level band. (**HPCI will start but will trip**) Reports to crew that HPCI has tripped. Attempts to restart (unsuccessful).

Event 7: (Cont) LOOP, A DG Output BKR FAILS and will not close. B DG Fails To Start but CAN be manually started. Small Recirc Leak		**RO:** • Assists BOP in controlling RPV level and monitoring other critical primary containment plant parameters **BOP:** • If directed, performs Defeat 4 to maximize drywell cooling • Places Torus Spray in service as follows: 1. Places keylock HS-2005[HS-1932] Outboard Torus Cooling/Spray Valve handswitch in OPEN and verify valve opening 2. Throttle open MO-2006[MO-1933], Torus Spray Valve • As directed starts CRD pump **(CRD A Pump unavailable)** 1. Ensures Recirc Pumps are tripped 2. Repositions HS-1903C – Enable Containment Spray Valves to Manual 3. Depending on RPV level may take HS-1903B to 2/3 Core Coverage/LPCI INIT Interlock Override to MANUAL OVERRD 4. Open MO-2000[1902] , Inboard Drywell Spray Valve 5. Throttle open MO-2001[1903], Outboard Drywell Spray Valve.

		Crew • Implements the mitigation strategies of EOP 1, RPV Control RO • Inserts a manual reactor scram. • Completes a scram report that includes all rods in, reactor pressure and trend and reactor water level and trend. • Restores and maintains RC/L 170-211” using RCIC and other alternate injection systems. • Maintains RC/P 800-1055 psig. using directed pressure control systems. • Lowers reactor pressure to the directed control band using the directed control system. CRS • Performs a crew update of entry into EOP 1 due to RPV level or Drywell Pressure. • Directs an RPV level band of 170-211” using RCIC and other alternate injection systems. • Directs installation of Defeat 11 • Directs an RPV pressure band of 800-1055 psig using directed pressure control systems. • Directs lowering reactor pressure to lessen the driving head on the leak in the drywell. • Shows concern for maintaining plant cooldown within the limits. Placekeeps in EOP 1 to the applicable WAIT UNTIL step in RC/P (RC/P-6) leg

		Crew • Respond to and implement the actions of AOP 304.1, Loss of 4160V Non-Essential Power RO • Announces suspending all evolutions in progress associated with electrical switchgear and switching operations • Verify two Well Water Pumps in service. Starts either B or C Well Water Pump and adjusts well water flow. • Verify Well Water Pump 1P-58D secured. In AUTO, verifies FC-4414D, demand is zero. • Verify GSW Pumps 1P-889A and B in service • Place Bus 1A1 Transfer switch in MANUAL. • Place Bus 1A2 Transfer switch in MANUAL. CRS Enters AOP 304.1, Loss of Both Non-Essential Buses

		Crew
		• Implements the mitigation strategies of EOP 2, Primary Containment Control
		RO
		• Informs the CRS of containment parameters including parameter name, value and trend.
		• Installs Defeat 4.
		• Utilizes OI 149 QRC to spray the torus.
		• Utilizes OI 149 QRC to spray the drywell.
		  • Trips the running recirculation pump.
		CRS
		• Performs a crew update of entry into EOP 2 due to Drywell Pressure.
		• Obtains containment parameters.
		• Directs installation of Defeat 4.
		• Directs spraying the torus after confirmation that torus pressure is greater than 2 psig.
		• Directs spraying the drywell before drywell temperature reaches 280F.
		  • Verifies torus water level less than 13.5 ft.
		  • Verifies plot of drywell temperature and drywell pressure on the DWSIL curve allows drywell sprays.
		  • Verifies recirculation pumps are secured.
		Placekeeps in EOP 2 to the applicable WAIT UNTIL steps in T/L (T/L-3 and T/L 10), T/T (T/T-2), DW/T (DW/T-6) and PC/P (PC/P-7) legs

		Crew
		• Implements that mitigation strategies of the ALC contingency of EOP 1
		RO
		• Lockouts ADS.
		• Attempts to restore and maintain RPV level above +15”
		  • Maximizes injection with CRD in accordance with AIP 407.
		  • Injects with SBLC in accordance with AIP 406.
		• Verifies injection subsystems can be lined up for injection
		• Verifies at least one injection subsystem lined up with a pump running.
		CRS
		• Directs ADS lockout.
		• Directs RPV level bands as RPV level lowers
		  • Directs maximizing injection with CRD in accordance with AIP 407.
		  • Directs injection with SBLC in accordance with AIP 406.
		• Ensures injections subsystems can be lined up for injection.
		• Waits for RPV level to drop to +15”
		• Ensures at least one injection subsystem lined up with a pump running.
		Before RPV level reaches -25” performs an Emergency Depressurization.

		Crew • Implements mitigation strategies of EOP 1 after EOP ED to restore adequate core cooling RO • Verifies low pressure ECCS systems start and align to inject into the RPV • Reports when 1 Core Spray pump is injecting above 3000 gpm. and 1 other ECCS pump is injecting. • Trips Core Spray pumps when RPV level indicates on the GEMACs • Throttles RHR injection to restore and maintain RPV 170-211” CRS • Verifies 1 Core Spray pump and 1 other ECCS pump available for injection • Direct injection with one or more Preferred Injection Systems (Table 1A) and Alternate Injection Systems (Table 2A) • Determines RPV level can be restored and maintained above +15” and returns to the normal RPV level control leg of EOP 1 • Directs restoring and maintaining RPV level 170-211” using low pressure ECCS systems • Directs tripping Core Spray pumps when RPV level indicates on the GEMACs Directs throttling RHR injection to maintain RPV level 170-211”

		SRO and Crew: **Diagnoses HPCI failure to run** **Directs Emergency Depressurization.** **Directs Opening 4 SRVs (CRITICAL TASK #2)** **When Directed opens 4 ADS SRVs to emergency (CRITICAL TASK #2)** **BOP:** • Informs SRO when 4 SRVs are open • Monitors and controls RPV level as he depressurization occurs

***** END OF SCENARIO *****

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

THIS SECTION IS ONLY REQUIRED FOR EVALUATED SCENARIOS.

DISCUSSION ITEMS

Insert any additional Discussion Points to be made after scenario completion. See Discussion Point discussion in the Expected Student Response column of the Simulator Exercise Guide Scenario Instructions three-column template above.

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:

Before EOP Entry:

1.

2.

After EOP Entry:

1.

2.

Abnormal Events:

1.

2.

Major Transients:

1.

2.

Critical Tasks:

1. Scrams Reactor due to EOP-1 entry conditions met
2. Starts the 'A' SBDG manually to power only safety-related electrical bus
3. Emergency Depressurization due to Loss of HPCI with SBLOCA.

NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Duane Arnold Energy Center** **Revision #:**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **NRC Initial License Exam, Scenario #2**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **~ 90 minutes**

Developed by: *Raymond Keith Walton* *1/28/2015*

Instructor/Developer Date

Reviewed by:

Instructor (Instructional Review) Date

Validated by:

SME (Technical Review) Date

Approved by:

Training Supervision Date

Approved by:

Training Program Owner (Line) Date

SIMULATOR EXERCISE GUIDE REQUIREMENTS

Terminal Objective: Given specific plant conditions, the students will be able to in accordance with plant procedures.

Enabling Objectives: Given specific plant conditions, the student will be able to perform:
1.
2.
3.

Prerequisites:

Training Resources:

References:

Protected Content: **Identify here and in training material as** {C001}; **See Comment for details.**

Evaluation Method:

Operating Experience:

Risk Significant Operator Actions:

TASKS ASSOCIATED WITH SIMULATOR EXERCISE GUIDE	
Task #	**Task Title**
	Annotate risk significant tasks as applicable

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER REVIEWER	DATE DATE

Facility: Duane Arnold Energy Center Op-Test # 2015-301

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions: The plant is operating at 80% power due to a downpower for maintenance. Thunderstorms are forecast for the area. "B" CRD pump was recently taken OOS for maintenance.

Turnover:

- Start 'B' SBDG for ST after maintenance.
- Raise Reactor power using control rods.

Event #	Malf #	Eventy Type*	Event Description
1	None	N BOP	Perform MSIV test per STP 3.3.1.1-17
2	rp02a	C BOP TS SRO	Trip of RPS MG Set Tech Spec 3.3.8 entry
3	rd01 3023	C ATC TS SRO	Control Rod Drift with AOP entry Tech Spec entry 3.1.3
4	ed13a	C BOP TS SRO	125 VDC Div 1 panel 1D11 trip results in AOP entries Tech Spec entry 3.8.7, Condition B
5	mc04b	R RO C BOP	Condenser Vacuum Leak (recoverable) Fast Power Reduction
6	rc08	BOP TS SRO	Spurious start of RCIC, requires manually stopping RCIC Tech Spec Entry 3.5.3, Condition A
7	mc04b	M ALL	Rising backpressure from Event 5 progression necessitates reactor scram. ATWS occurs
8	hp03	I BOP	Failure of HPCI controller (complicates RPV level restoration).
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

THIS PAGE IS USED FOR THE PRE-SCENARIO BRIEFING. IT CAN BE DELETED IF NOT REQUIRED.

SIMULATOR SET UP INSTRUCTIONS

Perform simulator set up per the site specific Simulator Setup Checklist.

General Instructions

1. Reset to IC23 and raise power to ~80% RTP
    a. Load Events
    b. Load Malfunctions
    c. Load Overrides
2. OR Reset to the IC provided by the LOIT Exam Development Team
3. Verify Events validate FALSE
4. Reset APRM Gains and clear recorders
5. Complete the Exam Setup Checklist
6. Ensure no BIAS is inserted on the FRV Controllers by verifying Y at 0.0
7. Verify EOOS up-to-date with 'B' CRD Pump OOS
8. Fill in STP 3.3.1.1-17 Cover Matter, and have for turnover.

Trigger No.	Trigger Logic Statement	Trigger Word Description
3	Manual Trigger	Trips A EPA
5	Manual Trigger	Drifts Rod 30-23 Out
7	Manual Trigger	Loss of 1D11
9	Manual Trigger	Condenser Air Leak
11	Manual Trigger	RCIC Spurious Start
13	Manual Trigger	Condenser Air Leakage Rises
20	ZLOHPHS2202(2) == 1	HPCI MO 2404 Starts to open

Time	Malf. No.	Malfunction Title	Delay	Ramp	ET	Initial Value	Final Value
	rp02a	RPS EPA BREAKER TRIP- RPS A EPA BKR			3	Inactive	Active
	rd013023	CONTROL ROD DRIFTS OUT- ROD 30-23			5	Inactive	Active
	ed13a	125 VDC DISTRIBUTION PANEL FAULT- PNL 1D11			7	Inactive	Active
	mc04b	MAIN CONDENSER AIR INLEAKAGE- HP CONDENSER		6 min	9	0	.9
	rc08	INADVERTENT RCIC INITIATION			11	Inactive	Active
	mc04b	MAIN CONDENSER AIR INLEAKAGE- HP CONDENSER		3 min	13	.9	1.2
Setup	rp05g	HYDRAULIC LOCK SCRAM DISCHARGE VOLUME (VARIABLE)				0	75
	hp03	HPCI FLOW CONTROLLER FAILS		1 min	20	As Is	30
	Fw02a	Cond Pump Trip			15		Active
	Fw02b	Cond Pump Trip			15		Active

Conduct simulator crew pre-scenario brief using TR-AA-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.

If surrogate operators are to be used, brief them using TR-AA-230-1007-F11, Surrogate Brief Checklist

SHIFT TURNOVER INFORMATION

- Day of week and shift
  - Today
  - Day Shift
- Weather conditions
  - Mild summer morning
- (Plant power levels)
  - Reactor Power Level ≈ 80%
  - Core Flow 41 Mlbm/hr
- Protected train
  - Protected Train is “B”
- Technical Specification Action statements in effect
  - None
- Locked in / failed annunciators and alarms
  - None
- Evolutions in progress or planned for upcoming shift
  - Perform STP 3.3.1.1-17, Main Steam Isolation Valve Functional Test.
    - Retesting a relay.
    - The STA will assist with the back panel verifications during the performance of the STP.
    -
- Plant PRA/PSA Status including CDF/LERF & color
  - CDF Baseline with one year to YELLOW
  - LERF Baseline with one year to YELLOW
- Existing LCOs, date of next surveillance
  - None.
- Procedures or major maintenance in progress
  - None
- Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
- Comments, problems, operator workarounds, etc.

○ One Extra NLO

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: Perform Main Steam Isolation Valve Testing	**Floor Instructor:** **Station person at C71A-K3A and C71A-K3B and role play when relays cycle. Use the cordless phones in the simulator to communicate. These relays are actual relays in the simulator.** Recommend performing one set (D MSIV INBD and OTBD)	**CREW:** Verifies Prerequisites for STP 3.3.1.1-17: • No other testing on the RPS System • All MSIV's are OPEN **SRO:** • Authorizes performance of STP 3.3.1.1-17 for all MSIVs. **BOP:** • Verify energized at 1C15, RPS Trip Channel A1 B Line MSIV 90% OPEN relayC71A-K3E. • Verify energized at 1C15, RPS Trip Channel B1 C Line MSIV 90% OPEN relayC71A-K3F. • If the MODE SWITCH is in RUN, then visually confirm (at 1C15) the following CHAN A1 MSIV CLOSURE SCRAM BYP MODE SWITCH NOT IN RUN relay C71A-K11A contacts open (if MODE SWITCH is not in RUN, mark step 7.1.2.a and 7.1.2.b "N/A") • Station personnel at 1C15 and 1C17 in preparation for observing test response of relays to the C71A-K3A and C71A-K3B, concurrent with cycling CV-4412 and CV-4413 • At 1C03, take A INBD MSIV TEST CV-4412 handswitch HS-4412B to TEST and release. • At 1C03, verify that CV-4412 goes partially closed and reopens fully. • Repeat actions for the remaining valves. **RO:** • Perform Peer Checks

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
EXAMINER NOTE: After completion of ST, crew will move to raise reactor power		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

Event 2
Trip of RPS MG Set
Tech Spec 3.3.8 entry
 	
At the direction of the Lead Examiner
 	
When called as the 2nd Asst. to investigate the loss of RPS, wait 2 minutes,
 	
When called as the 2nd Asst. to verify Alt power aligned to 1Y16,
 	
When contacted to verify the Cleanup Beds in hold, wait 3 minutes
	Simulator Operator:
	Activate [ET 3]
	Respond as plant personnel as necessary.
	
	Simulator Operator:
	Reports the A RPS MG Set is tripped and faint acrid smell and abnormally hot to touch, Both EPAs are tripped. 1Y30 looks ok.
	
	Simulator Operator:
	Report that 1Y16 is aligned to the alternate rps power.
	
	Simulator Operator:
	Report cleanup beds in hold.
		SRO
		Directs Operators to IAW AOP 358
		• Enters TSs
		  ○ **3.3.4** A 4 hr
		  ○ 3.3.1.1 A All Required actions met
		  ○ 3.3.1.1 B All Required actions met
		  ○ 3.4.5 B
		  ○ 3.4.5 C
		  ○ 3.3.3.1 PAM
		  ○ **3.6.1.3** – (12 times) All the Group 3 Isolation vales repositioned in the Group 3 Isolation ARP
		RO:
		• Report Power Pressure Level Report
		• Report the Loss of A RPS
		•
		BOP:
		• Complete actions IAW AOP 358

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		OI 358 Appendix 4 Actions – Insert Here
DSM	**Simulator Operator:** Acknowledge to support.	
Electricians	**Simulator Operator:** Acknowledge to support.	
Allow the crew to get to the ½ Scram Recovery Checklist prior to proceeding.		
Examiner Note: When the crew is about to restore Cleanup to service and at the lead examiner's direction, move on to the next event..		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3: Control Rod Drift with AOP entry Tech Spec entry 3.1.3		**CREW:** Diagnoses control rod 30-23 is drifting **SRO:** • Directs entry to AOP 255.1, Control Rod Movement/Indication Abnormal, Mispositioned control rod section. • Directs entry into AOP 255.2 Power Reactivity Abnormal Change. • Determines that the TS 3.3.2.1, Control Rod Block Instrumentation, requirements are met. • Evaluate the entry into TS LCO 3.1.3 C Control Rod Inoperable • Direct the Organization to write a clearance to remove the Amphenoils to electrically disable the HCU after it is Isolated. • Contacts RE and/or Duty Manager.
At the direction of the lead examiner,	**Simulator Operator:** **Activate [ET 5]** This will actuate RD013023, causing Rod 30-23 to drift out of the core.	
If contacted as the second assistant	**Simulator Operator:** report that the HCU lineup is normal and HCU pressure is normal.	**RO:** • 1C05A (D-6) **Rod Drift Actions** • Recognizes Rod 30-23 is drifting and informs the SRO. • As directed and IAW AOP 255.1, takes actions to address the stuck rod as follows:
When directed to Mechanically Isolate HCU 30-23, wait 4 minutes and	**Simulator Operator:** **Acknowledge the request** **delete malfunction RD013023** and call back and inform the control room the hcu has been isolated with (valve numbers) .	**Section 8.1 of OI 255, Isolation of HCU added to the writeup for actions.**

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3: Control Rod Drift (Cont'd) When contacted as the Reactor Enginer, When contacted as the DSM/Operations Direstor	**Simulator Operator:** **Acknowledge and inform the control room that you will evaluate the current rod configuration.** **Simulator Operator:** **Acknowledge the request for support.**	**BOP:** • Monitors balance of plant equipment/plant status. • Contacts SANSOE to inspect control rod 30-23 HCU for abnormalities.
EXAMINER NOTE: Continue to next event at examiner's direction.		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4: 125 VDC Div 1 panel 1D11 trip results in AOP entries Tech Spec entry (3.8.7.B) At the direction of the Lead Examiner	**Simulator Operator:** **Activate [ET 7]** This inserts ed13a causing a loss of 1D11 **Simulator Operator:** **If level increases to a scram, then set Event Trigger 9 to TRUE and move to next event.** **NOTE:** If the RO does not place the level controller to "A" a scram will occur.	**CREW** **The crew will recognize the loss of 1D11** **SRO** • **Possibly enters AOP 644** • Enters AOP 302.1–Loss of 125 VDC Power, Tab 1–Loss of 125vdc Div 1 • May direct, as time permits, the RO to transfer to "A" level control to control reactor level and try to maintain normal band. • Enters TS LCO 3.8.7.B – 8 Hr LCO (1D11) • Directs transferring non-essential power to the startup transformer. **RO** • Takes manual control of FW and attempts to restore reactor water level to the normal band. **OR** • Place the "A" level controller in service with handswitch • Place 3 Element to Single Element • Monitor Power Pressure and Level at 1C05
When contacted as the second assistant to go to the 1A3 switchgear room to in	**Simulator Operator:** report after 2 minutes that 1D10 CKT 6 has tripped free and there is no sign of smoke or fire at the breaker.	BOP Actions Continued on the next page.

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE

	Simulator Operator:	**Actions continued from the previous page.**
		BOP
		• Recognize the Loss of 1D11
		• Monitors BOP Equipment
		• Transfers non-essential power to the startup transformer per OI 304.1, section 4.2. as follows.
		  ○ Place the BUS 1A2 TRANSFER breaker mode selector switch in the MANUAL position.
		  ○ Select Phase 1 with the BUS 1A2 STARTUP XFMR AMPERES meter switch and observe the ammeter reading. Select Phase 1 with the BUS 1A2 AUX XFMR AMPERES meter switch.
		  ○ Place the control switch 4KV BREAKER 1A202 STARTUP XFMR TO BUS 1A2 momentarily in the CLOSE position. Observe that the red (breaker closed) and the white (closing spring charged) indicating lights are ON

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 5: **Spurious start of RCIC, requires manually stopping RCIC** **Tech Spec Entry 3.**		**Crew:** **Acknowledges annunciator 1C04c** **Announces alarm to the SRO** **SRO:** **Will direct the follow actions:** ○ **Trip rcic** ○ **Enter AOP 255.2 for Power Reactivity Abnormal** ○ **Enter TS 3.5.3 Conditon A for RCIC Inoperable.** ○ **May look at TS 3.3.5.3 for rcic instrumentation.**
At the discression the Lead Examiner	**Simulator Operator:** **Activate [ET 11]** This will spuriously start RCIC	
When sent to investigate the Spurious start of RCIC, wait 3 minutes,	**Simulator Operator:** **Inform the control room that the Level Switch for the RCIC Turbine has actuated.**	

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 4: (Cont'd)		**RO:** (Continued) ○ **BOP:** • Provides peer check when required
Continue to next event at examiner's direction.		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event #6 Condenser Vacuum Leak (recoverable) Emergent Power Reduction	**Simulator Operator:** **Activate [ET9]** This will insert mc04b, result in degrading backpressure.	○ Enter AOP 691, High Condenser Backpressure. Fast power reduction \ 39mlbm • Fast power reduction rod insertion • Reduce recirc to 27 mlbm • Insert rods to 30-35% power ○
HP Tech high rad brief	**Simulator Operator:** **Acknoledge the order**	
If contacted as Aux Operator to perform a High Rad Entry to investigate.	**Simulator Operator:** **Acknoledge the order**	
	Simulator Operator: **Activate [ET 13] if the crew inserts a manual scram**	
	Go in to the condenser bay and investigate	

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Back pressure gets worse. At the direction of the Lead Examiner, When Directed to install defeat 12	**Simulator Operator:** **Activate [ET 13]** **This will worsen the condenser air inleakage driving the crew to insert a manual scram.** **Simulator Operator:** **Acknoledge the order and activate ET 12 to install Defeat 12** . **Simulator Operator:** **When all rods are inserted,** **Activate [ET 15]** ADD RCIC Trip on RCIC Start. Restore drywell cooling iaw defeat 4 with group 7 JPM for this Override the Key Locks for defeat 4	EOP1 → ATWS Manually trip generator field breaker ATWS → EOP1 after drifting rods iaw rips Trip C/F when the crew gets all rods in. OI 149 to resetr lpci logic on lo lo lo trip. Torus cooling Restore water level with HPCI

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
	Follow up question for the SRO With a loss of A RPS, What is reportable IAW LI-AA-102-1001?	

***** END OF SCENARIO *****

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

THIS SECTION IS ONLY REQUIRED FOR EVALUATED SCENARIOS.

DISCUSSION ITEMS

Insert any additional Discussion Points to be made after scenario completion. See Discussion Point discussion in the Expected Student Response column of the Simulator Exercise Guide Scenario Instructions three-column template above.

POST SCENARIO REVIEW

LICENSED OPERATOR CONTINUING TRAINING REVIEW

- **Conduct Post-Scenario Review in accordance with Attachment 2 to TR-AA-230-1007 using TR-AA-230-1007-F07, Simulator Instructor LOCT Post-Exercise Checklist.**

LICENSED OPERATOR INITIAL TRAINING REVIEW

- **Conduct Post-Scenario Review in accordance with Attachment 2 to TR-AA-230-1007 using TR-AA-230-1007-F08, Simulator Instructor LOIT Post-Exercise Checklist.**

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:

Before EOP Entry:

1.

2.

After EOP Entry:

1.

2.

Abnormal Events:

1.

2.

Major Transients:

1.

2.

Critical Tasks:

1.

2.

NEXTera ENERGY NUCLEAR FLEET	SIMULATOR EXERCISE GUIDE	SEG

SITE: **Duane Arnold Energy Center** **Revision #:**

LMS ID: **LMS Rev. Date:**

SEG TITLE: **NRC Initial License Exam, Scenario #3**

SEG TYPE: ☐ **Training** ☒ **Evaluation**

PROGRAM: ☐ **LOCT** ☒ **LOIT** ☐ **Other:**

DURATION: **~ 90 minutes**

Developed by: Jesse Seymour — 2/18/15
Instructor/Developer — Date

Reviewed by: _____ _____
Instructor (Instructional Review) — Date

Validated by: _____ _____
SME (Technical Review) — Date

Approved by: _____ _____
Training Supervision — Date

Approved by: _____ _____
Training Program Owner (Line) — Date

SIMULATOR EXERCISE GUIDE REQUIREMENTS

Terminal Objective: Given the specific malfunctions presented in the evaluated scenario guide, the students will be able to protect the public, protect plant personnel and protect plant equipment, in accordance with plant procedures:

Enabling Objectives: There are no formal learning objectives for this evaluation.

Prerequisites: None

Training Resources:
Simulator
Simulator Operator
Phone Talker
Simulator Floor Instructor
Evaluation Team

References:

Protected Content: **Identify here and in training material as** {C001}; **See Comment for details.**
None

Evaluation Method: Dynamic Scenario graded in accordance with NUREG 1021 guidance.

Operating Experience: None

Risk Significant Operator Actions:

TASKS ASSOCIATED WITH SIMULATOR EXERCISE GUIDE	
Task #	**Task Title**
None	None

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER REVIEWER	DATE DATE
0	Initial development for 2015 NRC LOIT examination.	Initial development for 2015 NRC LOIT examination.	N/A	See Cover See Cover	

Facility: Duane Arnold Energy Center Op-Test # 2015-301

Examiners: _____ **Operators:** _____
_____ _____
_____ _____

Initial Conditions:

- Reactor power approximately 40%
- Power ascension in progress.

Turnover:

- Continue power ascension in accordance with IPOI 3, POWER OPERATIONS (35% - 100% RATED POWER, Section 4.0. Steps are completed up to step 5.
- Raise power to approximately 50%.
- Stabilize power at approximately 50% and perform HPCI pump surveillance test

Event #	Malf #	Eventy Type*	Event Description
1	AO-RR-069	R ATC	Raise power with recirculation flow.
2		I ATC TS SRO	APRM 'A' fails (inoperable). Tech Spec review (3.3.1.1, 3.3.2.1)
3		N BOP	RCIC surveillance test.
4		C BOP TS SRO	A RCIC system isolation signal is received due to steam leak; isolation is faulted. Tech Spec entry (3.5.3)
5		C BOP C SRO	River Water Supply Pump trip.
6		M (ALL)	Large break LOCA occurs (Recirc Pump suction break). Faulted LPCI initiation.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

THIS PAGE IS USED FOR THE PRE-SCENARIO BRIEFING. IT CAN BE DELETED IF NOT REQUIRED.

SIMULATOR SET UP INSTRUCTIONS

General Instructions

1. Reset to IC13 and lower power to ~40% RTP
    a. Lower reactor power using recirculation flow and control rods
    b. Load Events
    c. Load Malfunctions
    d. Load Overrides
    e. Place Torus Cooling in service with 1 RHR Pump and 1 RHRSW Pump operating on each side.
2. OR Reset to the IC provided by the LOIT Exam Development Team
3. Verify B and C APRM's are BYPASSED.
4. Mark up OI 150, Section 5.2 to step 7, and verify all steps to that point have been completed.
5. Mark up IPOI 3 up to and including step 7. NA step 8.
6. Obtain keys from key locker for Placing Torus Cooling in service.
7. Verify Events validate FALSE
8. Reset APRM Gains and clear recorders
9. Complete the Exam Setup Checklist
10. Ensure no BIAS is inserted on the FRV Controllers by verifying Y at 0.0
11. Verify EOOS up-to-date.

Trigger No.	Trigger Logic Statement	Trigger Word Description
1, 3, 5, 7	Manual Trigger	Manual Trigger
20	YCAB002 >= 48	Power > 48%

Time	Malf. No.	Malfunction Title	Delay	Ramp (sec)	ET	Initial Value	Final Value
Setup	rh10c	RHR C PUMP FAIL TO AUTO-ACTUATE				Inactive	Active
Setup	rh10d	RHR D PUMP FAIL TO AUTO-ACTUATE				Inactive	Active
Setup	rh10a	RHR A PUMP FAIL TO AUTO-ACTUATE				Inactive	Active
Setup	rh10b	RHR B PUMP FAIL TO AUTO-ACTUATE				Inactive	Active
Setup	stdg01	TRIP OVERRIDE - 'A' SBDG 1G31 FAILS TO AUTO START				Inactive	Active
Setup	stdg02	TRIP OVERRIDE - 'B' SBDG 1G21 FAILS TO AUTO START				Inactive	Active
Setup	cs05a	CORE SPRAY PUMP A - FAILURE TO AUTO-INITIATE				Inactive	Active
Setup	cs05b	CORE SPRAY PUMP B - FAILURE TO AUTO-INITIATE				Inactive	Active
Setup	strh02	LPCI B INJECT VALVE FAILS TO AUTO OPEN - MO-1905				Inactive	Active
Setup	ms31b	GROUP 6 ISOLATION VALVE(S) FAIL(S) TO CLOSE-MO2401				Inactive	Active
Setup	ms31a	GROUP 6 ISOLATION VALVE(S) FAIL(S) TO CLOSE-MO2400				Inactive	Active
Setup	strh01	LPCI A INJECT VALVE FAILS TO AUTO OPEN - MO-2003				Inactive	Active
Setup	sthp01	HPCI SYSTEM AUTO INITIATION BLOCK				Inactive	Active
Setup	nm08a	APRM CHANNEL FAILS- CHNL A		REMOVE	1	As Is	100
Setup	rc06	RCIC STEAM SUPPLY LINE BREAK (RCIC ROOM)		6 min	3	0	30
Setup	sw19b	RIVER WATER SUPPLY PUMP TRIP- PUMP B, 1P117B			5	Inactive	Active
Setup	rr15a	RECIRC LOOP RUPT- DESIGN BASES LOCA AT 100%- LOOP A			7	0	2
Setup	Rr17a			1 min	20	As Is	80
Setup	Sw14a			3 min			85
Setup	Sw14b			3 min			85

Time	Malf. No.	Malfunction Title	Delay	Ramp (sec)	ET	Initial Value	Final Value
Setup	Strc01	Write a sch file to block the initiation and valve light power					
		Add Condensate Pump Trip on 1A1/2 transfer.					
	HP0	HPCI TRIP on 15 seconds running.					

OVERRIDES

Time	Over. No.	Override Title	Delay	Ramp	ET	Initial Value	Final Value

REMOTE FUNCTIONS

Time	Remote No.	Remote Title	Delay	Ramp	ET	Initial Value	Final Value
Setup	fp08 May need to look up	RCIC DELUGE MAN ISOLATION VALVE V-33-84 (OPEN,CLOSE)				Open	Closed

Conduct simulator crew pre-scenario brief using TR-AA-230-1007-F06, Simulator Instructor Pre-Exercise Checklist.

If surrogate operators are to be used, brief them using TR-AA-230-1007-F11, Surrogate Brief Checklist

SHIFT TURNOVER INFORMATION

- Day of week and shift
  - Today
  - Day Shift
- Weather conditions
  - Warm Spring Day
- (Plant power levels)
  - Reactor Power Level ≈ 42%
  - Core Flow 30 Mlbm/hr
- Protected train
  - Protected Train is "B"
- Technical Specification Action statements in effect
  - TS LCO 3.5.1 Condition B- Day 1 of 7 One low pressure ECCS subsystem inoperable for reasons other than Condition A.
    - Restore low pressure ECCS subsystem to operable status within 7 days.
- Locked in / failed annunciators and alarms
  - None
- Evolutions in progress or planned for upcoming shift
  - Raise Power with Recirc to approximately 50% RTP.
  - Perform RCIC post maintenance confidence run for maintenance performed a week ago IAW OI 150, Section 5.2. in CST to CST mode of operation.
  - RCIC Inop STP, 3.5.3-XX was completed last shift and is in routing.
- Plant PRA/PSA Status including CDF/LERF & color
  - CDF Baseline with one year to YELLOW
  - LERF Baseline with one year to YELLOW
- Existing LCOs, date of next surveillance
  - None.
- Procedures or major maintenance in progress
  - None
- Equipment to be taken out of or returned to service this shift/maintenance on major plant equipment
- Comments, problems, operator workarounds, etc.
  - One Extra NLO is in work control waiting for the RCIC Test Run and has been briefed.

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: Raise power with Recirc flow. If Contacted as the Reactor Engineer to provide guidance,	Have the crews brief the evolutions on the turnover sheet. Provide the crews with OI 264, OI 150, IPOI 3, and STP XXXXX **Simulator Operator:** Inform the crew to raise power with Recirc Flow to achieve approximately 50% power and hold power constant until a rod sequence is approved for further power ascension.	**CREW:** **SRO:** • Directs power to be raised from 40 to 50% using recirculation pump flow. **ATC:** • Performs Recirculation Pump flow adjustments to raise power from 40 to 50%. • Monitors plant parameters for expected response during reactivity manipulation. **BOP:** • Adjusts generator excitation as necessary to maintain KVAR loading and power factor as specified by the system load dispatcher per OI 698, Main Generator. • Starts additional cooling tower fans in forward as necessary to maintain condenser absolute pressure less than 5 in. Hg., as indicated at LP COND 1E-7A[B] BACK PRESSURE indication PI-1476[1477] on 1C07.

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 1: When power reaches 48%	**Simulator Operator:** **Verify ET 20 activates.** This will cause "A" Recirc MG Set speed to rise.	**CREW:** **SRO:** • Will enter AOP 255.2 on the Power/Reactivity Abnormal. • Contact the Duty Station Manager/Operations Director and/or the Reactor Engineer. • May Enter TS 3.4.1 Condition C for the Mismatch in Recirc Pump Speeds. • If the "B" Scoop Tube was locked, the CRS may direct the crew to reset the "B" Scoop Tube in accordance with OI 264
When contacted as the 2nd Asst. to go to the MG Set Room to investigate the Recirc Pump Speed Changer, Wait 2 minutes and	**Simulator Operator:** Report that the power switch is on and the thermal overload button on the motor is reset.	**ATC:** • ARP 1C04A (C-5) Actions taken for the scoop lock. • Will Lock the 'A' Recirc MG Set Scoop Tube from 1C04. The crew may lock the "B" Scoop tube if they do not diagnose the event properly • Take actions IAW AOP 255.2 • If directed, reset the "B" Scoop Tube in accordance with OI 264
When Contacted as the DSM/OD	**Simulator Operator:** Agree to support trouble shooting efforts.	**BOP:** • Direct inplant operators to investigate the scoop tube malfunction • Take actions for AOP 255.2 • Run 3D Case • Plot Power to Flow • If directed, reset the "B" Scoop Tube in accordance with OI 264 •
When Contacted as the RE	**Simulator Operator:** Acknowledge the situation and inform the CRS that you will develop a plan for recovery.	

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
EXAMINER NOTE: After power has been raised to approximately 50%, commence Event 2.		
Event 2:	**Simulator Operator:** **ACTIVATE ET 1.** This will cause "A" APRM to fail upscale.	**Crew:** Identifies the following: • a half-scram has occurred. • a rod out-block has occurred. **BOP:** • OI 878.4 actions to Unbypass C APRM and take A APRM Out of operate. • OI 878.4 actions to Bypass A APRM • Unbypass the B APRM • Bypass the D APRM
If Contacted as a maintenance or support organization,	**Simulator Operator:** Acknowledge the issue, and/or to provide maintenance support for troubleshooting/repair.	**ATC:** Responds to failure of APRM 'A' • Acknowledges 1C05A (B-2), APRM A, C, OR E UPSCALE TRIP OR INOP. References ARP. • Acknowledges 1C05B (A-6), ROD OUT BLOCK. References ARP. • Identifies that APRM 'A' has failed.
Following the reset of the half-scram, crew should proceed to the RCIC surveillance test. If crew does not proceed,	**Simulator Operator:** Call the CRS as the Operations Director and direct the crew to proceed with the RCIC Trouble Shooting Run to test the Flow Controller.	• When directed by the CRS, bypasses the 'A' APRM. • Resets the half scram. • **SRO Actions are continued on the next page.**

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
		Continued from previous page. **SRO:** Directs crew response for failed APRM 'A' • Reviews TS 3.3.1.1, Condition A for applicability Instrumentation. • Reviews TS 3.3.2.1 for applicability. • Reviews TRM LCO 3.3.2, Condition A for applicability. • Directs 'A' APRM to be bypassed. Directs the half-scram to be reset. • Briefs the crew on the effects of the Scoop Tube and APRM Failure. • Direct the D APRM to be bypassed if not completed.
EXAMINER NOTE: After the half-scram is reset, crew should proceed to RCIC Trouble Shooting (Event 3).		

TIME/NOTES	INSTRUCTOR ACTIVITY	EXPECTED STUDENT RESPONSE
Event 3 RCIC Confidence Run	**If the vacuum pump does not initially start or trips, direct the crew to attempt it again at the direction of the Electrical Maintenance Supervisor in the RCIC Room.**	**SRO:** • Directs crew to conduct the RCIC Run IAW OI 150, Section 5.2. • Verify RCIC LCO has been entered
When Contacted as the Extra Operator for the RCIC Run,	**Simulator Operator:** Wait 4 minutes and inform the control Room that • Oil level has been verified satisfactory • And standing by outside the RCIC Room.	**ATC:** • Monitors plant parameters during RCIC Run. **BOP:** Starts RCIC in CST to CST mode in accordance with OI 150. • Start 1V AC 15A and B RCIC ROOM CLG UNITS at 1C23 • Open the REDUNDANT SHUTOFF valve MO 2316 on 1C03. • Open the TEST BYPASS valve MO 2515 to 44-46% open as indicated on RCIC TEST BYP MO 2515 POSITION ZI 2515. • Verify MO 2511 PUMP DISCHARGE valve is open. • Start 1P 227 VACUUM PUMP by placing handswitch HS 2415 on 1C04 in the START position. • Open MO 2426 LUBE OIL COOLER SUPPLY by placing HS 2426 in the OPEN position momentarily and observing proper valve position indication. • If time permits, ensure unnecessary/unauthorized personnel are clear of the RCIC Room. • Initiate Torus water temperature monitoring per STP 3.6.2.1-01. This is only required while heat is being added to the Torus.
When Contacted as Health Physics,	**Simulator Operator:** Acknowledge the running of RCIC and the potential to change rad levels in the plant.	
When contacted as an operator to verify RCIC Running Sat,	**Simulator Operator:** Report that the pump is operating sat.	
When Contacted as a member of the maintenance staff for trouble shooting	**Simulator Operator:** Report that you will begin trouble shooting and to stand by for direction from the team.	
		BOP Actions Continued Next Page

When the crew determines the need to perform STP 3.6.2.1-01,	**Floor Instructor:** One member of the exam team shall wear an STA Badge and take over the STP as the STA.	• Open MO 2404 TURBINE STEAM SUPPLY by placing the handswitch in the OPEN position momentarily and observing proper valve position indication and that RCIC turbine speed, pump discharge pressure, and RCIC flow indicators indicate increases. • Verify CV 2410, CV 2411, and CV 2436 Close • Verify that MO 2510 MIN FLOW BYPASS opens when RCIC Flow is less than 80 gpm with pump discharge pressure greater than 125 psig. • Verify HV 2406 TURBINE CONTROL VALVE Governor Valve is throttling to control turbine speed. • In the CST to CST mode, throttle MO 2515 TEST BYPASS to achieve the desired discharge pressure. • Verify that MO 2510 MIN FLOW BYPASS valve closes as RCIC flow rises above 80 gpm. • Adjust FIC 2509 FLOW CONTROL until desired flow is achieved; do not throttle RCIC turbine speed below the minimum of 2000 rpm.
Examiner Note: Once the RCIC test flow to the CST has been established, commence Event #4.		

Event 4: When RCIC flow to the CST has been established, and with direction from the lead examiner: As the extra operator at the RCIC Room Door, once the High Amb Temp alarm sounds,	**Simulator Operator:** **ACTIVATE ET 3** This will cause a small leak in the RCIC Room. Temperatures in the room will not exceed MAX SAFE limits. **Simulator Operator:** Inform the crew that a steam leak occurred in the RCIC Room, the RCIC room was evacuated, all personnel are accounted for, and that there are no injured personnel.	**CREW:** identify that a RCIC isolation signal is present due to a steak leak in the RCIC room (e.g. high area temperature). **ATC:** • Monitor 1C05 indications for Power/Pressure/Level. • If Required, attempt to Isolate the RCIC Steam Lines while the BOP is in the back panels area. **BOP:** performs the following: • May recognize the • Acknowledges 1C04B (B-04) STEAM LEAK DET AMBIENT HI TEMP, 1C04C (A-07) References ARP(s). • Identifies that a valid RCIC isolation signal should be present due to a steam leak in the RCIC Room. • Identifies that an automatic RCIC isolation has failed to occur. • Manually initiates RCIC isolation by performing the following in accordance with OI-150, Section 7.1 or the applicable ARPs: ○ Closes MO-2400 RCIC INBD STEAM LINE ISOL, and MO-2401 RCIC OUTBD STEAM LINE ISOL. SRO Actions continued on the next page.

	SIMUATOR OPERATOR
	Delete ESW COOLER Blockage
	
	If the Chief Examiner request the Entry in to EOP 3, Add malfunctions to prevent closing the Isolation valves until inplant operator actions are taken to reset a breaker or thermal overload.
		SRO Actions continued from the previous page.
		
		SRO: performs the following:
		• May enters EOP-3, Secondary Containment Control
		  ○ Implements actions of EOP-3 SC/T leg for RCIC room temperature being greater than the Max Normal Operating Limit, but less than the Max Safe Operating Limit.
		  ○ Directs manual isolation of the RCIC system if not already done.
		• References Technical Specifications to address RCIC system inoperability:
		  ○ TS 3.5.3, Condition A
		May declare TS 3.6.1.3, Condition B for two valves that failed to shut on the Isolation Signal in a single flow path.

EXAMINER NOTE: Once RCIC manual isolation has occurred and SRO has completed TS call, commence event #5.		

Event 5: River Water Supply Pump spurious trip	**Simulator Operator:** when directed by lead examiner **ACTIVATE [ET 5]** to cause the 'B' RWS Pump to trip.	**CREW:** identifies a trip of the 'B' River Water Supply Pump. **ATC:** monitors plant parameters. **BOP:** Performs the following: • attempt to start standby pumps in both RWS Subsystems as necessary to restore needed makeup flow. • Send an operator to the Intake Structure to verify alarms and check RWS pump breaker condition. •
When contacted as the AUX Operator to investigate the loss of the B RWS Pump, Wait 4 Minutes	**Simulator Operator:** and inform the control room that the B RWS Pump is hot to touch and that there is no smoke and no fire.	**SRO:** directs crew response as follows: • May Enter AOP-410, LOSS OF RIVER WATER SUPPLY ○ Update the Online Risk Monitor for the status of River Water Supply Pumps. • May Direct actions IAW the ARP 1C06A (A-3) B RWS Pump Trip for the tripped RWS Pump • LCO 3.7.2 met, TS Inop Log entry.
DSM Call	**Simulator Operator:** **Acknowledge the request for support.**	
EXAMINER NOTE:		

Event 6: Large Break LOCA (Recirc Suction break) with faulted LPCI auto initiation (manual alignment required). If Contacted as an operator in the plant,	**Simulator Operator:** perform the following at the direction of the Lead Examiner: **Activate [ET 7]** and verify rr15a activates on ramp **Simulator Operator:** Agree to support required actions	**CREW:** Will recognize the automatic reactor scram, lowering RPV level, lowering RPV pressure, and rising drywell pressure and Enter EOP 1 and 2 **ATC:** performs the following: • Performs IPOI 5 QRC 1, Reactor Scram Immediate Operator Actions: ○ Initiates a backup manual reactor scram. ○ Places THE MODE SWITCH in SHUTDOWN. ○ Verifies all control rods fully inserted. ○ Verifies main turbine trip ○ Verifies main generator lockout. ○ Verifies neutron flux is lowering. ○ Inserts all functional SRM and IRM detectors.

Event 6:
 	
Large Break LOCA (Recirc Suction break) with faulted LPCI auto initiation (manual alignment required).
	Simulator Operator:
	
	ROLE PLAY: if contacted as Equipment Operator, perform required component manipulations and make appropriate reports to the Control Room.
		SRO: directs crew actions as follows:
		• Implements EOP 1, RPV Control:
		  ○ **Recognizes the failed ECCS initiation (LPCI) and directs action to establish LPCI injection (CRITICAL TASK).**
		  ○ Implements the ALC Leg of EOP 1 RC/L:
		  ▪ Recognizes that RPV water level cannot be maintained >+15 inches (TAF).
		  ▪ Assesses available ECCS injection sources appropriately and transitions correctly.
		  ○ Implements RC/P.
		• Implements EOP 2, Primary Containment Control:
		  ○ Implements T/L.
		  ○ Implements T/T:
		  ▪ Aligns RHR for Suppression Pool Cooling as required.
		  ○ Implements DW/T:
		  ▪ Determines that Drywell cannot be maintained <150°F and maximizes drywell cooling.
		  ○ Implements PC/P:
		  ▪ Determines that Primary Containment pressure cannot be maintained less than 2.0 psig and ensures that Drywell and Torus sprays are operated appropriately.
		
		Add ED?

Event 6: Large Break LOCA (Recirc Suction break) with faulted LPCI auto initiation (manual alignment required).	**Simulator Operator:** ROLE PLAY: if contacted as Equipment Operator, perform required component manipulations and make appropriate reports to the Control Room.	**BOP:** performs plant EOP operations as directed by the SRO. Aligns systems (RHRSW, RHR, etc.) and reports trends as required. • **Identifies failure of automatic LPCI alignment and injection and manually aligns LPCI injection by starting RHR pumps and opening valves as necessary (CRITICAL TASK).**
EXAMINER NOTE: when sufficient crew execution of the EOPs has been observed, then the scenario may be terminated.		

***** END OF SCENARIO *****

SIMULATOR EXERCISE GUIDE SCENARIO INSTRUCTIONS

THIS SECTION IS ONLY REQUIRED FOR EVALUATED SCENARIOS.

DISCUSSION ITEMS

Insert any additional Discussion Points to be made after scenario completion. See Discussion Point discussion in the Expected Student Response column of the Simulator Exercise Guide Scenario Instructions three-column template above.

QUANTITATIVE ATTRIBUTES

(Use this form for NRC/INPO Evaluations only as required to document associated quantitative information.)

Malfunctions:

Before EOP Entry:

1.

2.

After EOP Entry:

1.

2.

Abnormal Events:

1.

2.

Major Transients:

1.

2.

Critical Tasks:

1. Scrams Reactor due to EOP-1 entry conditions met
2. Starts the 'A' SBDG manually to power only safety-related electrical bus
3. Emergency Depressurization due to Loss of HPCI with SBLOCA.

DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2015 NRC In Plant I

TITLE: VENT THE SCRAM AIR HEADER

JPM TITLE: **VENT THE SCRAM AIR HEADER**

JPM NUMBER: **201001** **REV. 0**

TASK NUMBER(S) / TASK TITLE(S):

K/A NUMBERS: **201001 K1.09** **K/A VALUE: 3.1/3.2**

Justification (FOR K/A VALUES <3.0):

TASK APPLICABILITY:
☒ **RO** ☒ **SRO** ☐ **STA** ☐ **Non-Lic** ☒ **SRO CERT** ☐ **OTHER:** _____

APPLICABLE METHOD OF TESTING: Simulate/Walkthrough: ☐ Perform: X

EVALUATION LOCATION: In-Plant: X Control Room: ☐

Simulator: ☐ Other: ☐

Lab: ☐

Time for Completion: 10 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: NO

Developed by:	Instructor/Developer	Date
Reviewed by:	Instructor (Instructional Review)	Date
Validated by:	SME (Technical Review)	Date
Approved by:	Training Supervision	Date
Approved by:	Training Program Owner	Date

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the job level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	☐	☐	☐
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	☐	☐	☐

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

{C001}

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER SUPERVISOR	DATE DATE

SIMULATOR SET-UP: *(Only required for simulator JPMs)*

SIMULATOR SETUP INSTRUCTIONS: NONE

SIMULATOR MALFUNCTIONS: NONE

SIMULATOR OVERRIDES: NONE

SIMULATOR REMOTE FUNCTIONS: NONE

Required Materials:

1. RIP 101.3, Rev 1
2. Crescent Wrench

General References:

1. RIP 101.3, Rev. 1

Task Standards:

1. **The operator simulates closing V-17-61.**
2. **The operator simulates removing pipe plug d/s of V-17-174.**
3. **Simulates opening V-17-174.**
4. **The operator simulates closing V-17-174.**
5. **Operator simulates installing pipe plug d/s of V-17-174.**
6. **Operator simulates opening V-17-61.**

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

- The plant is operating at 70% power.
- An ATWS has occurred.
- The Shift Manager has directed the RO to perform IPOI 5 QRC 2, ATWS.
- The RO has directed you to vent the scram air header.

INITIATING CUES (IF APPLICABLE):

- Vent the scram air header in accordance with RIP 101.3 and inform the control room.
- This JPM is not Time Critical.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step:1 Critical _Y_(SEQ-)	Close V-17-61 (Scram Pilot Air Header Isolation Vlv).
Standard:	The operator simulates closing V-17-61.
Evaluator Cue:	When the operator has simulated turning the handwheel in the clockwise direction, tell the operator "The valve stem is in and handwheel stops moving."
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 2 **Critical _Y_ (SEQ-)**	**Remove the pipe plug located downstream of V-17-174, (PI-184/PS1842 Test Connection Isolation valve).**
Standard:	**The operator simulates removing pipe plug d/s of V-17-174.**
Evaluator Cue:	**When the operator has simulated turning the cap in the clockwise direction, tell the operator,** **"The pipe plug has been removed."**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	

Performance Step: 3 **Critical _Y_ (SEQ-)**	**Open V-17-174, (PI-184/PS1842 Test Connection Isolation valve).**
Standard:	**Simulates opening V-17-174.**
Evaluator Cue:	**When the operator has simulated turning the handwheel in the counter clockwise direction, tell the operator,** **"The valve stem is up and handwheel stops moving. You hear a loud rush of air coming from the open pipe. The air flow diminishes over time."**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 4 **Critical N (SEQ-)**	**Communicates actions to control room.**
Standard:	**The operator simulates calling the control room and informs RO that scram air header is depressurized.**
Evaluator Cue:	**When the operator simulates informing the control room that the Scram Air Header has been vented IAW RIP 101.3, tell the operator** **"That all control rods indicated inserted. Restore the Scram Air Header."**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 5 **Critical N (SEQ-)**	**Question and Answer:** **What do you expect the position of the scram pilot valves to be before and after venting?**
Standard:	**The operator should respond that the scram pilot valves will be closed before venting and open after venting.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 6 **Critical _Y_ (SEQ-)**	**Restoration: Close V-17-174, (PI-184/PS1842 Test Connection Isolation valve).**
Standard:	**The operator simulates closing V-17-174.**
Evaluator Cue:	**When the operator has simulated turning the handwheel in the clockwise direction, tell the operator** **"The valve stem is in and handwheel stops moving."**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 7 **Critical _Y_ (SEQ-)**	**Restoration: Reinstall the pipe plug downstream of V-17-174.**
Standard:	**Operator simulates installing pipe plug d/s of V-17-174.**
Evaluator Cue:	**When the operator simulates putting the pipe plug back on, tell the operator** **"The pipe plug is installed"**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 8 **Critical _Y_ (SEQ-)**	**Restoration: Open V-17-61, Scram Pilot air header isolation valve.**
Standard:	**Operator simulates opening V-17-61.**
Evaluator Cue:	**When the operator has simulated turning the handwheel in the counter clockwise direction, tell the operator,** **"The valve stem is up and handwheel stops moving."**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Terminating Cues: **When the scram air header has been vented and restored, the JPM is complete.**

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **Non-Lic** ☐ **SRO CERT** **Date:** _____

☐ **LOIT RO** ☐ **LOIT SRO**

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

Remediation required: **YES** ☐ **NO** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: **ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.**

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

INITIAL CONDITIONS:

- The plant is operating at 70% power.
- An ATWS has occurred.
- The Shift Manager has directed the RO to perform IPOI 5 QRC 2, ATWS.
- The RO has directed you to vent the scram air header.

INITIATING CUES (IF APPLICABLE):

- Vent the scram air header in accordance with RIP 101.3 and inform the control room.
- This JPM is not Time Critical.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2015 NRC In Plant J

TITLE: OPERATE RCIC FROM 1C208

JPM TITLE: **OPERATE RCIC FROM 1C208**

JPM NUMBER: **REV. 0**

TASK NUMBER(S) /
TASK TITLE(S):

K/A NUMBERS: **201001 K1.09** **K/A VALUE: 3.1/3.2**

Justification (FOR K/A VALUES <3.0):

TASK APPLICABILITY:
☒ **RO** ☒ **SRO** ☐ **STA** ☐ **Non-Lic** ☒ **SRO CERT** ☐ **OTHER:** _____

APPLICABLE METHOD OF TESTING: Simulate/Walkthrough: [ ] Perform: [X]

EVALUATION LOCATION: In-Plant: [X] Control Room: [ ]

Simulator: [ ] Other: [X]
To be performed in the Training Building prior to the In Plant portion of the JPM, In Plant portion is required after the Task.

Lab: [ ]

Time for Completion: 40 Minutes Time Critical: NO

Alternate Path [NRC]: NO
Alternate Path [INPO]: NO

Developed by:	Instructor/Developer	Date
Reviewed by:	Instructor (Instructional Review)	Date
Validated by:	SME (Technical Review)	Date
Approved by:	Training Supervision	Date
Approved by:	Training Program Owner	Date

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the job level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	☐	☐	☐
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	☐	☐	☐

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Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

{C001}

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER SUPERVISOR	DATE DATE

SIMULATOR SET-UP: *(Only required for simulator JPMs)*

SIMULATOR SETUP INSTRUCTIONS:

1. Reset to any IC that RCIC can be run in
2. Activate the Remote Shutdown Panel with REMOTE Function EXAM01 to NORM
3. Verify the simulator group has restored the RCIC Controller at 1C208 to service.
4. Start RCIC in CST to CST Mode at 415 gpm.
5. Set up radios on the same channel
6. Simulator Operator functions as the remote shutdown panel operator for the JPM.
7. Large Picture of the Instrument Rack located near 1C208 for level indications if used instead of verbal Cues.

SIMULATOR MALFUNCTIONS: NONE

SIMULATOR OVERRIDES: NONE

SIMULATOR REMOTE FUNCTIONS: NONE

Required Materials:

1. AOP 915, Rev. 53

General References:

1. AOP 915, Rev. 53

Task Standards:

1. The Operator Unlocks the door.
2. The operator will place HS-2440 in REMOTE.
3. Reduce the rate of injection.
4. The operator will take the evaluator to the 1C208 Panel in the Plant or explain in enough detail as to demonstrate knowledge of the location in the plant.

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

INITIAL CONDITIONS:

- A Plant Transient has occurred requiring a shutdown from outside the control room.
- The control room is being evacuated.
- RCIC is injecting to the vessel.

INITIATING CUES (IF APPLICABLE):

- The CRS has directed you to take control of RCIC from 1C208, and restore reactor water level IAW AOP 915.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step:1 Critical N (SEQ-)	NOTE RCIC can be controlled from 1C208 but no flow or speed indication is available.
Standard:	Operator reads and place keeps the NOTE.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 2 Critical Y (SEQ-)	2. If directed by CRS to take manual control of RCIC (if running) at 1C208 perform the following: a. Open key locked door protecting normal/remote handswitch HS-2440 RCIC TURB SPEED SELECT.
Standard:	The Operator Unlocks the door.
Performance:	SATISFACTORY _____ UNSATISFACTORY _____
Comments:	

Performance Step: 3 **Critical N (SEQ-)**	**2. If directed by CRS to take manual control of RCIC (if running) at 1C208 perform the following:** **b. Verify HIC 2440 input (P) and output (V) are consistent with FIC 2509 output (V) if Control Room is manned. Otherwise, mark this step N/A.**
Standard:	**The operator will verify the values in the control room.**
Evaluator Cue:	**Simulator Operator:** **When the operator contacts the control room, provide the current readings for reactor water level in the simulator using Extreme View. Communications will be by phone number 7825 or by simulator radio if provided.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 4 **Critical Y (SEQ-)**	**2. If directed by CRS to take manual control of RCIC (if running) at 1C208 perform the following:** **c. Place HS-2440 in the REMOTE position.**
Standard:	**The operator will place HS-2440 in REMOTE.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 5 **Critical N (SEQ-)**	**2. If directed by CRS to take manual control of RCIC (if running) at 1C208 perform the following:** **d. Toggle the parameter displayed on HIC-2440 to V using the D pushbutton if needed.**
Standard:	**if required, the operator will toggle the display to V.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 6 **Critical Y (SEQ-)**	**2. If directed by CRS to take manual control of RCIC (if running) at 1C208 perform the following:** **e. Control RCIC flow with HIC 2440 as necessary using the pulser knob.**
Standard:	**The operator will turn the pulsar knob in the counter clockwise direction to lower flow.**
Evaluator Cue:	**Inform the operator that RPV Water Level is RISING and to reduce the rate of injection a small amount.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 7 **Critical Y (SEQ-)**	**After the completion of the above portion of the task, the operator is required to demonstrate the knowledge of the location of the 1C208 Panel in the Plant.**
Standard:	**The operator will take the evaluator to the 1C208 Panel in the Plant or explain in enough detail as to demonstrate knowledge of the location in the plant.**
Evaluator Cue:	**Inform the operator that this portion of the task is complete. Inform the operator that they are to take you to the 1C208 Panel in the Plant or describe its location.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Terminating Cues: **When the operator has taken control of the RCIC Turbine at 1C208 AND**
When the operator has demonstrated knowledge of the location of the 1C208 Panel in the plant.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **Non-Lic** ☐ **SRO CERT** **Date:** _____

☐ **LOIT RO** ☐ **LOIT SRO**

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

Remediation required: **YES** ☐ **NO** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.

TURNOVER SHEET

INITIAL CONDITIONS:

- A Plant Transient has occurred requiring a shutdown from outside the control room.
- The control room is being evacuated.
- RCIC is injecting to the vessel.

INITIATING CUES (IF APPLICABLE):

- The CRS has directed you to take control of RCIC from 1C208, and restore reactor water level IAW AOP 915.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

DUANE ARNOLD ENERGY CENTER

JOB PERFORMANCE MEASURE

2015 NRC In Plant K

TITLE: Shutdown of Regulating Transformer 1Y1A for Maintenance

JPM TITLE: **Shutdown of Regulating Transformer 1Y1A for Maintenance**

JPM NUMBER: **262002-05** **REV. 0**

TASK NUMBER(S) / **28.10 (NSPEO)/**
TASK TITLE(S): **Support shutdown of Regulating Transformer 1Y1A for maintenance**

K/A NUMBERS: **262002** **K/A VALUE: A4.01 3.1**

Justification (FOR K/A VALUES <3.0):

TASK APPLICABILITY:
☒ **RO** ☒ **SRO** ☐ **STA** ☒ **Non-Lic** ☒ **SRO CERT** ☐ **OTHER:** _____

APPLICABLE METHOD OF TESTING: Simulate/Walkthrough: [X] Perform: [ ]

EVALUATION LOCATION: In-Plant: [X] Control Room: [ ]

Simulator: [ ] Other: [ ]

Lab: [ ]

Time for Completion: 15 Minutes Time Critical: NO

Alternate Path [NRC]: NO

Alternate Path [INPO]: NO

Developed by: _____ _____
Instructor/Developer Date

Reviewed by: _____ _____
Instructor (Instructional Review) Date

Validated by: _____ _____
SME (Technical Review) Date

Approved by: _____ _____
Training Supervision Date

Approved by: _____ _____
Training Program Owner Date

JOB PERFORMANCE MEASURE VALIDATION CHECKLIST

ALL STEPS IN THIS CHECKLIST ARE TO BE PERFORMED PRIOR TO USE.

REVIEW STATEMENTS	YES	NO	N/A
1. Are all items on the signature page filled in correctly?	☐	☐	☐
2. Has the JPM been reviewed and validated by SMEs?	☐	☐	☐
3. Can the required conditions for the JPM be appropriately established in the simulator if required?	☐	☐	☐
4. Do the performance steps accurately reflect trainee's actions in accordance with plant procedures?	☐	☐	☐
5. Is the standard for each performance item specific as to what controls, indications and ranges are required to evaluate if the trainee properly performed the step?	☐	☐	☐
6. Has the completion time been established based on validation data or incumbent experience?	☐	☐	☐
7. If the task is time critical, is the time critical portion based upon actual task performance requirements?	☐	☐	☐
8. Is the job level appropriate for the task being evaluated if required?	☐	☐	☐
9. Is the K/A appropriate to the task and to the licensee level if required?	☐	☐	☐
10. Is justification provided for tasks with K/A values less than 3.0?	☐	☐	☐
11. Have the performance steps been identified and classified (Critical / Sequence / Time Critical) appropriately?	☐	☐	☐
12. Have all special tools and equipment needed to perform the task been identified and made available to the trainee?	☐	☐	☐
13. Are all references identified, current, accurate, and available to the trainee?	☐	☐	☐
14. Have all required cues (as anticipated) been identified for the evaluator to assist task completion?	☐	☐	☐
15. Are all critical steps supported by procedural guidance? (e.g., if licensing, EP or other groups were needed to determine correct actions, then the answer should be NO.)	☐	☐	☐
16. If the JPM is to be administered to an LOIT student, has the required knowledge been taught to the individual prior to administering the JPM? TPE does not have to be completed, but the JPM evaluation may not be valid if they have not been taught the required knowledge.	☐	☐	☐

All questions/statements must be answered "YES" or "N/A" or the JPM is not valid for use. If all questions/statements are answered "YES" or "N/A," then the JPM is considered valid and can be performed as written. The individual(s) performing the initial validation shall sign and date the cover sheet.

Protected Content: (CAPRs, corrective actions, licensing commitments, etc. associated with this material)

{C001}

UPDATE LOG: Indicate in the following table any minor changes or major revisions (as defined in TR-AA-230-1003) made to the material after initial approval. Or use separate Update Log form TR-AA-230-1003-F16.

#	DESCRIPTION OF CHANGE	REASON FOR CHANGE	AR/TWR#	PREPARER SUPERVISOR	DATE DATE

SIMULATOR SET-UP: *(Only required for simulator JPMs)*

SIMULATOR SET UP: NONE

Simulator Setup Instructions: NONE

SIMULATOR MALFUNCTIONS: NONE

SIMULATOR OVERRIDES: NONE

SIMULATOR REMOTE FUNCTIONS: NONE

Required Materials:

1. OI 317.1

General References:

1. OI 317.1, Rev. 59

Task Standards:

1. At 1D15[1D25] place inverter ALARM BYPASS SWITCH to BYPASS.
2. At 1Y15, turn circuit breaker 1Y1503 OFF
3. At 1Y1A, turn circuit breaker 1Y1A02 OFF
4. At 1Y1A, turn circuit breaker 1Y1A01 OFF
5. At 1B32, turn circuit breaker 1B3216A OFF

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

DURING THE JPM, ENSURE PROPER SAFETY PRECAUTIONS, FME, AND/OR RADIOLOGICAL CONCERNS AS APPLICABLE ARE FOLLOWED.

The initial conditions that I read may not **exactly** match the plant conditions, assume that the conditions that I read you are **the correct** plant conditions.

INITIAL CONDITIONS:

- 1Y1A Regulating Transformer requires maintenance.
- 1D15 Instrument AC Inverter is in operation.
- All other Instrument AC equipment are operable and in their normal line-ups.
- RPS Alternate Power Source is on 1Y2A.

INITIATING CUES (IF APPLICABLE):

- The CRS directs you, IAW OI 317.1, “120 VAC Instrument Control Power System,” to remove 1Y1A, Regulating Transformer, from service in preparation for maintenance.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

JPM PERFORMANCE INFORMATION

Start Time: _____

NOTE: When providing "Evaluator Cues" to the examinee, care must be exercised to avoid prompting the examinee. Typically cues are only provided when the examinee's actions warrant receiving the information (i.e., the examinee looks or asks for the indication).

NOTE: Critical steps are marked with a "Y" below the performance step number. Failure to meet the standard for any critical step shall result in failure of this JPM.

Performance Step: 1 **Critical N** OI 317.1, Section 5.5, Step (1)	At Panel 1Y36, verify the RPS alternate power supply source is **not** selected to 1Y16 [1Y26]
Standard:	Determines that RPS alternate power supply source is on 1Y2A in accordance with the Initial Conditions.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	_____

Performance Step: 2 **Critical N** OI 317.1, Section 5.5, Step (1)(a)	If necessary, transfer the RPS alternate power supply source to 1Y2A [1Y1A] per OI 358.
Standard:	Based on the Initial Conditions, this action is not necessary.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	_____

Performance Step: 3 **Critical N** OI 317.1, Section 5.5, Step (2)	If necessary, start up and transfer load to Inverter 1D15 per Section 3.5, or transfer loads to an operating inverter per Section 4.2.
Standard:	This step is a turnover item. 1D15 is in service. Student marks the step as N/A'd.
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	_____

Performance Step: 4 **Critical N** OI 317.1, Section 5.5, Step (3)	At 1D15 [1D25], momentarily depress the LAMP TEST/ALARM RESET pushbutton.
Standard:	Simulating pushing LAMP TEST/ALARM RESET pushbutton.
Evaluator Cue:	**If asked what he/she sees when the pushbutton is depressed, CUE him/her that all of the lights are lit. When he/she simulates releasing the pushbutton, inform the student that the panel is the way he/she sees it now.**
Performance:	**SATISFACTORY** _____ **UNSATISFACTORY** _____
Comments:	_____

Performance Step: 5 **Critical Y** OI 317.1, Section 5.5, Step (4)	At 1D15[1D25] open right cabinet door and place inverter ALARM BYPASS SWITCH to BYPASS.
Standard:	Place the ALARM BYPASS SWITCH to BYPASS.
Evaluator Note:	**The safety gear is located in a locker in the battery room hallway. The Aux man has a key on a ring that gets him/her into the locker.** **To achieve this task, a face shield and gloves are adequate, more may be chosen to wear.** **Once the gear is pointed out and it is determined what he/she is going to wear, no further actions are necessary as the cabinet will NOT actually be opened.** **The ALARM BYPASS SWITCH is located inside 1D15. For the purposes of this JPM, opening this panel is not required. The student should simulate opening the right cabinet door and state that the bypass switch is on the right side of the cabinet and that he will simulate taking the switch to BYPASS.**
Evaluator Cue:	**CUE the student that the ALARM BYPASS SWITCH is in BYPASS by showing the operator Picture 2 in the back of the JPM.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 6 **Critical N** OI 317.1, Section 5.5, Step (5)	Confirm the FORWARD TRANSFER light is ON.
Standard:	FORWARD TRANSFER light is confirmed ON.
Evaluator Cue:	**If asked, CUE him/her that the FORWARD TRANSFER light is ON.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 7 **Critical N** OI 317.1, Section 5.5, Step (6)	At 1Y15 [1Y25], confirm switch 1Y1504 [1Y2504] in the INVERTER position. (1Y15 [1Y25] MAINTENANCE SWITCH)
Standard:	Switch 1Y1504 confirmed in the INVERTER position.
Evaluator Cue:	**CUE the student that Switch 1Y1504 is confirmed in the INVERTER position.** **There is a CAUTION on this page that states that a scoop tube lock-up is possible when closing 1Y1503, the Candidate may call the control room and inform them of the possibility of a scoop tube lock up.** **CUE the student that you understand that a scoop tube lock up may occur, and that he may continue.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 8 **Critical N** OI 317.1, Section 5.5, Step (7) CAUTION	**CAUTION** Opening or closing of breaker 1Y1503 [1Y2503] could result in a Reactor Recirc A[B] MG Set Scoop Tube lockup due to a problem in the scoop tube positioner circuitry.
Standard:	Reviews and placekeeps the CAUTION.
Evaluator Cue:	**If the student calls the control room, CUE him that you understand that a scoop tube lock up may occur and that he may continue.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 9 **Critical Y** OI 317.1, Section 5.5, Step (7)	Lock the Reactor Recirc A[B] MG Set Scoop Tube per OI 264 (Reactor Recirc System).
Standard:	Locks the “A” Reactor Recirc MG Scoop Tube.
Evaluator Cue:	**Inform the student that another operator has locked the “A” Reactor Recirc MG Scoop Tube.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 10 **Critical Y** OI 317.1, Section 5.5, Step (8)	Turn circuit breaker 1Y1503 [1Y2503] OFF. (REGULATING TRANSFORMER 1Y1A [1Y2A] SUPPLY TO JS1501 [JS2501])
Standard:	Simulates turning off circuit breaker 1Y1503, REGULATING TRANSFORMER 1Y1A SUPPLY TO JS1501 by simulating pushing the breaker switch down.
Evaluator Cue:	**CUE the student that circuit breaker 1Y1503 is in the OFF position after the action is simulated.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 11 **Critical Y** OI 317.1, Section 5.5, Step (9)	At 1Y1A [1Y2A], turn circuit breaker 1Y1A02 [1Y2A02] OFF. (REGULATING TRANSFORMER 1Y1A [1Y2A] SUPPLY TO 1Y16 [1Y26])
Standard:	Simulate turning off circuit breaker 1Y1A02, REGULATING TRANSFORMER 1Y1A SUPPLY TO 1Y16 by simulating pushing the breaker switch down.
Evaluator Cue:	**CUE the student that circuit breaker 1Y1A02, REGULATING TRANSFORMER 1Y1A SUPPLY TO 1Y16 is off after the action is simulated.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 12 **Critical Y** OI 317.1, Section 5.5, Step (10)	Turn circuit breaker 1Y1A01 [1Y2A01] OFF. (REGULATING TRANSFORMER 1Y1A [1Y2A] INPUT)
Standard:	Simulate turning off circuit breaker 1Y1A01, REGULATING TRANSFORMER 1Y1A INPUT by simulating pushing the breaker switch down.
Evaluator Cue:	**CUE the student that circuit breaker 1Y1A01, REGULATING TRANSFORMER 1Y1A INPUT is OFF after the action is simulated.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 13 **Critical Y** OI 317.1, Section 5.5, Step (11)	At 1B32 [1B42], turn circuit breaker 1B3216A [1B4203A] OFF. (REGULATING TRANSFORMER 1Y1A [1Y2A] AC SUPPLY)
Standard:	Simulate turning off circuit breaker 1B3216A, REGULATING TRANSFORMER 1Y1A AC SUPPLY by simulating pushing the breaker switch down.
Evaluator Cue:	**CUE him that breaker 1B3216A, REGULATING TRANSFORMER 1Y1A AC SUPPLY, is off after the action is simulated.** **The student may state that he will open the cabinet to verify breaker is in the OPEN position. CUE the student when he/she sees the breaker and it is in the OPEN position.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Performance Step: 14 **Critical Y** OI 317.1, Section 5.5, Step (12)	Reset the Reactor Recirc A[B] MG Set Scoop Tube as directed by the OSM/CRS per OI 264 (Reactor Recirc System).
Standard:	Resets the "A" Reactor Recirc MG Scoop Tube.
Evaluator Cue:	**Inform the student that another operator will reset the Reactor Recirc MG Scoop Tube and the JPM is complete.**
Performance:	**SATISFACTORY _____ UNSATISFACTORY _____**
Comments:	_____

Terminating Cues: When breaker 1B3216A, REGULATING TRANSFORMER 1Y1A AC SUPPLY, is simulated to be OFF and the scoop tube is reset, the JPM is complete.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.

Stop Time: _____

Examinee: _____ **Evaluator:** _____

☐ **RO** ☐ **SRO** ☐ **STA** ☐ **Non-Lic** ☐ **SRO CERT** **Date:** _____

☐ **LOIT RO** ☐ **LOIT SRO**

PERFORMANCE RESULTS: **SAT:** ☐ **UNSAT:** ☐

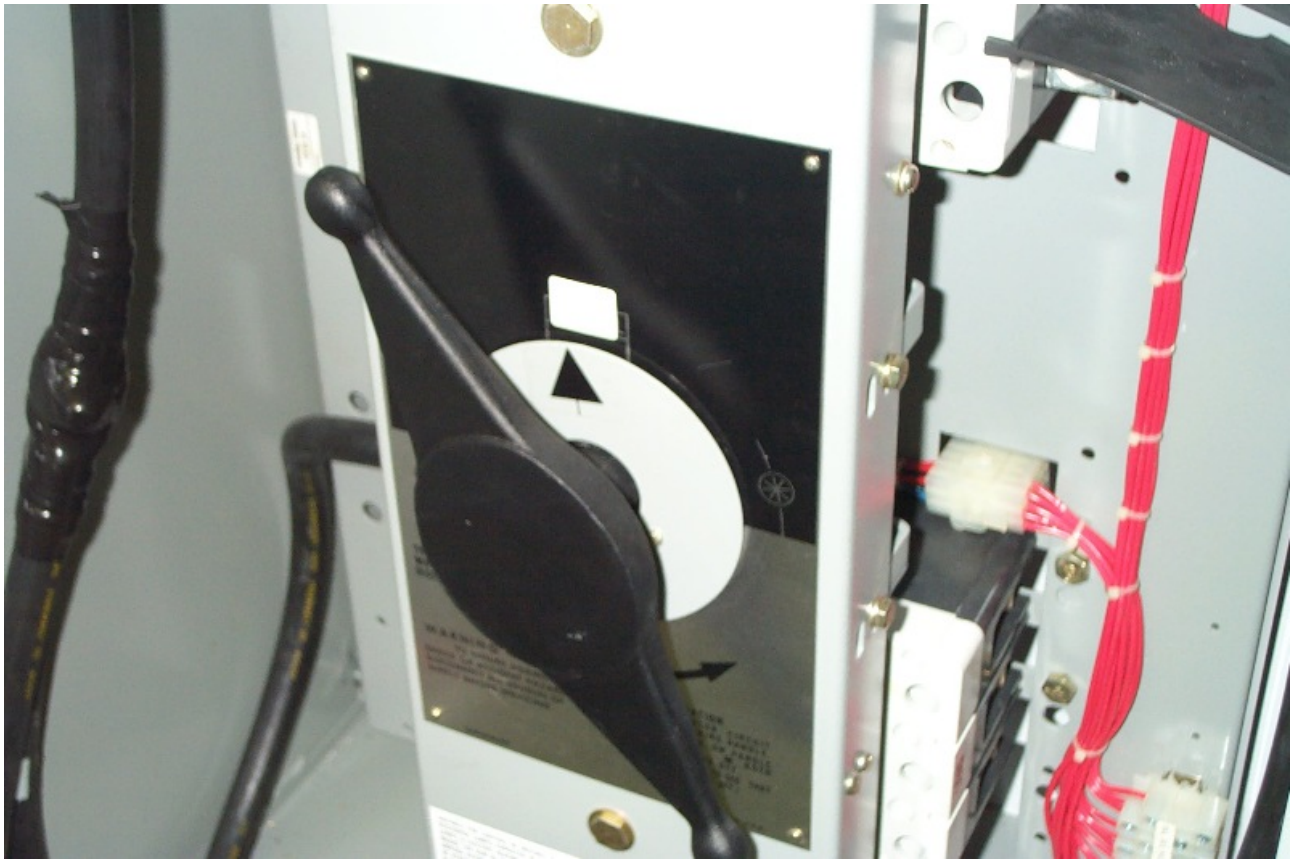
Remediation required: **YES** ☐ **NO** ☐

COMMENTS/FEEDBACK: (Comments shall be made for any steps graded unsatisfactory).

EXAMINER NOTE: ENSURE ALL EXAM MATERIAL IS COLLECTED AND PROCEDURES CLEANED, AS APPROPRIATE.

EVALUATOR'S SIGNATURE: _____

NOTE: Only this page needs to be retained in examinee's record if completed satisfactorily. If unsatisfactory performance is demonstrated, the entire JPM should be retained.



Picture 2

TURNOVER SHEET

INITIAL CONDITIONS:

- 1Y1A Regulating Transformer requires maintenance.
- 1D15 Instrument AC Inverter is in operation.
- All other Instrument AC equipment are operable and in their normal line-ups.
- RPS Alternate Power Source is on 1Y2A.

INITIATING CUES (IF APPLICABLE):

- The CRS directs you, IAW OI 317.1, “120 VAC Instrument Control Power System,” to remove 1Y1A, Regulating Transformer, from service in preparation for maintenance.

NOTE: Ensure the turnover sheet that was given to the examinee is returned to the evaluator.