INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: OPERATIONS TRAINING

COURSE TITLE: COLUMBIA GENERATING STATION SIMULATOR EXAMINATION

LESSON TITLE: Reduce Power with Flow; BPV Surveillance – One BPV is Failed Closed; NR Instrument Fails Downscale; Fire in TB – CAS Leak – A/C's Fail to Auto Start – CAS A/B Trip; Scram on Loss of CAS Pressure; Steam Leak in Containment; RHR-P-2A Overcurrent Causes an SM-7 Lockout; RHR-P-2B Fail Auto Start Then a Shaft Shear; RRC-P-1A Stop P/B Failed off; Spray with SW-B per PPM 5.5.2; Secure Drywell Sprays

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code	LO001750	Rev. No.	0
JPM PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 12/09/12

REVISED BY: DATE:

VALIDATED BY: DATE:

TECHNICAL REVIEW: DATE:

INSTRUCTIONAL REVIEW: DATE:

SAT Coordinator

APPROVED: DATE:

Operations Training Manager

NRC EXAM SCENARIO #1

Initial conditions: The plant is operating at 100% power. TSW-P-1A is tagged out for motor replacement. The reactivity brief and task preview for the shift's scheduled activities have been completed.

Shift Directions: Per the Reactivity Control Plan, reduce reactor power with flow to 90%. Concurrent with the power reduction, perform OSP-MS-M701, Bypass Valves Test.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	R (ATC) R (CRS)	Power reduction to 90% by lowering RRC flow.
2	T = 0	C (BOP)	Perform OSP-MS-M701, Main Turbine Bypass Valves Test. BV3 fails to open, requiring BPV's to be declared inoperable (Tech Spec).
3	T = 20	I (ATC) I (CRS)	RFW-LI-606A (the selected NR instrument) fails downscale (Tech Spec).
4	T = 35	I (BOP)	Fire in the Turbine Building resulting in degrading Control Air header pressure. Both standby CAS compressors fail to auto start on low header pressure, and must be manually started to restore header pressure.
5	T = 45	M (All)	Loss of CAS-C-1A and CAS-C-1B. A manual rector scram is required prior to MSIV closure.
6	T = 55	M (All)	A Steam LOCA develops inside containment when the MSIVs close.
7	T = 60	C (BOP) C (CRS)	When Drywell pressure reaches 1.68 psig, RHR-P-2A will automatically start with an overcurrent condition. The output breaker will fail to trip and cause a lockout on SM-7. DG-1 must be emergency tripped.
8	T = 65	C (BOP) C (CRS)	RHR-P-2B fails to auto start. RHR-P-2B has a sheared shaft when manually started. Initiate Drywell sprays with SW-B through RHR-B using PPM 5.5.2 after Drywell temperature reaches 285°F, but before Drywell temperature reaches 330°F (Critical Task). Secure Drywell sprays when Drywell pressure drops to LT 12 psig and before it drops to -0.5 psig (Critical Task).
9	T = 65	C (ATC)	The stop pushbutton fails to stop RRC-P-1A.

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

The scenario starts with Columbia at 100% power. TSW-P-1A is tagged out for motor replacement.

After the crew takes the shift, power is to be lowered to 90% for economic dispatch request from BPA. The crew will lower power with RRC flow.

At the same time, the BOP operator will perform BPV surveillance test, OSP-MS-M701. When the third bypass valve is tested, it will not open. The CRS will refer to Tech Specs and enter TS 3.7.6.

After Tech Specs are referenced, RFW-LI-606A will fail downscale. The crew will swap FWLC channels from Channel A to Channel B. Tech Spec again will be referenced.

The next event is a fire in the Aux Boiler Room, Turbine Building 441' elevation East side. The fire will cause a rupture in the Control Air System. CAS pressure will slowly drop. ABN-FIRE and ABN-CAS will be entered. The Standby CAS compressors will not auto start but may be started manually. When started, CAS pressure will start to recover.

Due to a failed fire hose that occurs during firefighting efforts, CAS-C-1A and CAS-C-1B become wetted and will trip. With only one CAS compressor running, CAS pressure will again begin to drop. Firefighting efforts will put the fire out.

When it is determined that a complete loss of air is apparent, the crew will insert a manual scram (should be prior to MSIVs going closed which would cause an automatic scram).

When the MSIVs close, a Steam LOCA inside containment will occur causing a High Drywell Pressure signal at 1.68 psig.

When RHR-P-2A starts on high Drywell pressure, it will have an overcurrent fault. The breaker on SM-7 will not open, and a lockout on SM-7 will occur. The crew will emergency trip DG-1 which will be running with no Service Water.

Additionally, RHR-P-2B will not auto start on high Drywell pressure but may be manually started. When it is started the shaft will shear and the pump will develop no discharge pressure.

The crew will realize that both RRC pumps are running without RCC flow (RRC pumps tripped off on the high drywell pressure signal). When the stop pushbutton for RRC-P-1A is depressed it will not stop the pump. The crew will open one of the supply breakers to stop RRC-P-1A.

Wetwell pressure will rise to 2 psig and the crew will want to spray the Wetwell but will realize both RHR spray systems are not operational.

Drywell/Wetwell pressure and Drywell temperature will continue to rise. The crew will perform PPM 5.5.2, RHR/SW Crosstie Lineup.

Wetwell sprays will be initiated (GT 2 psig Wetwell pressure). Drywell Sprays will be initiated when Drywell temperature reaches 285°F or Wetwell pressure reaches 12 psig. (Note: After MSIVs close it takes 5 minutes and 15 seconds to get to 285°F DW/T, 6 minutes and 15 seconds to get to 12 psig WW/P, and 12 minutes to get to 330°F DW/T) (Critical Task).

Drywell Sprays will be secured when Drywell Pressure drops to LT 12 psig and before Drywell Pressure drops to LT -0.5 psig (Critical Task).

The scenario will be terminated when drywell sprays have been secured.

Event No. 1		
Description: Reduce Reactor Power with flow. This event is initiated by the turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T = 0	CRS	Directs the ATC to reduce reactor power at the rate of 1 Hz per minute or 10 MWe/minute and stop the power decrease when Reactor Power is approximately 90%.
	ATC	Reduces reactor power with RRC flow as directed at the rate directed. Verifies both RRC pump individual pump controllers are in AUTO and depresses the Master Controller LOWER pushbutton to lower RRC Pump flow.
COMMENTS:		

Event No. 2

Description: Perform Bypass Valve Test Surveillance OSP-MS-M701 (Tech Spec).

This event is initiated by turnover information. Failure of BPV #3 to open is active from the beginning of the scenario.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs BOP operator to perform OSP-MS-M701.
	BOP	Flags expected annunciators per P&L 3.4.
		Step 7.1 Reduce Reactor Power to LE 3411 Mwt (75 Mwt below 100% power) per PPM 3.2.1 or 3.2.6.
		Step 7.2 Verify proper margin to Pre-Conditioned Status (PCS) exists per PPM 9.3.18.
		NOTE: Due to low extraction steam pressures, therefore slower heater level control, low pressure heaters 1 and 2 are removed from service when Reactor Power is LT 76% and testing Turbine Bypass Valves.
		Step 7.3 If reactor power is LT 76%, then verify COND-HX-1A, B, and C and COND-HX-2A, B, and C are removed from service per SOP-FWH-SHUTDOWN..
		NOTE: The following condensate flow requirement is to allow sufficient margin for Desuperheat Sprays and Hotwell dump flow, while providing sufficient flow to the Reactor. NOTE: Each Condensate Booster Pump is rated for 11,000 gpm.
		Step 7.4 If condensate flow is not 3000 gpm LT the rated flow for the present condensate pump configuration (as indicated on COND-FR-11), then reduce reactor power until condensate flow is 3000 gpm LT the rated flow for the present pump configuration.
		Step 7.5 Establish desuperheat spray at approximately 150 psig (COND-PI-40), by one or more of the following methods. N/A method(s) not used. • Place COND-PCV-40 to OPEN (Desuper Spray Press Control) • Throttle OPEN COND-V-178 (Desuper Spray Bypass) • Place COND-PIC-40 in MANUAL (TB 441, IR-9) to establish desuperheat spray at ~100 psig
		Step 7.6

		Select BV on the SELECT VALVE panel (Menu, Valve Testing). Selects Menu. Selects Valve Testing. Selects BV.
		Step 7.7 Verify OK TO TEST BV VALVES is green. (The light will turn green at ~91% power)
		NOTE: Use indication on DEH Monitor panel for MWe.
		Step 7.8 Perform the following to test BV1:
		Step 7.8.1 Record MWe.
		Step 7.8.2 Select TEST BV1.
		NOTE: When in the Valve Testing Mode, BPVs will move only while the OPEN BV or CLOSE BV button is being touched. Valve motion will stop if finger is lifted from the touch screen, and will resume when the button is touched and held again.
		Step 7.8.3 Select TEST.
		Step 7.8.4 Touch and hold OPEN BV1 button.
		Step 7.8.5 When BPV1 is fully open, then release OPEN BV1 button.
		Step 7.8.6 Verify BPV1 is OPEN.
		Step 7.8.7 Record MWe.
		Step 7.8.8 Touch and hold CLOSE BV1 button.
		Step 7.8.9 When BPV1 is fully closed, then release CLOSE BV1 button.
		Step 7.8.10 Verify BPV1 is CLOSED.
		Step 7.8.11 Record MWe.
		Step 7.8.12 Select TEST BV1.

		Step 7.8.13 Select EXIT TEST.
	CRS	Step 7.8.14 Verify Plant conditions have stabilized before continuing to the next step.
	BOP	Step 7.9 Perform the following to test BV2:
		Step 7.9.1 Record MWe.
		Step 7.9.2 Select TEST BV2.
		NOTE: When in the Valve Testing Mode, BPVs will move only while the OPEN BV or CLOSE BV button is being touched. Valve motion will stop if finger is lifted from the touch screen, and will resume when the button is touched and held again.
		Step 7.9.3 Select TEST.
		Step 7.9.4 Touch and hold OPEN BV2 button.
		Step 7.9.5 When BPV2 is fully open, then release OPEN BV2 button.
		Step 7.9.6 Verify BPV2 is OPEN.
		Step 7.9.7 Record MWe.
		Step 7.9.8 Touch and hold CLOSE BV2 button.
		Step 7.9.9 When BPV2 is fully closed, then release CLOSE BV2 button.
		Step 7.9.10 Verify BPV2 is CLOSED.
		Step 7.9.11 Record MWe.
		Step 7.9.12 Select TEST BV2.
		Step 7.9.13 Select EXIT TEST.
	CRS	Step 7.9.14

		Verify Plant conditions have stabilized before continuing to the next step.
	BOP	Step 7.10 Perform the following to test BV3:
		Step 7.10.1 Record MWe.
		Step 7.10.2 Select TEST BV3.
		NOTE: When in the Valve Testing Mode, BPVs will move only while the OPEN BV or CLOSE BV button is being touched. Valve motion will stop if finger is lifted from the touch screen, and will resume when the button is touched and held again.
		Step 7.10.3 Select TEST.
		Step 7.10.4 Touch and Hold Open BV3 button.
		Step 7.10.5 When BPV3 is fully open, then release OPEN BV3 button.
	BOP	Recognizes that Bypass valve #3 does not open and informs CRS. (Note: if the OPEN button is held long enough the DEH Trouble alarm will annunciate due to SPC A Control vs. feedback deviation).
	CRS	Refers to Technical Specifications and refers to LCO 3.7.6 Main Turbine Bypass System.

		Contacts Work Control and requests assistance with inoperable bypass valve. May contact System Engineer.
		Conducts Brief – informs crew that LCO 3.7.6 Condition A is applicable and required action is to satisfy the requirements of the LCO within 2 hours or reduce thermal power to LT 25% RTP within 4 hours.
		May direct desuperheat spray be secured.
	BOP	If directed secures desuperheat spray by taking the control switch for COND-PCV-40 to Close.
COMMENT:		

Event No. 3		
Description: RFW-LI-606A Fails Downscale. This event is initiated by activating **TRIGGER 1** after Tech Specs for the Bypass Valve has been referenced.		
Time	Position	Applicants Actions or Behavior
T = 20	ATC	Acknowledges RFW CONTR SYSTEM TROUBLE alarm. Monitors RPV level and reports level is 36" and steady. Recognizes RFW-LI-606A indicates downscale and informs CRS. Refers to ARP.
	CRS	Enters ABN-INSTRUMENTATION and updates crew on entry. Determines RFW-LI-606A detector is RFW-DPT-4A.
	BOP	Per ARP, checks FWLC Video Display on back panel H13-P612 and notes that it indicated 'A' Narrow Range has an invalid signal (reading 0.0 in) and Channel B is controlling.
		May direct OPS2 to investigate RFW-DPT-4A on RB 522' on H22-P004.
ROLEPLAY: In two minutes and call X2171 and report there is nothing obviously wrong with RFW-DPT-4A.		
	BOP	May check EFCV-X107 open.
	CRS	Directs transfer of Reactor Vessel Level Control Channel selector switch from CH A to CH B.
	ATC	Places the Reactor Vessel Level Control Channels from Channel A to Channel B.
	CRS	Refers to Tech Specs and identifies TS 3.3.2.2, Feedwater and Main Turbine High Water Trip Instrumentation, Condition A (Place channel in trip within 7 days).
		Contacts Work Control about Channel A failure and requirement to put in a tripped condition within 7 days.
		Conducts brief.
COMMENTS:		

Event No. 4
Description: Fire in the Turbine Building with degrading CAS pressure on a 2 minute time delay. CAS-C-1A and CAS-C-1C fail to Auto Start.

This event is initiated by activating **TRIGGER 2** and is initiated after Tech Specs for RFW-LI-606A failure have been referenced. The failure of compressors to auto start is active from the beginning of the scenario.		
Time	**Position**	**Applicants Actions or Behavior**
T = 35	BOP	Responds to fire alarms and reports alarms indicate a fire in the Turbine Building 441' Boiler Room and the East End Equipment Area.
		Reports start of FP-P-2A.
ROLEPLAY: After FP-P-2A starts, call as OPS 3 (on radio) and report heavy smoke coming from the Aux Boiler Room.		
	CRS	Enters ABN-FIRE and updates crew on entry.
	BOP	Performs ABN-FIRE immediate actions: • Sounds Alerting Tone • Announces fire Turbine Building 441' Aux Boiler Room • Dispatches the Fire Brigade • Repeats the three steps • Depresses the Hanford Fire Department pushbutton on FCP-1
ROLEPLAY: After the announcement: As the Fire Brigade Leader request the fire brigade muster at the 441' turnout locker.		
	BOP	Makes announcement for the fire brigade to muster at the 441' turnout locker.
	CRS	Directs evacuation of non-emergency personnel per PPM 13.5.1 (Blue form).
	BOP	Announces evacuation of the Turbine Building.
ROLEPLAY: Three minutes later, as the Fire Brigade Leader, report the fire is limited to the Aux Boiler Room.		

	BOP	Responds to Air Dryer Trouble, the Air AFT-FLTR A dP High, Standby Air Compressor On, and Low CAS Header Pressure alarms as they annunciate. Informs CRS and refers to ARP.
		Informs CRS of lowering CAS pressure and trend (down slow).
	CRS	Enters ABN-CAS and updates crew on entry.
ROLEPLAY: If asked for local investigation of CAS pressure loss – you will try and investigate but priority is on fighting the fire for now.		
	BOP	When the Standby Compressor On annunciator alarms, verifies starting of standby air compressors. Recognizes that CAS-C-1A and CAS-C-1C should have auto started but did not. May inform CRS prior to attempting start.
		Places the control switches for CAS-C-1A and CAS-C-1C in the START position and reports start of both compressors to the CRS.
		Checks CAS pressure and reports CAS pressure trend is up slow (Note: it takes about a minute until CAS pressures downward trend stops and the header starts to re-pressurize).
	CRS	Directs announcement to suspend all unnecessary use of Control and Service Air be made.
	BOP	Makes announcement as directed.
COMMENT:		

Event No. 5

Description: Loss of CAS-C-1A and CAS-C-1B.

This event is triggered by activating **TRIGGER 3** after it has been reported that CAS pressure trend is up and the Control Air Header Pressure Low annunciator has cleared.

Time	Position	Applicants Actions or Behavior
T=45	BOP	Acknowledges and reports Bus 73 ground alarm. Acknowledges and reports CAS-C-1A motor trip alarm. Acknowledges and reports Bus 83 ground alarm. Acknowledges and reports CAS-C-1B motor trip alarm. Reports CAS-C-1A and CAS-C-1B are not running.
	CRS	May direct Fire Brigade be contacted and asked about the compressor trips.
ROLEPLAY: If asked, report that the compressors tripped when a fire hose failed and wetted the air compressor motors. Fire water has been isolated to that hose and efforts are underway to replace the hose. The fire is being attacked with another hose and the fire is under control. **Also – if asked about CAS pressure loss report there is no way to investigate that at this time.**		
	BOP	Reports CAS pressure again trending down.
	CRS	Sets CAS pressure as a key parameter.
		When it is determined that a complete loss of air is apparent directs RFW-V-118 be verified closed. Directs RFW-LIC-620 to manual and full open Startup flow control valves.
	ATC	Verifies RFW-V-118 is closed and fully opens both Startup Flow Control valves (RFW-FCV-10A/10B) using the controllers turn knob until 100 is indicated on the controller. May also observe panel indication for both valves indicates that both are full open (10A fully opens before the 10B starts to open).
	CRS	May set key parameter of CAS air pressure.
	BOP	Monitors lowering CAS pressure and reports when key parameter met.
	CRS	When it is determined that a complete loss of air is apparent directs a manual scram be inserted.
	ATC	Announces “Listen up for the scram report”. Inserts a manual scram by rotating the Mode switch to Shutdown; Monitors and reports APRM downscale lights illuminated, reports RPV Pressure and trend, and reports RPV Level and trend.

		Announces EOP entry due to low RPV level. Reports All Rods In. Inserts IRM/SRMs by depressing the Power On and the Drive In pushbuttons.
	CRS	Enters EOP 5.1.1 (RPV Control) and updates crew on entry.
Right after the CRS announces entry into EOP 5.1.1 (RPV Control): ROLEPLAY: Control Room – this is the Fire Brigade Leader – the fire is out and a re-flash watch has been stationed. **Also – if asked about CAS pressure loss report that you will attempt to look into it (no further feedback during the remainder of the scenario will be given).**		
	CRS	Directs RPV level be maintained +13" to +54" with the feed and condensate system. RPV/L band may be widened to -50" to +54" as the scenario progresses due to MSIV closure and changing feed sources.
		Directs PPM 3.3.1 subsequent actions.
		Directs pressure control with DEH in automatic (while MSIVs are still open).
		Direct +13" actuations be verified.
	BOP	Verifies the following: Reactor scram; RRC Pumps running at 15 Hz; Group 5 and 6 valves isolated on GDS screen (no yellow bordered NSSS groups on GDS). Reports +13" actuations verified.
	ATC	Maintains RPV level in given band with the Feed and Condensate System using RFW-V-118.
		Uses Quick Card initially to use RFW pumps to maintain level (while MSIVs are still open should use RFW pumps): Step 2.1.1 If Reactor Feed Pump(s) (RFP) are operating, then perform the following:
		a. Verify RFP(s) have ramped down in speed. b. If preferred to operate RFW-FCV-2A(B) in auto, then verify RFW-FCV-2A(B) is operating properly in Automatic (Minimum Flow Valve) (H13-P840).

		c. If desired to operate RFW-FCV-2A(B) in manual to prevent complications in controlling Reactor Level or valve cycling, then place RFW-FCV-2A(B) in Manual, and slowly Open to approximately 80%. (**Should leave in Auto)** d. Place RFW-P-1B in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840): 1) Select MDEM. 2) Select YES. e. Place RFW-P-1A in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840): 1) Select MDEM. 2) Select YES. f. Control Turbine speed as required.
		Step 2.1.2 If Feedwater Temperature Reduction was in progress, then verify RFW-V-109 is closed (H13-P840).
		Step 2.1.3 Start closing RFW-V-112A and RFW-V-112B (H13-P840).
		Step 2.1.4 Start opening RFW-V-118 (Throttle valve) (H13-P840) **(Uses RFW-V-118 to control feed rate to vessel to maintain RPV Level as directed)**
		Step 2.1.5 Verify the following open (H13-P840): • RFW-V-117A • RFW-V-117B
		Step 2.1.6 Verify RFW-LIC-620 is in manual (V selected for Valve position demand) with 0 output (Startup RPV Level Control) (H13-P603). (Valves are fully open due to loss of CAS)
		Step 2.1.7 Verify RFW-V-112A and RFW-V-112B are fully closed.
		Step 2.1.8 Verify RFW-V-118 is FULLY OPEN. (Uses RFW-V-118 to control RPV level as

		directed)
		Step 2.1.9 If Reactor Feed Pump(s) (RFP) are operating, then adjust the running RFP speed to establish ~ 200 psid across RFW-FCV-10A & 10B using either Feedwater touch screen (H13-P840). (Will adjust RFW pump speed to be GT RPV pressure)
Note: When MSIVs close, RPV pressure band should be lowered to facilitate feeding with the Condensate Booster pumps.		
		Maintains RPV level in band directed.
COMMENTS:		

Event No. 7

Description: Steam LOCA inside Primary Containment.

This event is **automatically activated** when the MSIVs close on low CAS pressure by the event file and uses Trigger 4.

Time	Position	Applicants Actions or Behavior
T=55	BOP	Recognizes and reports MSIV closure (due to low CAS pressure).
		Places MSIV control switches for all MSIVs in the close position.
		Takes manual control of RPV pressure with SRVs at a pressure band of 800 to 1000 psig. Updates crew.
	CRS	Directs pressure control with SRVs at 800 – 1000 psig. May direct a lower pressure band of 500 to 600 psig to facilitate feeding with the Condensate Booster Pumps.
	BOP	Acknowledges Suppression Pool Level high/low and Drywell/Suppression Pool Temp high annunciators as they annunciate. Recognizes increasing Drywell pressure and informs CRS.
		Reports EOP entry on High Drywell pressure at 1.68 psig (and Wetwell level (+2") and Drywell temperature (135°F) when they occur).
	CRS	Enters PPM 5.2.1 (Primary Containment Control) and re-enters PPM 5.1.1 (RPV Control) and updates crew.
		Directs actuations be verified for 1.68 psig Drywell pressure.
		Verifies the following: HPCS DG, HPCS-P-1 and HPCS-P-2 start DG-1 and DG-2 start RHR-P-2A (Refer to Event 8), RHR-P-2B (refer to Event 9), RHR-P-2C and LPCS-P-1 start CW-P-1B and CW-P-1C trip (continued on next page)
		SW-P-2A and SW-P-2B start RCC-P-1A, RCC-P-1B and RCC-P-1C trip Observes GDS and verifies no yellow bordered NSSS groups (which would indicate a containment isolation valve out of position)

Comments:

Event No. 8

Description: SM-7 Lockout caused by overcurrent condition on RHR-P-2A and failure of the pumps breaker to open.

This event is active from the start of the scenario and is realized when RHR-P-2A starts. When the pump starts the event file will initiate trigger 5 which causes pump breaker to fail as is and SM-7 lockout on a 30 second time delay.

Time	Position	Applicants Actions or Behavior
T=60	BOP	May recognize overcurrent condition on RHR-P-2A when it auto starts by observing pump amp meter on P601.
		May recognize that a loss of power to LPCS-P-1 and RHR-P-2A has occurred. Responds to electrical panel to investigate loss of power.
		Notes that SM-7 is not powered. Investigates annunciators and panel indications and recognizes that a lockout on SM-7 exists (the Lockout Circuit Avail white light for CB-7/1 is not lit) and informs CRS.
		Reports that due to the lockout, DG-1 is running without service water. May refer CRS to ABN-SW and ABN-ELEC-SM1/SM7.
	CRS	Enters ABN-SW and ABN-ELEC-SM1/SM7 and updates crew.
		Directs DG-1 be tripped per subsequent actions of either ABN-SW or ABN-ELEC-SM1/SM7.
	BOP	Depresses the DG-1 emergency trip pushbutton and reports DG-1 tripped.

Comments:

Event No. 9

Description: RHR-P-2B Fails to Auto Start and when it is started it has a sheared shaft.

This event is active from the start of the scenario and is realized when 1.69 psig actuations are being verified.

Time	Position	Applicants Actions or Behavior
T=65	BOP	While verification of 1.68 psig actuations is being performed, recognizes that RHR-P-2B should have auto started but did not.
		Takes the control switch for RHR-P-2B to start and observes breaker closure/pump start. Verifies proper pump operation and recognizes the pump has not developed any discharge pressure and low running amps are indicated. Informs CRS.
	CRS	May direct local investigation of RHR-P-2B.
ROLEPLAY: Wait one minute: RHR-P-2B shaft is sheared and the motor is free spinning from the pump.		
	CRS	Directs RHR-P-2B be secured and may direct control fuses be pulled
	BOP	Secures RHR-P-2B by placing C/S to Stop and directs OPS 2 to pull the control power fuses.
BOOTH OPERATOR: Wait two minutes and <u>ACTIVATE TRIGGER 10</u> to pull the control power fuses/rackout the breaker and report completion to the control room.		

Comments:

Event No. 10		
Description: RRC-P-1A Stop pushbutton Failed. This event is active from the start of the scenario and is realized when the pushbutton is depressed.		
Time	**Position**	**Applicants Actions or Behavior**
T=65	ATC	Recognizes that RRC pumps are running without RCC cooling (RCC pumps trip off at 1.68 psig Drywell pressure).
		Informs CRS and requests permission to stop the RRC pumps.
	CRS	Directs both RRC pumps be stopped.
	ATC	Depresses the stop pushbuttons for RRC-P-1A and RRC-P-1B. Verifies pumps stopped (red ASD lights out and green lights illuminate). Recognizes RRC-P-1A did not stop.
		Informs the CRS of the failure of RRC-P-1A to stop when the Stop pushbutton was depressed.
	CRS	Directs opening CB-RRA, CB-RPT-3A or CB-RPT-4A to stop RRC-P-1A.
	ATC	Opens breaker as directed. Reports RRC-P-1A stopped.
Comments:		

Event No. 11		
Description: Perform PPM 5.5.2 to spray containment with Service Water B.		
The Critical Task is to initiate Drywell sprays with SW-B through RHR-B using PPM 5.5.2 after Drywell temperature reaches 285°F, but before Drywell temperature reaches 330°F .		
The Critical Task is to terminate Drywell sprays after Drywell pressure reaches 1.68 psig but before drywell pressure drops to LT -0/5 psig.		
Time	**Position**	**Applicants Actions or Behavior**
T=70	BOP	Reports Wetwell pressure at 2 psig and trending up.
	CRS	Referring to PPM 5.2.1 (Primary Containment Control, determines that Wetwell sprays are required to be initiated (before 12 psig Wetwell pressure). Recognizes that both loops of RHR are unavailable to spray containment. Using flow chart icon, directs PPM 5.5.2 (RHR/SW CROSSTIE LINEUP) be performed.
	BOP	Obtains PPM 5.5.2 and required equipment in plastic bag from EOP drawer.
		Step 4.1.1 Verify RHR-P-2B Stopped. **Takes C/S for RHR-P-2B to stop if not previously accomplished.**
FLOOR OPERATOR: Be behind H13-P601 and when candidates comes back to perform step 4.1.2 ask what actions he is performing. When step 4.1.2 is stated inform him that he is in the process of performing the step. Keep him there for one total minute and then inform him that the step has been completed.		
		NOTE: The following step overrides RHR-V-68B (Heat Exchanger SW Discharge) automatic open logic. E-CP-H13/P680 Bay F is located behind H13-P601. See Attachment 6.1.
		Step 4.1.2 Lift and tape the black wire at TM-7, Terminal 15 (Cable 2M8BB-24) to override RHR-V-68B automatic open logic (E-CP-H13-P680 Bay F) (This panel is not modeled in the simulator but is located behind H13-P601 in the control room.
		Step 4.1.3 Verify the following valves are closed: • RHR-V-24B (Suppression Pool Cooling/Test Return)(H13-P601) • RHR-V-27B (Suppression Pool Spray) (H13-P601) • RHR-V-16B (Drywell Spray Outboard Isolation) (H13-P601) • RHR-V-17B (Drywell Spray Inboard Isolation) (H13-P601)

		NOTE: If SW-P-1B is operating, then performing the following step may result in injecting service water into the RPV.
		Step 4.1.4 Open the following valves: • RHR-V-115 (SW B to RHR B Cross Connect) (H13-P601) • RHR-V-116 (SW B to RHR B Cross Connect) (H13-P601)
		Step 4.1.5 Start SW-P-1B (if not operating).
		Step 4.1.6 Perform one of the following sections. N/A the section not performed. • Section 4.2 for RPV injection • Section 4.3 for Containment Sprays
		Informs the CRS that PPM 5.5.2 is completed up to initiating containment sprays.
	CRS	Directs spraying the Wetwell.
	BOP	Step 4.3.1 Verify RHR-V-42B Closed.
		Step 4.3.2 If desire to spray the Wetwell, then open RHR-V-27B.
		Verifies flow through RHR-B (may not be visible due to only about 500 gpm flowrate from Wetwell sprays). Informs the CRS that Wetwell sprays have been initiated with SW-B.
	CRS	Sets key parameter of 285°F DW/T or 12 psig Wetwell pressure.
	BOP	Informs the CRS when Drywell Temperature reaches 285°F or when Wetwell pressure reaches 12 psig.
	CRS	Verifies RRC pumps are secured. (It may be at this point in the scenario that the crew attempts to stop RRC-P-1A and not on the loss of RCC cooling flow at 1.68 psig) Directs Drywell Cooling fans be secured.

	BOP/ATC	Goes to back panel and secures the five Drywell Cooling Fans (CRA-FC-2A, 1A, 2B, 1B, 1C – Fan controls that are not in brown area on panel – Note: CRA-FC-2A and 1A are already off due to loss of power to SM-7). Informs CRS that Drywell Cooling fans are secured.
	CRS	Directs Drywell Sprays be initiated with PPM 5.5.2.
	BOP	Step 4.3.3 If desire to spray the Drywell, then open the following valves: • RHR-V-17B • RHR-V-16B
		Step 4.3.4 Close RHR-V-68B.
		Informs CRS Drywell sprays with SW-B have commenced. Reports Drywell pressure and downward trend.
	CRS	Directs that Drywell sprays be terminated when Drywell pressure drops to LT 1.68 psig and that Wetwell Sprays be stopped if Wetwell pressure drops to LT 1.68 psig.
BOOTH OPERTOR: When Drywell Sprays have been initiated, reduce MAL-RRS009A to 1500 (and adjust as necessary) to allow Drywell pressure to drop and allow securing of Drywell Sprays.		
	BOP	After Drywell pressure reaches 1.68 psig and before it drops to LT -0.5 pisg, stops Drywell sprays be closing RHR-V-16B and/or RHR-V-17B. Informs the CRS that Drywell sprays have been stopped.
Comments:		
TERMINATION CRITERIA: The scenario will be terminated when Drywell sprays have been stopped.		

TURNOVER INFORMATION

Initial Conditions

Columbia is operating at 100% power. TSW-P-1A is tagged out for motor replacement. TSW-P-1B is protected and selected as the emergency standby TSW pump.

Shift Directions

Reactor Power is to be lowered for economic dispatch due to a request from the BPA. Stop the power decrease when the "OK TO TEST BV VALVES green light illuminates at approximately 90% reactor power.

A Reactivity brief for the power reduction has been held and power is to be lowered immediately following shift turnover.

Additionally, commence performance of OSP-MS-M701. The pre job brief has been conducted. Proper margin to Pre-Conditioned Status (PCS) exists per PPM 9.3.18. The Dittmer Dispatcher has been notified of the upcoming Bypass Valve Testing.

The power reduction and BPV surveillance are to be performed concurrently.

SIMULATOR SETUP INSTRUCTIONS

Reset to IC #171.

Blue Tag TSW-P-1A C/S.

Blue tag the Emergency Standby Selector Switch in the B Pump position.

Flag annunciator.

Have a signed in copy of OSP-MT-M701 available for each crew.

SCHEDULE FILE

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      <ITEM row = 1>
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Start and Trigger 6 on RHR-V-68B Green light on</DESCRIPTION>
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EVENT FILE

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<!-- This file contains a Thunder Simulations Event -->
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LOCKOUT">X01O299R &gt 0</TRIGGER>
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CLOSED">X01O321G &gt 0</TRIGGER>

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INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	OPERATIONS TRAINING
COURSE TITLE	COLUMBIA GENERATING STATION SIMULATOR EXAMINATION
LESSON TITLE	Pull Control Rods for a Control Rod Set; Rod Drifts Out; Isolate Rod; SGT Strip Heater Fails On; Another Failure; OBE – Trip of RFW-P-1A; RRC Pumps Fail to Run Back; RFW-P-1B Trips; Startup Fail to Close in on SM-1, SM-2 and SM-3 – Manually Re-Energized; RHR-A Suction Line Rupture ED on Low Suppression Pool Water Level

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code	LO001751	Rev. No.	0
JPM PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	06/11/12
REVISED BY		DATE	
VALIDATED BY		DATE	

TECHNICAL REVIEW		DATE	
INSTRUCTIONAL REVIEW		DATE	
	SAT Coordinator		
APPROVED		DATE	
	Operations Training Manager		

NRC EXAM SCENARIO #2

Facility: Columbia Scenario No.: 2 Op-Test No.: 2013

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: Reactor power has been lowered to support a Control Rod Set. HPCS-P-1 is tagged out for shaft replacement. The #1 and #2 RFW Heaters have been removed from service per the Reactivity Control Plan. The reactivity brief and the task preview for the shift's scheduled activities have been completed. An SNE is stationed in the Control Room to monitor core conditions.

Turnover: Continue with the Reactivity Control Plan (RCP) and adjust control rods to the target pattern and then return the plant to 100% power.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	R (ATC) R (CRS)	Pull Control Rods per the Reactivity Control Plan to achieve the target rod pattern.
2	T = 10	C (ATC) C (CRS)	While moving control rods, a previously adjusted rod (38-23) begins to drift out. Once inserted, releasing the continuous insert pushbutton causes the control rod to drift out again, requiring the control rod to be isolated (Tech Spec).
3	T = 20	I (BOP) I (CRS)	SGT-A high temperature due to strip heaters failing to de-energize (Tech Spec).
4	T = 35	C (BOP)	Bus Duct Cooling Fan 1A Fails, Standby does not auto start but can be manually started.
5	T = 40	I (ATC) I (CRS)	Operating Basis Earthquake. RFW-P-1A Trip. RRC pumps fail to automatically run back to 30Hz.
6	T = 50	M (All)	A trip of RFW-P-1B results in a loss of Feedwater and a reactor scram.
7	T = 51	C (All)	When the Main Turbine trips, Startup Power will not close in on SM-1, SM-2 or SM-3.
8	T = 60	M (All)	Aftershock results in a rupture in the RHR-A suction line. Emergency Depressurize the RPV before Suppression Pool level reaches 19 feet 2 inches (Critical Task).
9	T = 70	C (BOP) C (CRS)	The cross-connect valve between the RHR-A and RCIC pump rooms (FDR-V-607) fails to automatically close due to a failed level switch, and must be manually closed to maintain RCIC operation. Close FDR-V-607 prior to reaching the Maximum Safe Operating Value water level in the RCIC pump room (Critical Task).

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

The scenario starts with Columbia at approximately 75% power. HPCS-P-1 is OOS due to shaft replacement.

After shift turnover reactor power will be lowered with core flow to 70% to support a control rod set.

During the control rod set, one of the previously moved control rods will begin to drift out of the core. The ATC operator will recognize this and take actions to insert the control rod, which will insert. When the insert pushbutton is released, the control rod will again begin to drift out of the core. The ATC operator will again insert the control rod and the crew will take action to isolate that rod. Tech Spec will be referenced.

After Tech Specs have been referenced a SGT-B high temperature alarm will occur due to a strip heater failing to de-energize. The BOP operator will respond and start SGT-B per and then start SGT-A which will cause temperature to drop. Tech Specs will be referenced.

The next event is a failure of IBD-FN-1A. The BOP operator will respond to annunciators and report the failure of IBD-FN-1A and refer to ARPs. He will note that IBD-FN-1B should have auto started but did not and start IBD-FN-1B.

The next event is an Operating Basis Earthquake which results in a trip of one of the two operating Reactor Feedwater Pumps, RFW-P-1A. During verification of automatic actions the ATC operator will find that the automatic runback of the Reactor Recirculation Pumps did not occur. Manual actions to lower RRC pumps to 30 Hz will be successful.

After the plant stabilizes, the Turbine Building watch will contact the Control Room and inform them that the reason RFW-P-1A tripped was a rupture of the control oil system and that there is a leak in the control oil system on RFW-P-1B. Ten seconds later RFW-P-1B will trip. The crew should attempt to insert a manual scram prior to the automatic scram at +13 inches.

When the Main Turbine trips and the electrical plant transfers to the Startup Transformer, the startup breakers associated with SM-1, SM-2 and SM-3 will not auto close. This results in a loss of all operating Condensate Pumps, closure of the MSIVs, a loss of CRD and a trip of the Control Air System's Air Compressors. The crew will take action to establish RPV level control with the RCIC system, and restart CRD pumps (HPCS-P-1 is OOS at the beginning of the scenario). Pressure control will be on SRVs at 800 – 1000 psig.

An aftershock will result in a rupture of the RHR-A suction line from the suppression pool causing flooding in the A-RHR room. The crew will take action per EOP PPM 5.3.1 (Secondary Containment Control). During verification of automatic actions the crew will recognize that the cross connect valve between RHR-A room and the RCIC pump room, FDR-V-607, failed to automatically close (due to a failed R1 sump level switch). Prior to reaching Maximum Safe Operating Value in the RCIC pump room, the crew will manually close FDR-V-607 with the control switch which is located on back panel H13-P632.

Makeup to the Suppression Pool cannot be performed due to HPCS being OOS.

The crew should initiate an Emergency Depressurization per PPM 5.1.3, RPV Depressurization, before Suppression Pool water level drops to 19 feet 2 inches.

The scenario will be terminated when an Emergency Depressurization has been performed and RPV level is being returned to +13" to +54" level band.

Event No. 1

Description: Reduce Reactor Power to approximately 70% with flow. Withdraws control rods 38-23, 38-39 and 22-23 per reactivity plan from position 06 to position 10.

This event is initiated by the turnover information.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs control rod withdrawal per reactivity plan.
	ATC	Selects control rod 38-23 (then 38-39, then 22-23). Performs the following to withdraw each control rod one notch each time: • Verifies control rod position and no rod blocks exist • Depresses the Withdraw pushbutton • Observes CRD Drive Header and Cooling Header Flow • Observes Insert then the Withdraw and then the Settle lights illuminate • Verifies control rod position when settle function complete

COMMENTS:

Event No. 2		
Description: Control Rod 38-23 Drifts Out of the Core This event is initiated by activating **TRIGGER 1** when Control Rod 22-39 (the last control rod to be withdrawn per the Reactivity Plan) is **selected** to be withdrawn (Note: Drift is on 38-23 NOT 22-39).		
Time	**Position**	**Applicants Actions or Behavior**
T = 10	ATC	Acknowledges the Rod Drift annunciator. Scans the full core display and observes the red drift light is lit for control rod 38-23 or observes the Rod Worth Minimizer Operator Console display and observes the 'd' associated with rod 38-12.
		Per ABN-ROD immediate actions - selects Control Rod 38-23. Observes the rod position. Notes that the rod is drifting out of the core.
		Per ABN-ROD immediate actions: Depresses the CONTINUOUS INSERT pushbutton. Drives Control Rod 38-23 full in. Releases the Continuous Insert pushbutton.
		Observes that Control Rod 38-23 continues to drift out of the core and informs the CRS. Per ABN-ROD Immediate Actions: Depresses and Holds the CONTINUOUS INSERT pushbutton.
	CRS	Per ABN-ROD immediate actions: Directs Control Rod 38-23 be isolated.
	BOP	Directs OPS2 to isolate control rod 38-23 by closing CRD-V-103 and CRD-V-105 associated with control rod 38-23.
BOOTH OPERATOR: Wait two minutes and then REMOVE MAL-RMC-004 for rod 38-23. **ROLEPLAY: After malfunction is removed inform the control room that the rod has been isolated.**		
	CRS	Directs the ATC operator release the CONTINUOUS INSERT pushbutton for 38-23.
	ATC	Releases the CONTINUOUS INSERT pushbutton and observes control rod remains fully inserted and informs the CRS.
	CRS	Refers to Tech Spec 3.1.3 Control Rod operability and notes condition C applies

		(Fully insert inoperable control rod within 3 hours AND Disarm the associated CRD within 4 hours). Conducts Brief.
COMMENT:		

Event No. 3		
Description: SGT-B Strip Heater Fails Resulting in a High Temperature Condition. This event is initiated by activating **TRIGGER 2** after Tech Specs for the Control Rod has been referenced.		
Time	**Position**	**Applicants Actions or Behavior**
T = 20	BOP	Acknowledge the SGT Div B Board K2 Trouble alarm on Board S. Investigates back panel.
		Acknowledges the Charcoal Filter B-1 Outlet Temperature High alarm and refers to ARP.
		Observes SGT-TI-6B and notes reading (~265°F). Refers CRS to ABN-SGT-TEMP/RAD.
	CRS/BOP	May send OPS2 to SGT-B to investigate locally.
ROLEPLAY: If sent, wait two minutes and report that SGT-B train smells hot and the unit is hot to the touch. The local temperature indications are higher than normal at 200°F and 230°F. There is no smoke and no indications of a fire.		
	CRS	Per ABN-SGT-TEMP/RAD directs SGT-A be started per SOP-SGT-START.
	CRS/BOP	Directs SGT-DISC-8B2BL (SGT-ESH-1B) disconnect be opened per ARP.
BOOTH OPERATOR: When SGT-FN-1B12 is started per ABN Trigger 3 will automatically initiate and lower SGT Temperature to 100°F on a 15 minute ramp. **ROLEPLAY: When Trigger 3 initiates, report SGT-DISC-8B2BL has been opened.**		
	BOP	Starts SGT-A per SOP-SGT-START section 5.2.2: If manually initiating SGT Train A with the lead fan at the subsystem level, then perform the following (H13-P827, Bd K1): a. Verify SGT-V-2A is OPEN (Inlet from Reactor Building). b. Momentarily turn SGT-FN-1A1 fan control switch from AUTO to PTL SYS. START. c. Verify the following: • Main Heaters ENERGIZE as indicated by Main Heater ON light and A1 amp meter. • SGT-V-5A1 OPENS (Exhaust to Stack). • SGT-FN-1A1 STARTS (within 10 seconds). d. If required to operate in manual flow control, then perform the following: **(MANUAL CONTROL SHOULD NOT BE REQUIRED).**
	CRS	Directs subsequent actions of ABN-SGT-TEMP/RAD be performed to start SGT-B.

	BOP	Start and recirculate the SGT train that has the charcoal high temperature or high radiation as follows: Step 4.2.1 Verify SGT-V-1A(1B) is CLOSED (Inlet From Containment). Step 4.2.2 Verify SGT-V-5A1(5B2) and SGT-V-5A2(5B1) are CLOSED (Exhaust to Stack). Step 4.2.3 Verify SGT-V-2A(2B) is OPEN (Inlet from Reactor Building). Step 4.2.4 Verify SGT-V-3A2 (3B1) is OPEN (Fan Inlet). Step 4.2.5 If possible, then station an HP technician near SGT to monitor for airborne contamination/smoke. Step 4.2.6 Open SGT-V-4A1(4B2) (Exhaust to Reactor Building). Step 4.2.7 Place SGT-EHC-1A1(1B2) control switch to ON (Main Heater). Step 4.2.8 Verify SGT-FN-1A1(1B2) starts within 10 seconds after the Main Heaters energize. Step 4.2.9 If the SGT system is required to be operable, then declare the SGT train inoperable in the Plant Logging System. Step 4.2.10 Place SGT-DPIC-1A1(1B2) in MANUAL, and adjust the flow rate to approximately 4000 CFM as indicated by SGT-FR-2A1(2B2). Step 4.2.11 When the charcoal temperature/radiation has returned to normal, then place SGT in standby per SOP-SGT-STBY.
		Reports SGT-B started per ABN-SGT-TEMP/RAD and temperature decreasing.
	CRS	Refers to Tech Specs 3.6.4.3 (SGT is inoperable when manual control of SGT-B is taken. TS 3.6.4.3 Condition A is applicable – Restore SGT subsystem to operable status within 7 days.
COMMENTS:		

Event No. 4

Description: IBD-FN-1A Motor Fails due to ground. IBD-FN-1B does not Auto start.

This event is initiated by activating **TRIGGER 9** after Tech Specs for Standby Gas have been referenced.

Time	Position	Applicants Actions or Behavior
T = 20	BOP	Responds to electrical panel alarms as they annunciate: • Bus 31 ground • Gen Bus Duct Clr Flow low • Gen Bus Duct Air Flow Loss Observes Bus Duct Cooling Fans 1A control switch in run but Green light is on and Red light is off. Observes Bus Duct Cooling Fan 1B is also not running. Informs the CRS and refers to ARPs.
		Informs the CRS that the ARP for Air Flow Loss directs to start the standby fan per SOP-IBD-OPS. Refers the CRS to ABN-GENERATOR.
	CRS	May direct the standby fan be started per PPM 1.3.1, Conduct of Operations as an auto action that should have occurred and didn't or may direct starting the standby fan per SOP-IBD-OPS.
	BOP	Starts IBD-FN-1B as directed. Places IBD-FN-1A C/S to Off and notes that IBD-FN-1B does not auto start. Places IBD-FN-1B C/S to Run and after dampers reposition, notes it does start. Observes annunciators clear as bus duct temperatures/parameters return to normal. Reports system status to CRS.

COMMENTS:

Event No. 5		
Description: Operating Basis Earthquake. Trip of RFW-P-1A (on a 20 second Time Delay). Failure of RRC Pumps to Automatically runback to 30 Hz. This event is initiated by activating **TRIGGER 4** and is initiated after Tech Specs for SGT has been referenced.		
Time	**Position**	**Applicants Actions or Behavior**
BOOTH OPERATOR: Start EQ at lowest volume and work to highest volume in 15 seconds then turn off the earthquake machine. Activate TRIGGER 4 five seconds into earthquake simulation.		
T = 40	BOP	Responds to Board S and announces Operating Basis Earthquake Exceeded alarm. Refers to ARP and directs the CRS to ABN-EARTHQUAKE.
	ATC	Recognizes and announces the trip of RFW-P-1A. Observes RPV level dropping. Observes RFW-P-1B speed ramping up and reports B Feed Pump responding. Reports RPV level as it drops to about +20 inches and then begins to return to +36".
	CRS	Directs runback of the RRC pumps be verified.
	ATC	Observes P602 indications and recognizes: • both RRC pumps remain at GT 30 Hz • both RRC Pump controllers remain in Automatic • the FW Pump trip amber lights are not lit on either controller • the Feedwater pump Trip Limit annunciator is not in alarm Reports observations to the CRS.
	CRS	Directs both RRC pump speeds be lowered to 30 Hz.
	ATC	May leave master controller in Auto and depress the lower pushbutton to reduce RRC-P-1A and RRC-P-1B's speed to 30 Hz. May take manual control of the both RRC pump controllers and depresses the lower pushbutton to reduce RRC-P-1A and RRC-P-1B's speed to 30 Hz or may depress the master controller to lower speeds to 30 Hz. Reports both RRC pumps at 30 Hz. Reports Power/Pressure/Level at end of power reduction.
	BOP	After referring CRS to ABN-EARTHQUAKE, checks back panel and reports all Amber and all Red lights illuminated.

	CRS	Updates crew on ABN-EARTHQUAKE entry. Per subsequent actions – initiates a controlled Reactor Shutdown per PPM 3.2.1.
		Directs ABN-EARTHQUAKE announcement be made.
	BOP	Makes ABN-EARTHQUAKE announcement.
ROLEPLAY: Booth Operator to Role Play SAS officer.		
	BOP	Goes to Simulator Booth and directs SAS to repeat above announcement on the Alternate Security/Area Wide and Security radio channels. Directs OPS2 inspection of the Spent Fuel Pool for damage.
COMMENT:		

Event No. 6		
Description: Trip of the B Reactor Feedwater Pump. This event is initiated by activating **TRIGGER 5** and is initiated after the below role play which should be made after actions to reduce RRC flow due to the failure of the pumps to runback and actions for the OBE have taken place.		
Time	**Position**	**Applicants Actions or Behavior**
T = 50	**ROLEPLAY: Call X2171 and as OPS3 report oil on floor in front of the Reactor Feed Pump cabinets which appears to be coming from the control oil system and you are investigating further. Call back one minute later and report that you just opened the cabinet door of the B Reactor Feed Pump and it appears there is a leak in the control oil piping on the B Reactor Feed Pump which is getting larger even as you speak. After the Roleplay THEN activate TRIGGER 5.**	
	ATC	Acknowledges annunciator and reports trip of the B Reactor Feedwater pump and may also announce that he is initiating a manual reactor scram.
	CRS	Directs a manual scram if not already being performed.
	ATC	Turns Mode switch to SHUTDOWN and announces: Listen up for the scram report: Mode switch is in Shutdown, APRMs are downscale, RPV Pressure is xxx, RPV Level is xxx and down fast. Reports EOP entry due to low RPV level.
	CRS	Repeats back the scram report. Updates crew on EOP 5.1.1 (RPV Control) EOP entry.
	ATC	Reports RPV level as it drops below -50". Verifies RCIC initiation and injection to the RPV at 600 gpm (may increase injection flow to 700 gpm).
	CRS	Directs +13" and -50" actuations be verified.
	ATC/BOP	Verifies Containment isolation valves closed by GDS indication (no yellow bordered groups). Verifies RCIC initiated. Verifies HPCS DG start.
	ATC	Updates crew on MSIV closure (Due to loss of RPS power when buses fail to auto transfer to startup power) and that pressure control is on SRVs at 800 to 1000 psig.
	CRS	Directs pressure control with SRVs at 800 – 1000 psig pressure band.
COMMENTS:		

Event No. 7		
Description: Failure of the Startup Transformer to Auto Close in on SM-1, SM-2 and SM-3 causing a loss of the Condensate system. This event is active from the beginning of the scenario and is realized when the Main Turbine trips.		
Time	**Position**	**Applicants Actions or Behavior**
The Critical Task for this event is to re-power SL-21 which supplies power to Control Room back panel H13-P632 which will allow the closure of FDR-V-607 (refer to EVENT 7).		
T=50	BOP	Responds to the electrical panels and observes that the Startup breakers have not closed in on SM-1, SM-2 and SM-3 but did close in on SH-5 and SH-6. Observes and reports that Backup Transformer has closed in and is powering SM-7 and SM-8. Observes DG-1 and DG-2 have auto started.
	BOP	May report electrical board status to CRS prior to taking the following actions to re-power SM-1, SM-2 and SM-3: Places the CB-S1 SYNC Selector switch to MAN position. Places the CB-S1 Control Switch to CLOSE and observes red light on and green light off. Places the CB-S1 SYNC Selector switch to OFF position. Places the CB-S2 SYNC Selector switch to MAN position. Places the CB-S2 Control Switch to CLOSE and observes red light on and green light off. Places the CB-S2 SYNC Selector switch to OFF position. Places the CB-S3 SYNC Selector switch to MAN position Places the CB-S3 Control Switch to CLOSE and observes red light on and green light off. Places the CB-S3 SYNC Selector switch to OFF position.
	BOP	Re-powers SL-11, SL-21 and SL-31 using quick card: 2.1 Energizing SL-11 from SM-1 (Dead Bus) 2.1.1 Verify SM-1 is energized. 2.1.2 Verify CB-11/1 green light illuminated and green flag displayed. 2.1.3 If CB-1/11 is OPEN, then perform the following: a. Verify CB-1/11 white LOCKOUT CIRCUIT AVAIL light illuminated. b. Verify CB-1/11 green light illuminated and green flag displayed. c. Close CB-1/11.

		2.1.4 Close CB-11/1. 2.1.5 Verify SL-11 voltage is approximately 480 (432-528) volts. 2.2 Energizing SL-21 from SM-2 (Dead Bus) 2.2.1 Verify SM-2 is energized. 2.2.2 Verify CB-21/2 green light illuminated and green flag displayed. 2.2.3 If CB-2/21 is OPEN, then perform the following: a. Verify CB-2/21 white LOCKOUT CIRCUIT AVAIL light illuminated. b. Verify CB-2/21 green light illuminated and green flag displayed. c. Close CB-2/21. 2.2.4 Close CB-21/2. 2.2.5 Verify SL-21 voltage is approximately 480 (432-528) volts. 2.3 Energizing SL-31 from SM-3 (Dead Bus) 2.3.1 Verify SM-3 is energized. 2.3.2 Verify CB-31/3 green light illuminated and green flag displayed. 2.3.3 If CB-3/21 is OPEN, then perform the following: a. Verify CB-3/31 white LOCKOUT CIRCUIT AVAIL light illuminated. b. Verify CB-3/31 green light illuminated and green flag displayed. c. Close CB-3/31. 2.3.4 Close CB-31/3. 2.3.5 Verify SL-31 voltage is approximately 480 (432-528) volts.
	CRS	Directs both CRD pumps be started for RPV injection.
	ATC/BOP	Places CRD controller to manual and takes control switches for CRD-P-1A and CRD-P-1B to START. May direct OPS2 perform ABN-CRD-MAXFLOW.
BOOTH OPERATOR: If directed to perform ABN-CRD-MAXFLOW, wait three minutes and then <u>ACTIVATE TRIGGER 26</u> and report completion when valves have completed repositioning.		
	BOP	Reports High Drywell Pressure EOP entry into PPM 5.2.1 (Primary Containment Control) at 1.68 psig with no indication of a leak in the drywell (due to heat up).
	CRS	Directs 1.68 psig actuations be verified.

	BOP	Verifies 1.68 psig actuations: RHR-P-2A, RHR-P-2B, RHR-P-2C, LPCS-P-1 running on min flow. DG-1 and DG-2 are running. SW-P-1A and SW-P-1B are running. GDS indicates all containment isolation valves closed except for RCIC-V-8 and RCIC-V-63 (no yellow bordered NSSSS groups).
	ATC	Reports RPV level slowly recovering.
	BOP	Reports Main Steam Tunnel high temp alarm and eventual EOP entry into PPM 5.3.1 (Secondary Containment Control), due to Main Steam Tunnel Temp Hi Hi. Reports EOP 5.2.1 (Primary Containment Control), entry on Drywell Temperature and Wetwell level as they occur.
	ATC/BOP	Recognizes CAS air compressors do not restart on loss of power. Directs OPS3 to reset CAS air compressors.
ROLEPLAY: A minute after the request to reset CAS, <u>ACTIVATE TRIGGER 23</u> and when compressors have restarted, report completion to the Control Room.		
	CRS	May decide to expand RPV level band to -50" to +54". May direct SLC initiation and injection into RPV as an Alternate Injection System (Table 3 of EOP 5.1.1 RPV Control).
	ATC	If directed, injects with both SLC Systems using SOP-SLC-INJECTION-QC: 2.1 Remove the SLC keylock switch blanks, and insert both keys into the SLC System control switches. 2.2 Initiate SLC injection by performing the following (H13-P603): • PLACE SLC System A control switch to the OPER position. • PLACE SLC System B control switch to the OPER position. 2.3 Report the following to the CRS: • SLC flow rate (-82 gpm) • Initial tank level (4800 gal) • RWCU-V-4 status (should be closed)
COMMENTS:		

Event No. 8		
Description: Earthquake tremor causes a rupture in the RHR-A suction piping resulting in flooding of the RHR-A pump room and Suppression Pool Water Level to drop. Emergency Depressurize the RPV when it is determined that Suppression Pool water level cannot be maintained GT 19' 2". The event is initiated by activating **TRIGGER 6** and is initiated after plant has been stabilized, the electrical buses have been re-energized and RPV level is GT -50".		
Time	**Position**	**Applicants Actions or Behavior**
The Critical Task for this event is to initiate an Emergency Depressurization prior to Suppression Pool Water Level reaching 19'2".		
BOOTH OPERATOR: Start EQ and work back to highest volume in 10 seconds then turn off the earthquake machine. Activate TRIGGER 6 five seconds into earthquake simulation.		
T=60	BOP	Acknowledges the Suppression Pool Level Hi/Low alarm (P601-A11 2-3 and P601-A12 2-3). Reports Suppression Pool level dropping giving actual level and trend. Reports EOP entry into PPM 5.2.1 (Primary Containment Control) on Low Suppression Pool level when level drops to LT -2".
	CRS	Directs field investigation by OPS2. Updates crew on PPM 5.2.1 (Primary Containment Control) EOP entry.
ROLE-PLAY – Two minutes after being directed to investigate, report that there is a crack in the piping between the Suppression Pool and the RHR Pumps suction valve, RHR-V-4A. Room water level is rising and you are leaving the room. If asked, the break cannot be isolated.		
NOTE: It takes about five minutes after trigger actuation to get the RHR-A Pump Room High Level EOP entry alarm and BISI. The R1 sump high level alarm does not annunciate due to failed level switch which also causes FDR-V-607 not to auto close.		
	BOP	Acknowledges RHR A PUMP ROOM WATER LEVEL HIGH annunciator and BISI and reports EOP entry into PPM 5.3.1 (Secondary Containment Control). Refers to ARP: May contact the RWCR Operator to verify sump pumps FDR-P-1A and FDR-P-1B operating. Refers CRS to ABN-FLOODING.

		Verifies FDR-V-607 closed on P632 and observes valve is actually opened. Takes FDR-V-607 control switch to close and observes green light on and red light off. Informs CRS.
	CRS	Updates crew on PPM 5.3.1 (Secondary Containment Control) EOP entry. Refers ABN-FLOODING and directs actions: • Directs evacuation of affected Area (RHR-A Pump Room). • Directs RHR-P-2A be stopped (Note: Pump will eventually trip on overload if not secured). • Directs the control power fuses be removed for RHR-P-2A. • Locate and isolate the source of the flooding per Section 7.2. • Monitor adjacent ECCS Pump rooms for flooding.
ROLE-PLAY – Two minutes after request to pull RHR-P-2A fuses, <u>ACTIVATE TRIGGER 7</u> and report control power fuses for RHR-P-2A have been pulled.		
	BOP	Makes evacuation announcement as directed per ABN-FLOODING: • Sounds Alerting tone for 5-10 seconds • Alert station personnel to flooding in the RHR-A Pump Room • Evacuates all non-emergency personnel from the affected area • Refers to PPM 13.5.1 for localized evacuation.
COMMENTS:		

Event No. 9

Description: FDR-V-607 (the RHR-A / RCIC Room cross-connect valve) Fails to Auto Close.

This event is initiated by the CRS when it has been determined that Suppression Pool Water Level cannot be maintained GT +19'2".

The Critical Task is to close FDR-V-607 prior to exceeding Max Safe Operating Level in the RCIC Pump Room.

Time	Position	Applicants Actions or Behavior
T = 75	CRS	Recognizes HPCS-P-1 is not available and Suppression Pool Water Level cannot be maintained GT +19'2".
	CRS	Updates crew on requirement to initiate an Emergency Depressurization. Updates crew on PPM 5.1.3 (RPV Depressurization) EOP entry. Exits the Pressure leg of PPM 5.1.1 (RPV Control), and enters PPM 5.1.3 (Emergency RPV Depressurization).
		Determines if RPV injection with LPCS and RHR is required based on RPV Level and trend (It is anticipated that one ECCS pump will be used to return RPV water level back to +13" to +54" level band with RCIC eventually isolating on low RPV pressure).
		Determines Wetwell level is above 17'. Directs 7 SRVs (ADS preferred) be opened.
	BOP	Opens SRVs as directed starting with the first ADS SRV and working to the last.
		As each SRV is opened, observes Primary Containment pressure response.

Comments:

TURNOVER INFORMATION

Initial Conditions

HPCS-P-1 is undergoing schedule maintenance as the pump shaft has been removed.

The following have been protected per PPM 1.3.83 – RCIC-P-1, LPCS-P-1, DG-1, DG-2, ADS-A, ADS-B' SW-A, SW-B, TR-S, TR-B.

Reactor power has been lowered to support a Control Rod Set.

The #1 and #2 RFW Heaters have been removed from service per the Reactivity Control Plan.

The reactivity brief and the task preview for the shift's scheduled activities have been completed.

An SNE is stationed in the Control Room to monitor core conditions.

Shift Directions

Continue with the Reactivity Control Plan (RCP) to adjust control rods to the target pattern and then return the plant to 100% power.

SIMULATOR SETUP INSTRUCTIONS

Reset to Saved IC#172 (75% Power, FW Heaters #1 and #2's Removed From Service)

Hang Blue Tags on HPCS-P-1 and HPCS-V-4.

Depress the Manual Out Of Service BISI for the HPCS System.

Make it a Div 3 Work Week.

Flag locked in annunciators.

Protect the following per PPM 1.3.83 – RCIC-P-1, LPCS-P-1, DG-1, DG-2, ADS-A, ADS-B, SW-A, SW-B, TR-S and TR-B.

Set up the Earthquake Machine on lowest volume.

SCHEDULE FILE

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EVENT FILE

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NRC EXAM SCENARIO #3

ENERGY NORTHWEST

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	OPERATIONS TRAINING
COURSE TITLE	COLUMBIA GENERATING STATION SIMULATOR EXAMINATION
LESSON TITLE	Raise Power with Flow to 100%; Perform OSP-HPCS/IST-Q701; HPCS Min Flow Fuses Clear; CRD-P-1B Trips; Grid Disturbance, ASD Channel 1B1 Trips; Grid Disturbance, Lockout on SH-5 and SH-6, Manual Scram; Hydraulic ATWS; Inject SLC, RWCU-V-4 Fails to Auto Close; Lower Level, S/R/S Inserts Control Rods

LENGTH OF LESSON 1.5 Hours

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code	LO001752	Rev. No.	0
JPM PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	12/09/12
REVISED BY		DATE	
VALIDATED BY		DATE	

TECHNICAL REVIEW		DATE	
INSTRUCTIONAL REVIEW		DATE	
	SAT Coordinator		
APPROVED		DATE	
	Operations Training Manager		

NRC EXAM SCENARIO #3

Facility: Columbia Scenario No.: 3 Op-Test No.: 2013

Examiners: _____ Operators: _____

_____ _____

_____ _____

Initial Conditions: The plant is operating at 95% power. RCC-P-1B is tagged out due to excessive vibrations and imminent failure. OSP-HPCS/IST-Q701, HPCS System Operability Test, is in-progress.

Turnover: Return Columbia to 100% power. Continue with the performance of OSP-HPCS/IST-Q701, starting at Step 7.3. The two year VPI and channel calibration are NOT due. The pre-job brief has been completed, and Equipment Operators are on station to support completion of the surveillance. The power increase and surveillance are to be performed concurrently.

Event No.	Timeline	Event Type*	Event Description
1	T = 0	R (ATC) R (CRS)	Increase Reactor Power from 95% to 100% with RRC Flow.
2	T = 0	N (BOP) N (CRS)	Perform the HPCS System Operability Test, OSP-HPCS/IST-Q701.
3	T = 15	I (BOP) I (CRS)	The HPCS min flow, HPCS-V-12, fuses clear while closing. (Tech Spec).
4	T = 25	C (ATC) C (CRS)	CRD-P-1B trips on low suction pressure.
5	T = 45	C (CRS) R (ATC)	A grid disturbance causes a trip of ASD Channel 1B1. (Tech Spec) Power reduction by lowering RRC-P-1A speed to match loop flows.
6	T = 60	C (ATC) C (CRS)	Another grid disturbance results in a lockout of SH-5 and SH-6, and a complete loss of RRC flow requiring a manual reactor scram.
7	T = 60	M (All)	Hydraulic ATWS. Inhibit ADS prior to automatic initiation to prevent an uncontrolled depressurization and significant power excursion (Critical Task). Terminate and prevent injection into the RPV with the exception of SLC, RCIC, and CRD, to establish an LL (Critical Task). Perform PPM 5.5.11 to insert control rods. Rods insert. Return RPV level to normal band (Critical Task).
8	T = 65	C (ATC)	Inject Standby Liquid Control (boron) prior to exceeding 110°F Suppression Pool temperature (Critical Task). RWCU-V-4 fails to automatically close when SLC is initiated.

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

Columbia is at 95% power due to economic dispatch. BPA has just requested Columbia return to 100%. Additionally, OSP-HPCS/IST-Q701 is in progress and will be continued after shift turnover.

The ATC will raise reactor power with RRC flow to achieve 100% power.

The BOP operator will perform the HPCS surveillance. As full flow test conditions are established, the Min Flow valve for HPCS-P-1 fuses will clear. The crew should back out of the surveillance and secure HPCS-P-1. Tech Specs will be referenced and HPCS will be declared inoperable.

The next event is a trip of CRD-P-1B on low suction pressure. ABN-CRD will be entered and both suction filters will be placed into service. CRD-P-1A will be started.

The next event is a grid disturbance that results in multiple annunciators and ASD Channel 1B1 tripping causing RRC-P-1B to run back to 51 Hz. The crew will lower RRC-P-1A speed to match loop flows.

Another grid disturbance will result in a lockout on SH-5 and then SH-6 which results in a loss of both RRC pumps. Per immediate actions of ABN-RRC-LOSS a manual reactor scram will be inserted.

The crew will recognize a hydraulic ATWS condition exists. The crew will take manual control of HPCS and will inhibit ADS. RCIC-V-1 will be closed to prevent RCIC initiation at -50” (which would cause the Main Turbine to trip).

Standby Liquid Control will be initiated and when initiated, SLC flow will be only 18 gpm due to relief valves lifting.

PPM 5.5.6 will be performed to prevent the MSIVs from closing when RPV level is lowered.

PPM 5.5.1 will be performed to make all ECCS injection valves throttleable.

The crew will stop and prevent injection into the RPV and establish an Lowered Level of -65” with RPV level being maintained between -80” and -140”.

PPM 5.5.11 will be performed to insert control rods.

Control rods will go in after RPV level has been lowered and is being controlled -80” to -140”.

When all control rods are inserted the crew will stop SLC injection and return RPV level back to +13” to +54” level band.

The scenario will be terminated when RPV level has been returned to normal.

Event No. 1

Description: Raise power with Flow from 95% to 100%.

This event is initiated by the turnover information.

Time	Position	Applicants Actions or Behavior
T = 0	CRS	Directs ATC to raise power with flow to achieve 100% reactor power at a rate not to exceed 10MWE/min or 1Hz per minute.
	ATC	Notes Reactor Power and RRC pump flow and Hz indications. **Verifies both RRC pumps individual controllers are in AUTO and depresses Master Controller Raise P/B to increase flow/power as directed.**
		Informs the CRS when power is 100%.

COMMENTS:

Event No. 2		
Description: Perform the HPCS System Operability Test, OSP-HPCS/IST-Q701. This event is initiated by turnover information.		
Time	**Position**	**Applicants Actions or Behavior**
T = 0		7.3.3 If not already operating, then start HPCS-P-2 (Service Water Pump) (H13-P601). ***Takes HPCS-P-2 control switch to start and observes red light on, green light off.***
		7.3.4 If not already open, then verify SW-V-29 auto opens. (Service Water Pump Discharge) (H13-P601). ***Observes SW-V-29 red light on green light off and rising discharge pressure on SW-PI-40.***
		7.3.5 Verify HPCS-P-1 Motor upper and lower lubricant levels are normal. Record SAT in the Driver Lubrication Measured Value space on Attachment 9.2. ***Contacts OPS2 and directs step performance.***
ROLEPLAY: VERIFY HPCS-P-1 Motor upper and lower lubricant levels are normal.		
		7.3.6 Verify H13-P601.A1-6.7, HPCS WATER LEG PUMP DISCH PRESS LOW is clear.
		Verify HPCS System pressure GE 50 psig per HPCS-PIS-13 (H22-P024) (RB 471). ***Contacts OPS2 and requests gage reading.***
ROLEPLAY: HPCS-PIS-13 is reading 90 psig.		
		7.3.8 If HPCS is required to be operable, then enter HPCS as inoperable, but available, in the Plant Logging System. ***Informs the CRS to perform this step.***
		7.3.9 Open HPCS-V-10 (Inboard Test Valve). ***Takes control switch for HPCS-V-10 to open and observes valve position indication on HPCS-P01-606 on P601 vertical board.***

		7.3.10 If non-intrusive testing is scheduled for HPCS-V-2 and/or HPCS-V-24, then notify Electricians that HPCS-V-2 and HPCS-V-24 are about to open.
		7.3.11 Start HPCS-P-1 (H13-P601). ***Makes plant announcement of the intent to start HPCS-P-1.*** ***Takes control switch for HPCS-P-1 to start and observes red light on, green light off and amps rising and discharge pressure rise.***
		7.3.12 Verify HPCS-V-12 (Minimum Flow Valve) auto opens. ***Observes HPCS-V-12 red light on and Green light off.***
ROLEPLAY: A minute after HPCS-P-1 starts, As OPS2, inform the Control Room that the pump start looks good. ALso call as OPS4 that HPCS-P-2 start looks good.		
		7.3.13 Throttle open HPCS-V-11 (Outboard Test Valve) to adjust system flow at HPCS-FI-603 to 6560 gpm (GE 6500 gpm but LE 6690 gpm). ***Takes control switch for HPCS-V-11 to open and observes valve position indication on HPCS-P01-604 on P601 vertical board.*** ***Observes HPCS flow rising on HPCS-FI-603 as HPCS-V-11 is opened.***
		7.3.14 Verify HPCS-V-12 (Minimum Flow Valve) auto closes above approximately 1300 gpm. ***Observes HPCS-V-12 start to close (green light comes on) as flow is raised GT 1300 gpm.*** ***SEE NEXT EVENT***
COMMENT:		

Event No. 3

Description: HPCS-V-12, HPCS Minimum Flow Valve fuses clear.

This event is initiated by **EVENT TRIGGER 1** which automatically activates when HPCS flow rises to 3000 gpm.

Time	Position	Applicants Actions or Behavior
T = 10	BOP	Observes both the green alight and the red light for HPCS-V-12 go out. Acknowledges the HPCS OUT OF SERVICE alarm and the MOV Network Pwr loss/OL BISI. Informs the CRS of indication and alarm/BISI.
	CRS	May direct HPCS-V-11 be closed and HPCS-P-1 be secured or may direct BOP operator to back out of the surveillance procedure.
	BOP	Performs actions to secure HPCS as directed by the CRS.
	CRS	Contacts Work Control / Production about HPCS-V-12.
		Refers to Tech Specs and notes LCO 3.5.1 Condition B applies (Verify RCIC operable by administrative means immediately; AND restore HPCS to operable status within14 days). PAM 3.3.3.1 (30 days). Also is reportable to NRC due to single train failure within 8 hours.
	CRS BOP	Directs Control Power fuses for HPCS-P-1 be pulled.
ROLEPLAY: Wait three minutes and then ACTIVATE TRIGGER 2 and report completion.		
	CRS	Conducts Brief.

COMMENTS:

Event No. 4		
Description: CRD-P-1B Trips on Low Suction Pressure. This event is initiated by activating **TRIGGER 3** and is initiated after Tech Specs for HPCS have been referenced and brief has been completed.		
Time	**Position**	**Applicants Actions or Behavior**
T = 25	ATC	Acknowledges CRD PUMP B SUCTION PRESS LOW alarm and refers to ARP. Acknowledges CRD PUMP ABNORMAL OPERATION alarm and refers to ARP.
		Observes CRD-P-1B not running and informs the CRS. Refers CRS to ABN-CRD.
		When Accumulator alarms come in, refers the CRS to Tech Spec 3.1.5.
	CRS	Updates crew on ABN-CRD entry. Refers to ABN-CRD and directs placing both CRD suction filters in service per ABN-CRD-MAXFLOW (due to the CRD PUMP B SUCTION PRESS LOW alarm that was in and cleared).
ROLEPLAY: Wait two minutes and then ACTIVATE TRIGGER 26 and report completion.		
	CRS	Notes time the second accumulator alarm comes in and starts the 20 minute clock (see ABN-CRD step 4.1.1).
	CRS	May hand off ABN completion to ATC or direct individual steps. Directs placing CRD-FC-600, CRD Flow Controller, in MANUAL at zero output.
	ATC	**Places the CRD Flow Controller in MANUAL by moving black knob to the left over the 'M'.** **Depresses the Close pushbutton until the red arrow lowers and is over the '0'.**
	CRS	Directs the standby CRD pump, CRD-P-1A be started (May direct the tripped CRD pump be re-started if he determines the cause for the trip is known and has been corrected -Low suction trip corrected by placing both suction filters in service) (CRD-P-1B will trip immediately if restarted)..
	ATC	Starts CRD pump as directed by taking control switch to start. Observes amps, pressure indications for CRD pump start.
	CRS	Directs CRD-FC-600 be nulled and transferred to Auto.
	ATC	Depresses the Open pushbutton until the red arrow is in the green band. Moves black lever to the right until over the 'A'. Observes CRD accumulator alarms clearing.

		Informs the CRS when all accumulator alarms have cleared.
COMMENTS:		

Event No. 5

Description: Grid Disturbance, ASD Channel 1B1 Fault Trip

This event is initiated by activating **TRIGGER 4** and is initiated after a CRD pump has been re-started and all CRD accumulators have cleared.

Time	Position	Applicants Actions or Behavior
T=45	ATC	Acknowledges various annunciators associated with the grid disturbance. Acknowledges ASD 1B/1 Alarm and ASD 1B/1 Fault annunciators.
		Observes the following indication: Loop B ASD Channel Failure Limit light illuminated. RRC-P-1B speed is 51Hz. Green light on (Red light off) for ASD Channel 1B1. B RRC Pump controller has transferred to Manual.
		Informs CRS that ASD Channel 1B1 has tripped off. Reports current Reactor Power, Pressure and Level.
		Acknowledges A or B Hi Flow Delta annunciator. Observes Loop B flow at 36,000 gpm and Loop A flow at 44,000 gpm.
	CRS	Updates crew on ABN-POWER entry. Refers to Tech Spec 3.4.1, flow mismatch, which is applicable until flows are matched. Contacts Production/Work Control concerning ASD Channel fault. Directs RO to match RRC loop flows by lowering RRC Loop A flow.
	ATC	Reduces RRC-P-1A speed as directed to match flows and clear High Flow Delta alarm (may reduce RRC-A speed with controllers in Auto or may take manual control of RRC-M/A-R676A).
	ATC	Reports Reactor Power, Pressure and Level after the flow reduction.

COMMENTS:

Event No. 6

Description: Another Grid Disturbance and Lockout on SH-5 and SH-6 causing a loss of both RRC Pumps and a manual scram insertion.

The event is initiated by activating **TRIGGER 5** and is initiated after plant has been stabilized and RPV level is **STEADY** at +36".

Time	Position	Applicants Actions or Behavior
T=60	ATC	Acknowledges various annunciators associated with the grid disturbance.
	BOP	Responds to electrical plant and recognizes and reports lockout on SH-5 and SH-6. May not initially report lockouts due to loss of RRC Pumps and insertion of manual scram.
	ATC	Acknowledges alarms associated with loss of both RRC Pumps.
		Recognizes the loss of both RRC pumps and announces intent to initiate a manual reactor scram per immediate actions of ABN-RRC-LOSS. Inserts a manual reactor scram by turning Mode switch to SHUTDOWN and announces: Listen up for the scram report: Mode switch is in Shutdown, APRMs are NOT downscale, current RPV Pressure and trend, and current RPV Level and trend. Reports EOP entry due to failure to scram.

COMMENTS:

Event No. 7		
Description: Hydraulic ATWS. This event is active at the beginning of the scenario and is realized when a manual reactor scram is inserted.		
Time	**Position**	**Applicants Actions or Behavior**
Critical Task is to inhibit ADS prior to an automatic initiation to prevent an uncontrolled depressurization and significant power excursion.		
Critical Task is to terminate and prevent injection into the RPV with the exception of SLC, RCIC, and CRD, to establish an Lowered Level.		
Critical Task is to Insert Control Rods.		
T = 60	ATC	Continues with immediate scram actions after recognizing all control rods did not insert: • Depress the manual scram pushbuttons • Initiate ARI and verifies valves opened • Insert SRMs and IRMs Reports reactor power at approximately 45%.
	CRS	Updates crew on EOP entry into PPM 5.1.1 (RPV Control), and directs/verifies that the Mode Switch has been placed in SHUTDOWN. Updates crew and exits PPM 5.1.1 (RPV Control) and transitions to PPM 5.1.2 (RPV Control - ATWS). Directs BOP to: • Inhibit ADS and take manual control of HPCS. • Verify actuations for +13" and -50" as they occur. • Verify pressure is being maintained by the bypass valves in Auto.
	BOP	Takes both ADS control switches to the INHIBIT position and acknowledges associated alarms and BISIs. Arms and Depresses the HPCS system initiation P/B while holding the control switch for HPCS-P-1 to STOP. Closes HPCS-V-4 when it get fully opened. Reports ADS inhibited and manual control of HPCS taken to CRS.
	CRS	Directs bypassing the MSIV isolation interlocks on high tunnel temperature and low RPV level per PPM 5.5.6.
	CRS	Goes to EOP drawer and gets PPM 5.5.6 procedure and equipment bag containing two keys. Performs PPM 5.5.6:

		• At H13-P609 places MS-RMS-S84 to BYPASS • At H13-P611 places MS-RMS-S85 to BYPASS Updates Crew on the completion of PPM 5.5.6.
T = 65	CRS	Directs RCIC-V-1 be closed to keep Main Turbine on line when RPV level is lowered.
	BOP	Closes RCIC-V-1, verifies RCIC trip annunciator and reports completion to CRS.
	CRS	Directs performance of PPM 5.5.1, Overriding ECCS valve logic to allow throttling RPV injection.
	BOP	Goes to EOP drawer and pulls PPM 5.5.1 procedure and equipment bag containing 5 keys. Performs PPM 5.5.1: • HPCS – Override HPCS-V-4 (HPCS RPV injection valve) automatic logic by placing HPCS-RMS-S25 in the OVERRIDE position (H13-P625). • LPCS - Override LPCS-V-5 (LPCS RPV injection valve) automatic logic by placing LPCS-RMS-S21 in the OVERRIDE position (H13-P629). • RHR Loop A - Override RHR-V-42A (RHR RPV injection valve) automatic logic by placing RHR-RMS-S105 in the OVERRIDE position (H13-P629). • RHR Loop B - Override RHR-V-42B (RHR RPV injection valve) automatic logic by placing RHR-RMS-S106 in the OVERRIDE position (H13-P618). • RHR Loop C - Override RHR-V-42C (RHR RPV injection valve) automatic logic by placing RHR-RMS-S107 in the OVERRIDE position (H13-P618). Updates crew to completion of PPM 5.5.1, and that the ECCS injection valves are closed and throttleable.

	CRS	Direct the ATC to: • Stop and prevent condensate and feedwater. • Lower level to a band less than –65" but greater than –183" (preferred band is –80" to –140"). • Commence RPV injection at -65".
	ATC	Uses Quick Cards to stop and prevent Condensate and Feedwater and lines up on the startup flow control valves as directed: Step 2.1.1 If Reactor Feed Pump(s) (RFP) are operating, then perform the following: a. Verify RFP(s) have ramped down in speed. b. Verify RFW-FCV-2A(B) is operating properly in Automatic (Minimum Flow Valve) (H13-P840). c. If RFW-FCV-2A(B) is not operating properly and is cycling, complicating Reactor Level Control, then place RFW-FCV-2A(B) in Manual, and slowly open to approximately 80%. d. Place RFW-P-1B in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840): 1) Select MDEM. 2) Select YES. e. Place RFW-P-1A in MDEM mode using either RFT-COMP-1 or RFT-COMP-2 (Pump Control Screen) as follows (H13-P840): 1) Select MDEM. 2) Select YES. f. Control Turbine speed as required. Step 2.1.2 If Feedwater Temperature Reduction was in progress, then verify RFW-V-109 is Closed (H13-P840). Step 2.1.3 Start closing RFW-V-112A and RFW-V-112B (H13-P840). (2H) Step 2.1.4 Start opening RFW-V-118 (Throttle valve) (H13-P840).
		Step 2.1.5 Verify the following Open (H13-P840): (2H)

		• RFW-V-117A • RFW-V-117B Step 2.1.6 Verify RFW-LIC-620 is in MANUAL (V selected for Valve position demand) with 0 output (Startup RPV Level Control) (H13-P603). Step 2.1.7 Verify RFW-V-112A and RFW-V-112B are Fully Closed. Step 2.1.8 Verify RFW-V-118 is Fully Open.
		Reports EOP entry on low RPV water level at +13". Reports Reactor Power as it drops due to lowering level. When Reactor Power is LT 5%, marks RPV level to establish an LL. Step 2.1.9 If Reactor Feed Pump(s) (RFP) are operating, then adjust the running RFP speed to establish ~ 200 psid across RFW-FCV-10A & 10B using either Feedwater touch screen (H13-P840). Step 2.1.10 Adjust RFW-LIC-620 manual output to control RPV level. Maintains RPV level between LL and –183" as directed (–80" to –140").
T = 70	CRS	Directs PPM 5.5.11 be performed to insert control rods.
BOOTH OPERATOR: Be standing next to Board S to get direction from BOP operator to perform Attachment 6.1.		
	BOP	Goes to EOP drawer and pulls procedure for PPM 5.5.11 and equipment bag. Performs PPM 5.5.11: Determines that no RPS scram lights are lit Removes one TB1 ARI fuse (P650 F01, F02, F03 or F04) Removes one TB2 ARI fuse (P650 F01, F02, F03 or F04). Determines that some or all blue scram valve lights are lit. Determines Tab B should be performed: TAB B:

		Places the SDV HIGH LEVEL TRIP control switch to BYPASS. Determines the scram cannot be reset. Overrides RPS trip signals per Attachment 6.1.
	BOP	ATTACHEMNT 6.1 Goes to Board S and directs booth operator to perform back panel operations associated with Attachment 6.1 (may also direct Attachment 6.2 at this point).
BACK PANEL OPERATOR: Take direction from the BOP operator. If Attachment 6.1 is directed, wait three minutes and then Activate <u>TRIGGER 28</u> to install RPS jumpers. **When completed, circle slash the procedure steps and inform the BOP operator that they have been completed by standing next to Board S and giving the crew an update:** **"UPDATE READY - Attachment 6.1 of PPM 5.5.11 has been completed, END OF UPDATE."**		
	BOP	Continues with Tab B actions: Reset the scram (by depressing reset pushbuttons). Ensures both CRD pumps are running (the tripped CRD pump may or may not be re-started per this step but if restarted it will immediately trip).
BACK PANEL OPERATOR: Be standing next to Board S to get direction from BOP operator to perform Attachment 6.2.		
	BOP	Directs Back Panel Operator to perform Attachment 6.2 to bypass all RSCS rod blocks.
BACK PANEL OPERATOR: Take direction from the BOP operator to perform back panel steps of Attachment 6.2. Wait two minutes and then Activate <u>TRIGGER 30</u> to install jumpers. **When completed, circle slash the two steps at the bottom of the page and inform the BOP operator that they have been completed by standing next to Board S and giving the crew an update:** **"UPDATE READY - Attachment 6.2 of PPM 5.5.11 has been completed, END OF UPDATE."**		
BOOTH OPERATOR: When RPV Level has been lowered and is being maintained: TO CLEAR ATWS: When both scram discharge volume vents and drains are fully open, set the four ATWS malfunctions to a severity of sixty (order does not matter).		
	BOP	Manually starts to drive control rods by starting at 10-43 and inserting every other rod in every other row. Reports success in driving control rods to CRS.
		When the Scram Discharge Volume has been drained for more than 2 minutes initiates a

		manual scram by depressing the four red manual scram pushbuttons. If rods do not insert continues scram/reset/scram Tab B and raises SDV drain time by 2 minutes. Determines All Rods are in and informs the CRS.
		Installs the following fuses removed in TAB A: TB1 ARI fuse TB2 ARI fuse
	CRS	Directs SLC be stopped.
	ATC BOP	Takes control switches out of OPER and observes both SLC pumps stop.
	CRS	Exits PPM 5.1.2 (RPV Control ATWS) and enters PPM 5.1.1 (RPV Control). Directs RPV level be raised to -50" to +54" band with available systems.
	ATC	Raises RPV level into band as directed.
TERMINATION POINT – The scenario will be terminated when RPV level is being returned to the directed band.		
Comments:		

Event No. 8		
Description: Initiate SLC - RWCU-V-4 fails to auto close. This event is active from the start of the scenario and is realized when SLC is initiated.		
Time	**Position**	**Applicants Actions or Behavior**
Critical Task is to inject Standby Liquid Control (boron) prior to exceeding 110°F Suppression Pool temperature.		
T = 65	CRS	Directs SLC initiation prior to Suppression Pool temperature reaching 110°F.
	ATC	Initiates SLC per the quick card: Remove the SLC keylock switch blanks and insert both keys into the SLC System control switches. Initiate SLC injection by performing the following (H13-P603): • Place SLC System A control switch to the OPER position • Place SLC System B control switch to the OPER position Report the following to the CRS: • SLC flow rate (~82gpm) • Initial tank level • RWCU-V-4 status (should be closed) Reports SLC flow rate indicating low at about 18 gpm. Reports initial tank level.
		Verifies RWCU-V-4 closed and notes valve is actually open. Takes the control switch for RWCU-V-4 to the close position and observes green light on and red light goes out.
		Reports RWCU-V-4 failed to auto close but was manually closed with the control switch.
		Directs investigation by OPS2 of reduced SLC flow.
ROLEPLAY - Three minutes after request inform the Control Room that the SLC relief valves are lifting and that maintenance has been contacted and is on their way. You will inform them in any change in SLC status.		
Comments:		

TURNOVER INFORMATION

Initial Conditions

Columbia is at 95% power due to an economic dispatch request from BPA.

RCC-P-1B is tagged Out of Service for pump seal replacement.

BPA has just requested Columbia return to 100%.

LCS 1.3.7.2 has been entered per OSP-HPCS/IST-Q701 step 7.3.2.

Shift Directions

Raise power with flow to 100% reactor power.
Continue with OSP-HPCS/IST-Q701.
The two evolutions are to be performed concurrently.

SIMULATOR SETUP INSTRUCTIONS

Have a copy of OSP-HPCS/IST-Q701 with it signed in and prerequisites signed off.

Reset to saved IC #173.

Hang blue tag on RCC-P-1B.

Ensure CRD-P-1B Running and the red dot is over CRD-P-1B.

Booth Operator needs to go on the floor to perform PPM 5.5.11 Attachment 6.1 and 6.2 during the scenario. Have a marker to mark up the EOP procedure available.

You may want to give the HPCS surveillance to the crew ahead of time for them to review.

SCHEDULE FILE

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EVENT FILE

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ENERGY NORTHWEST

-

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR INITIAL TRAINING

COURSE TITLE: ADMIN JOB PERFORMANCE MEASURE

LESSON TITLE: VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM BYPASS VALVE POSITION (PPM 3.1.2)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
JPM PQD Code	LO001729	Rev. No.	2
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 07/20/10

REVISED BY: Ron Hayden DATE: 12/06/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

SAT Coordinator

APPROVED BY _____ DATE _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM
BYPASS VALVE POSITION (PPM 3.1.2)

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Setup Instructions:

Get Attachment 7.1 of PPM 3.1.2 and put two boxes that could be checked. One states APRM readings ARE GT power readings extrapolated from BPV position and the other states APRM readings ARE NOT GT power readings extrapolated from BPV position.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: RO-0906

Validation Time: 10 minutes

Alternate Path: No

Time Critical: No

PPM Reference: PPM 3.1.2 Rev. 76

Location: Classroom

NUREG 1123 Ref: 2.1.25 (3.9 / 4.2)

Performance Method: Perform

Task Standard: It is determined that APRM readings are NOT greater than power level readings extrapolated from BPV positions and that block is checked on Attachment 7.1.

JPM CHECKLIST

INITIAL CONDITIONS:	*Columbia is in the process of starting up following a refueling outage. Current plant conditions are: APRMs indicate 29% power; Feedwater temperature is 147°F; House Loads are equal to 1% Core Thermal Power; BPV#1 is indicating 80 percent open; BPV#2 is indicating 85 percent open; BPV#3 is indicating 90 percent open; BPV#4 is indicating 95 percent open.*
INITIATING CUE:	You have been directed by the CRS to perform step Q37 of PPM 3.1.2 "Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1". Present the completed Attachment 7.1 to the examiner with the table of BPV vs. % CTP filled in and a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	PPM 3.1.2 step Q37: Completes Attachment 7.1	Indicates the following information on Attachment 7.1: BPV #1 is 80% open which correlates to approximately 6.6% of CTP BPV #2 is 85% open which correlates to approximately 7.3% of CTP BPV #3 is 90% open which correlates to approximately 7.9% of CTP BPV #4 is 95% open which correlates to approximately 8.2% of CTP House Loads 1% (given) Total CTP is approximately 31.0		S / U

VERIFY APRM READINGS GT POWER EXTRAPOLATED FROM
BYPASS VALVE POSITION (PPM 3.1.2)

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	2		Compares calculated Total CTP (~31%) to the given APRM reading of 29% and determines that APRM indicated power levels are NOT greater than extrapolated BPV power levels and checks the appropriate block on Attachment 7.1 (actual power levels are NOT greater than calculated power levels)		S / U *
Termination Criteria: Student hands Attachment 7.1 to examiner					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: It is determined that APRM readings are NOT greater than power level readings extrapolated from BPV positions and that block is checked on Attachment 7.1.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is in the process of starting up following a refueling outage.
Current plant conditions are:

- *APRMs are indicating 29% power*
- *Feedwater temperature is 147°F*
- *House Loads are equal to 1% Core Thermal Power*
- *BPV#1 is indicating 80 percent open*
- *BPV#2 is indicating 85 percent open*
- *BPV#3 is indicating 90 percent open*
- *BPV#4 is indicating 95 percent open*

Cue:

You have been directed by the CRS to perform step Q37 of PPM 3.1.2 "Verify the APRM readings are GT power level readings extrapolated from bypass valve position per Attachment 7.1".

Present the completed Attachment 7.1 to the examiner with the table of BPV vs. % CTP filled in and a check mark applied to the appropriate box indicating if APRM readings are or are not GT power level readings extrapolated from BPV position.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	ASSIGN OPERATORS TO CREW POSITIONS
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001767	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Chris Maxwell	DATE	10/02/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE
INSTRUCTIONAL REVIEW BY		DATE
APPROVED BY		DATE
	Operations Training Manager	

Verify materials current IAW SWP-TQS-01 prior to use

ASSIGN OPERATORS TO CREW POSITIONS
MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Ensure the candidate has access to a copy of PPM 1.3.1.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None
Safety Items: None
Task Number: RO-0559
Validation Time: 15 minutes
Alternate Path: N/A
Time Critical: No
PPM Reference: PPM 1.3.1 Rev.108
Location: Classroom/Simulator

NUREG 1123 Ref: 2.1.5 (RO 2.9)
Performance Method: Perform

Task Standard: Assign qualified operators to each crew position in accordance with PPM 1.3.1.

JPM CHECKLIST

INITIAL CONDITIONS:	Today is 3/11/12. You are the night shift Lead RO (CRO3) with the plant operating at 100% power. The following Equipment Operators have been assigned to this shift: - Rolland Kirby - Pete Latigo - Kevin Martin - Amy Parker
INITIATING CUE:	Assign operators to the required crew positions by writing the name of the individuals in the blanks provided on the JPM Answer Sheet. When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	3	Assign an operator to RWCR.	Rolland Kirby		S / U *
	4	Assign an operator to Rx/RW.	Kevin Martin		S / U *
	5	Assign an operator to TG.	Pete Latigo		S / U *
	6	Assign an operator to Outside.	Amy Parker		S / U *
	7	Assign an operator to FBT Leader.	Rolland Kirby		S / U *
	8	Assign an operator to FBT-EO.	Amy Parker		S / U *
	9	Assign two operators to 1st Responder.	Rolland Kirby and Amy Parker		S / U *
	10	Assign two operators to Safe S/D.	Pete Latigo and Kevin Martin		S / U *

Termination Criteria: Candidate hands in the completed JPM Answer Sheet.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Transfer the following to the "Results of JPM" page: Any Unsat step(s) and JPM completion time.					

JPM RESULTS:
ASSIGN OPERATORS TO CREW POSITIONS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Assign qualified operators to each crew position in accordance with PPM 1.3.1.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Today is 3/11/12. You are the night shift Lead RO (CRO3) with the plant operating at 100% power.

The following Equipment Operators have been assigned to this shift:

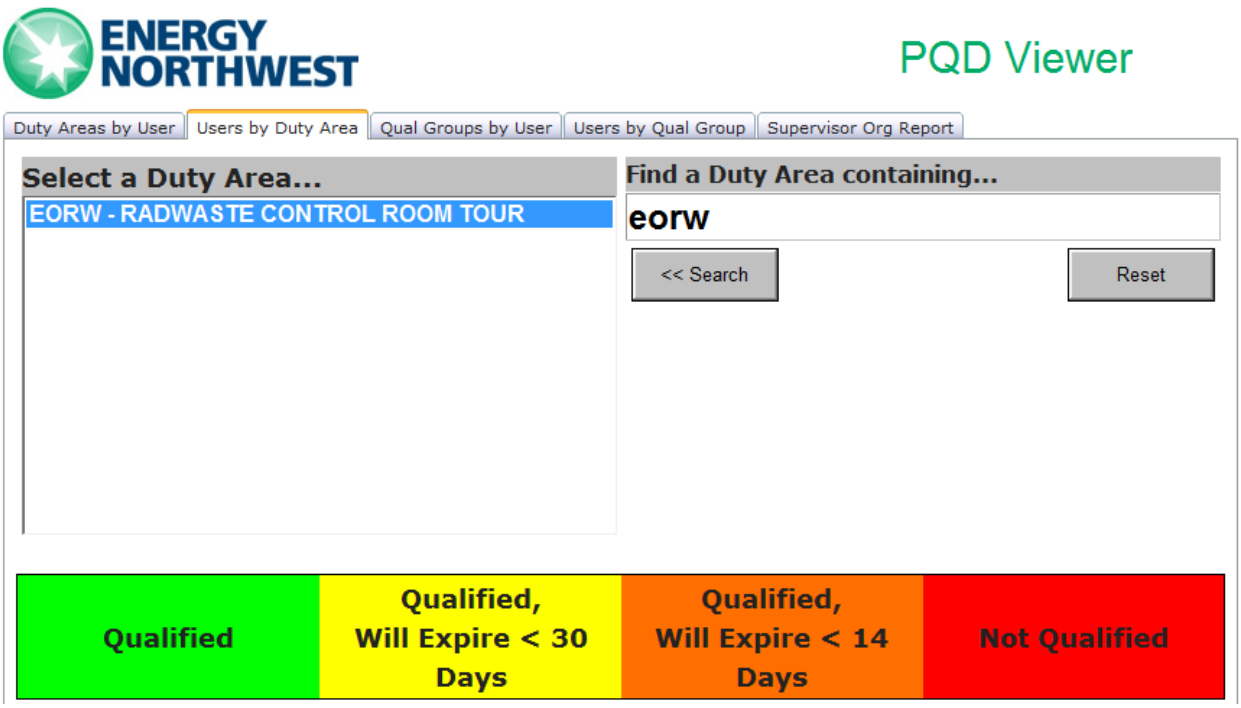
- Rolland Kirby
- Pete Latigo
- Kevin Martin
- Amy Parker

Initiating Cue:

Assign operators to the required crew positions by writing the name of the individuals in the blanks provided on the JPM Answer Sheet.

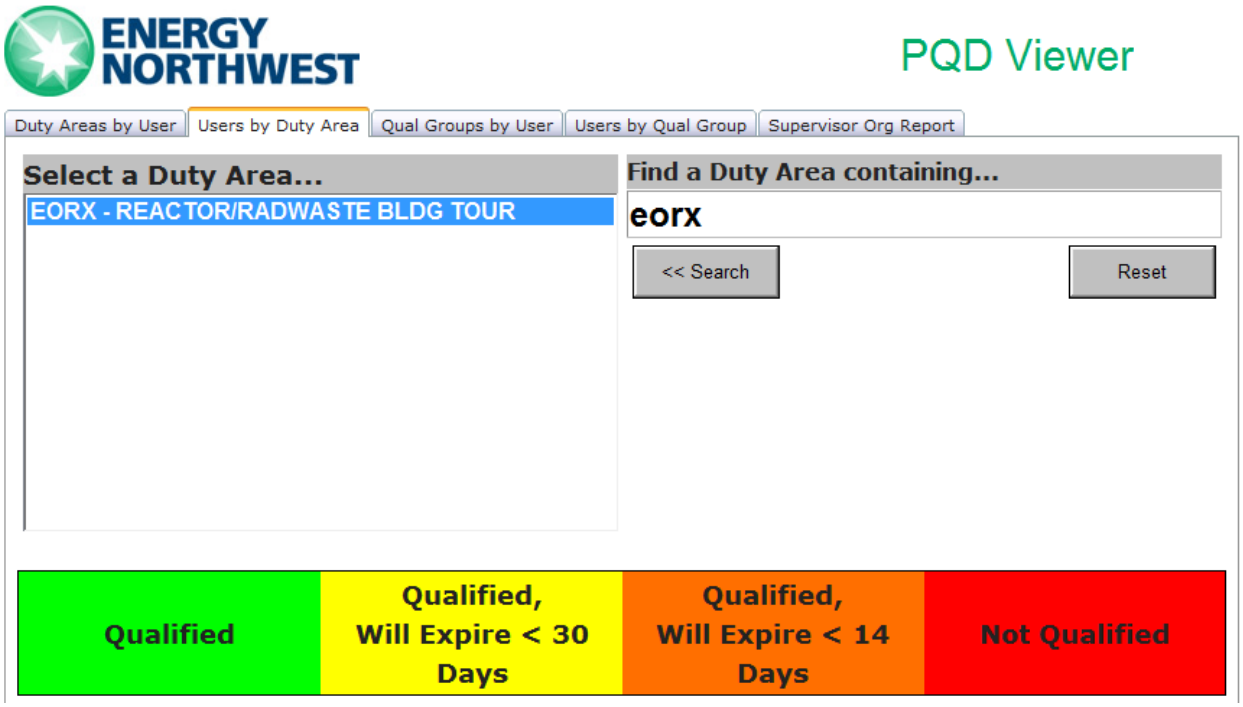
When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

RWCR	
Rx/RW	
TG	
Outside	
FBT Leader	
FBT-EO	
1st Responder (2)	
Safe S/D (2)	

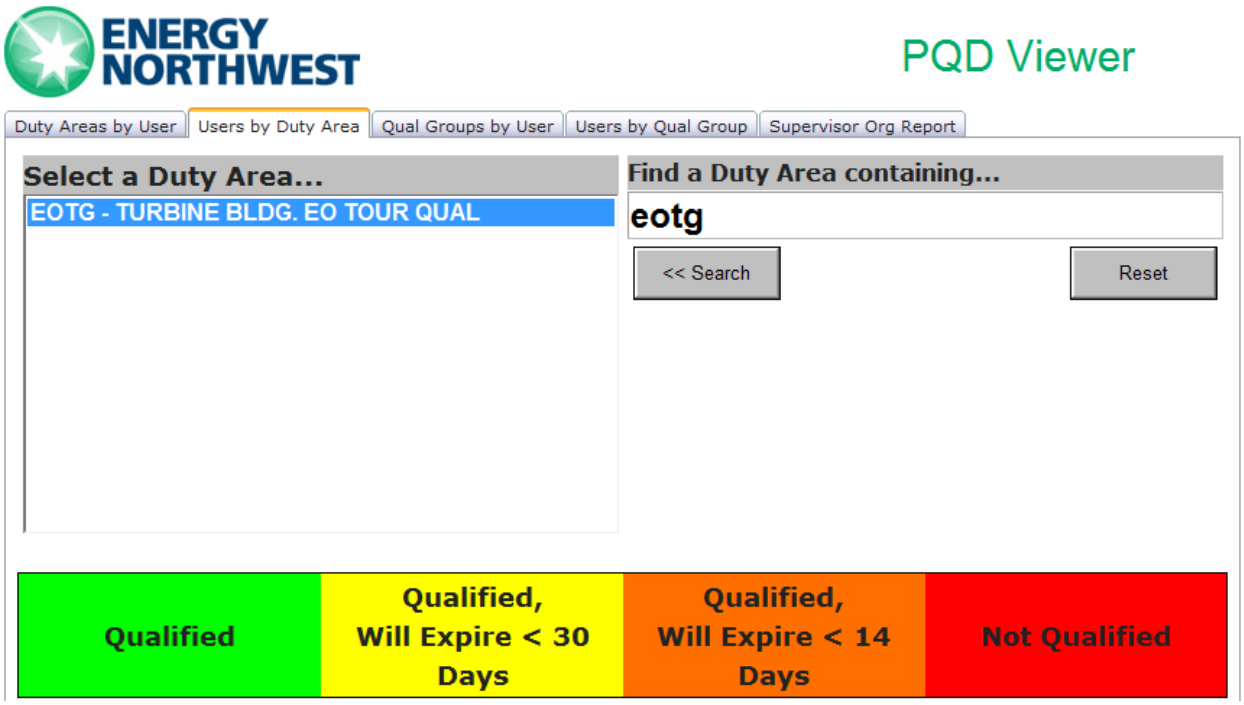


Qualified Individuals

	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORW	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			N	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13

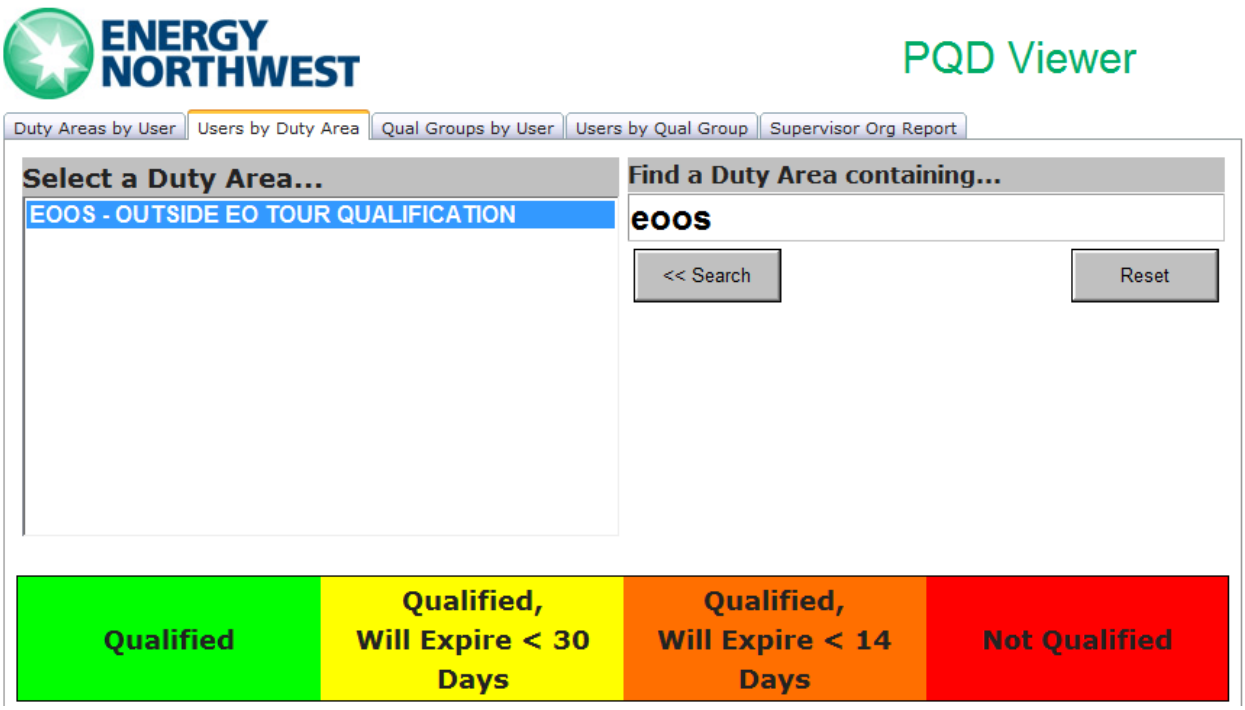


Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORX	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

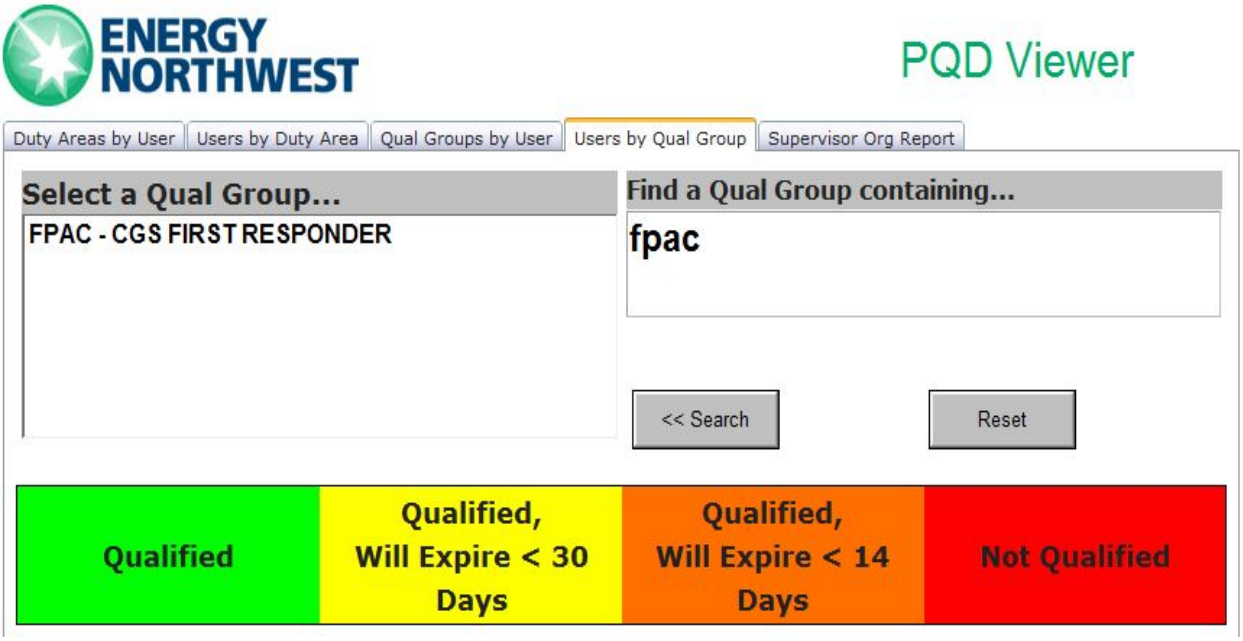


Qualified Individuals

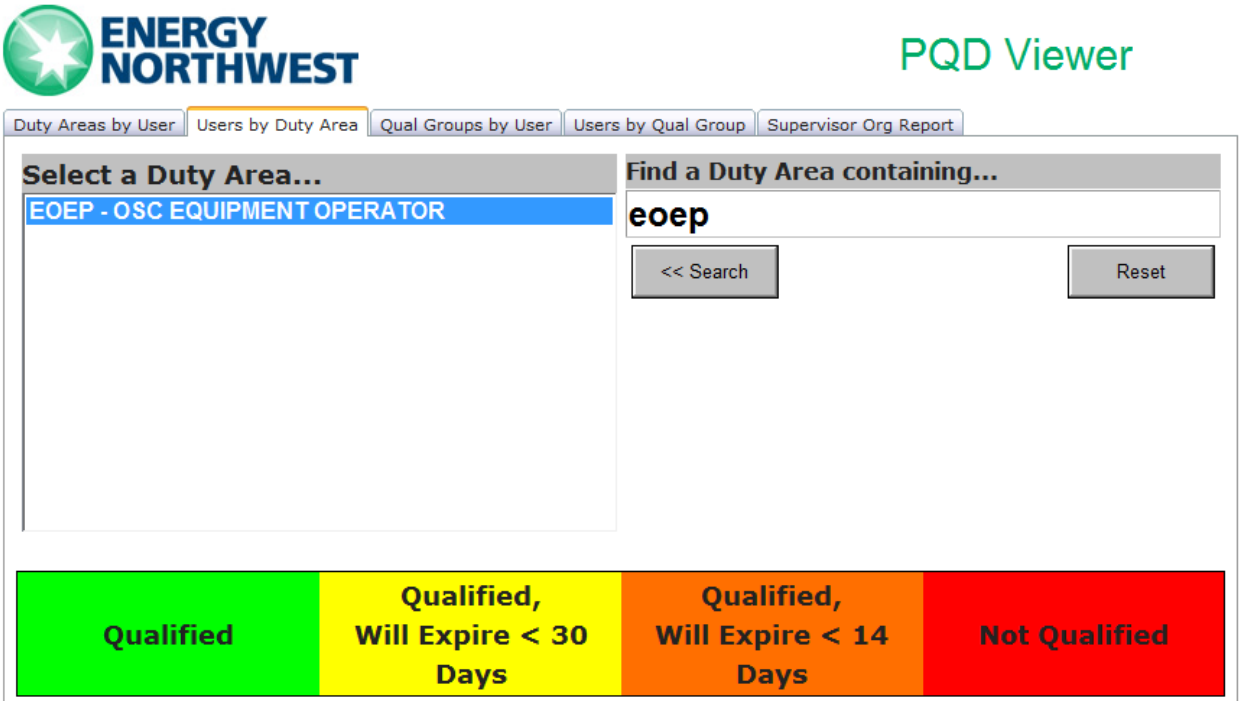
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOTG	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



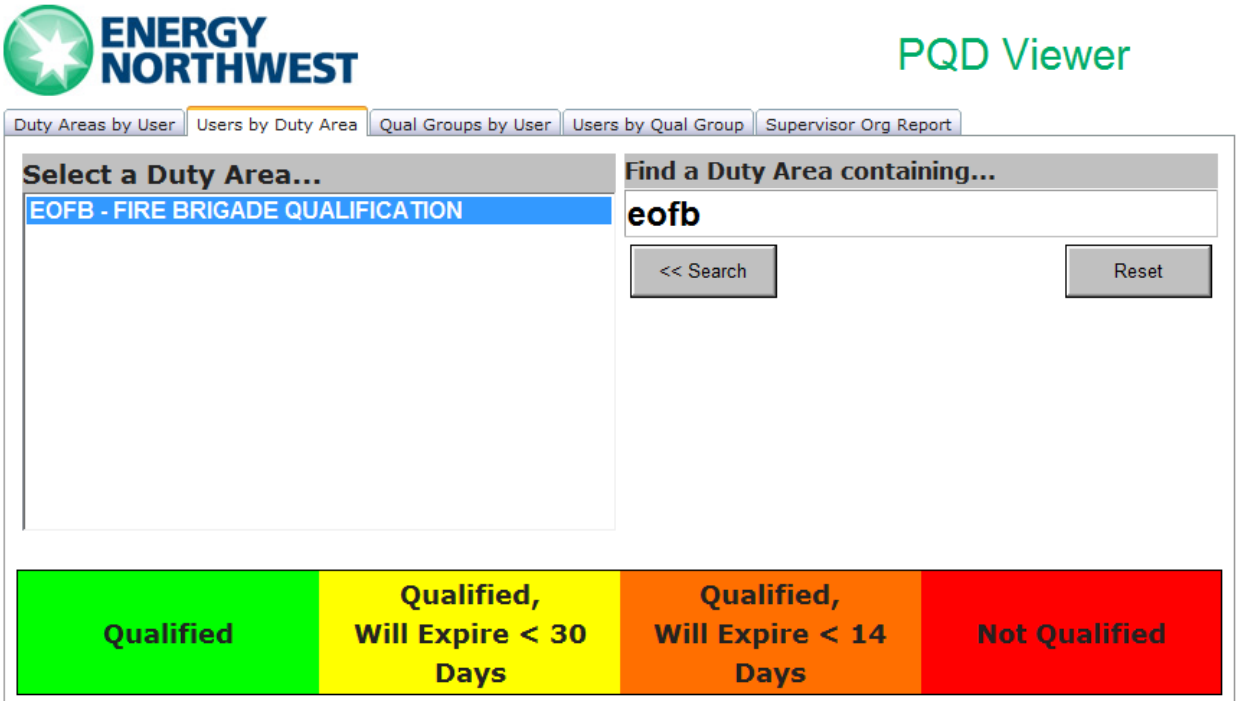
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOOS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



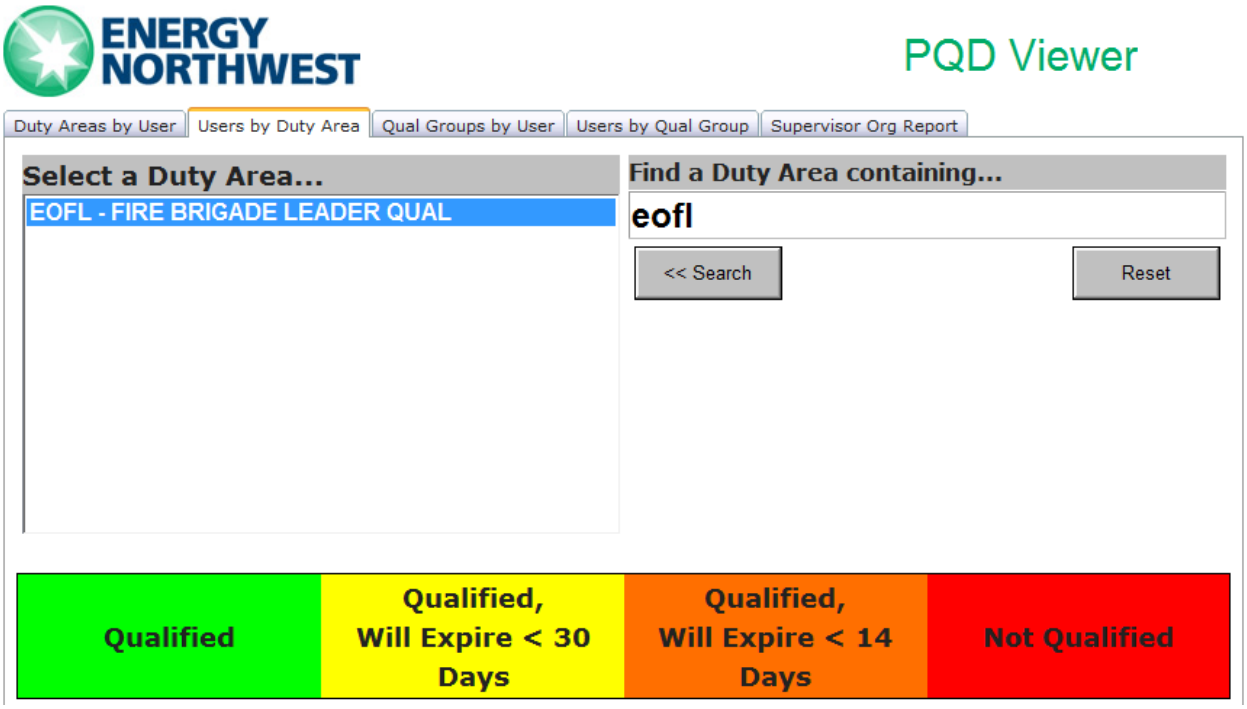
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	FPAC	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



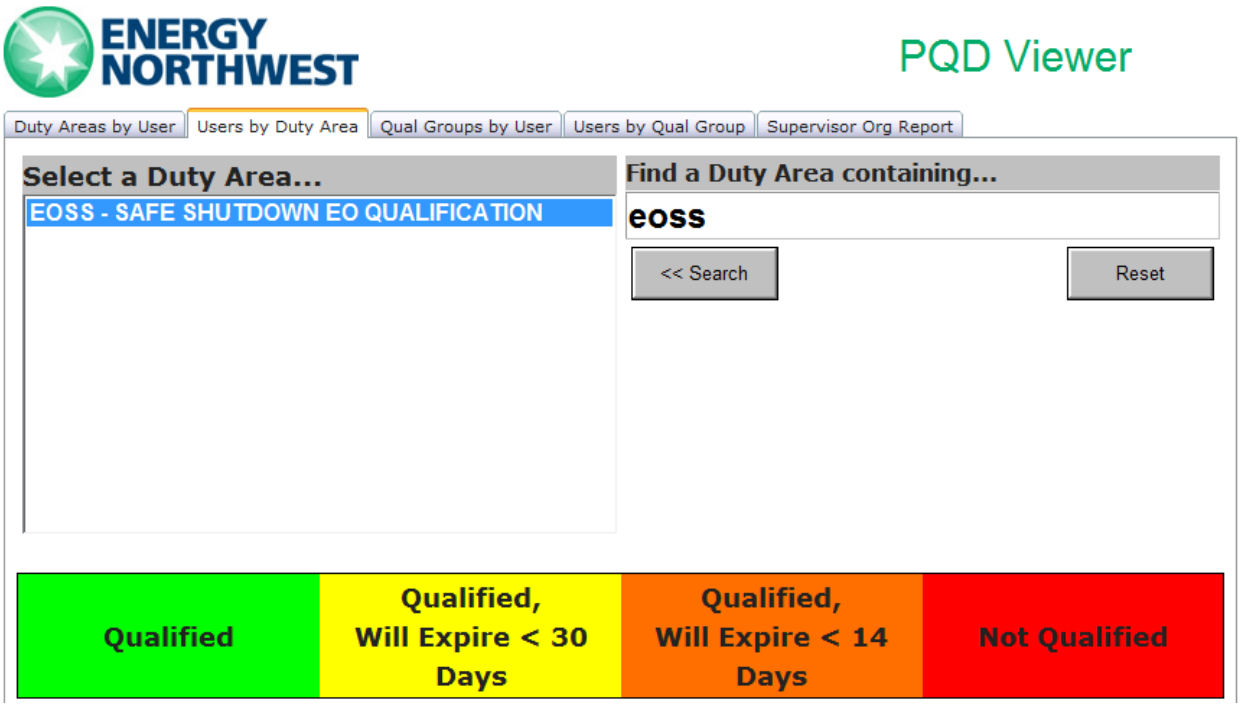
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOEP	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFB	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFL	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			N	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOSS	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			N	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	EXPLAIN RHR-P-2C FAILURE TO START USING EWDS
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001768	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Chris Maxwell	DATE	10/02/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Ensure the candidate has access to the following EWDs:

- EWD-9E-006
- EWD-9E-097
- EWD-9E-098
- EWD-47E-007
- EWD-47E-007A
- EWD-46E-107A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0573

Validation Time: 15 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: None

Location: Classroom/Simulator

NUREG 1123 Ref: 2.2.41 (RO 3.5)

Performance Method: Perform

Task Standard: Identify that RHR-P-2C will not start using the ARM and DEPRESS pushbutton while powered from E-TR-S with no LOCA signal present.

JPM CHECKLIST

INITIAL CONDITIONS:	The MODE Switch was just been placed in Startup/Hot Standby in preparation for control rod withdrawal. A Condensate piping rupture in the Turbine Building caused a loss of Condensate and lowering RPV water level. The CRS directed RHR-P-2C to be started for injection using the ARM and DEPRESS pushbutton. RHR-P-2C was in a normal standby lineup, and did not start when armed and depressed with RPV water level at -20".
INITIATING CUE:	Using EWD-9E-006, explain why RHR-P-2C did not start when armed and depressed. Include the EPN(s) of any contacts in the RHR-P-2C circuit breaker logic that prevented the pump start. When you have completed the explanation, return all JPM materials to your examiner.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	11	Identify E-RLY-RHRB/RHRC/2 contact 7-8 is open while RHR-P-2C is powered from E-TR-S.	"E-RLY-RHRB/RHRC/2 contact 7-8 is open while RHR-P-2C is powered from E-TR-S", or words to that affect included in the explanation. Note: Equivalent language to "RHR-P-2C is powered from E-TR-S" includes, but is not limited to the following: - SM-8 is powered from E-TR-S - E-CB-S/3, E-CB-3/8, and E-CB-8/3 are closed - RHR-P-2C is powered by the Startup Transformer		S / U *
	12	Identify E-RLY-RHRC/62/2 contact 1-5 is open when no F or A signal (LOCA signal) exists.	"E-RLY-RHRC/62/2 contact 1-5 is open when no F or A signal (LOCA signal) exists", or words to that affect included in the explanation.		S / U *
Termination Criteria: Candidate hands in the completed explanation.					

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Transfer the following to the "Results of JPM" page: Any Unsat step(s) and JPM completion time.					

JPM RESULTS:
EXPLAIN RHR-P-2C FAILURE TO START USING EWDS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Identify that RHR-P-2C will not start using the ARM and DEPRESS pushbutton while powered from E-TR-S with no LOCA signal present.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The MODE Switch was just been placed in Startup/Hot Standby in preparation for control rod withdrawal.

A Condensate piping rupture in the Turbine Building caused a loss of Condensate and lowering RPV water level.

The CRS directed RHR-P-2C to be started for injection using the ARM and DEPRESS pushbutton.

RHR-P-2C was in a normal standby lineup, and did not start when armed and depressed with RPV water level at -20".

Initiating Cue:

Using EWD-9E-006, explain why RHR-P-2C did not start when armed and depressed. Include the EPN(s) of any contacts in the RHR-P-2C circuit breaker logic that prevented the pump start.

When you have completed the explanation, return all JPM materials to your examiner.

RHR-P-2C did not start when armed and depressed because: _____

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE MINIMUM AND MAXIMUM STAY TIMES (ADMIN)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
JPM PQD Code	LO001632	Rev. No.	1
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 5/29/08

REVISED BY: Ron Hayden DATE: 12/06/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

APPROVED BY _____ DATE _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Each student should have access to a calculator.
Have a copy of the SWPs for student.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: Calculator

Safety Items: None

Task Number: RO-0022

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 11.2.7.1

Location: Classroom

NUREG 1123 Ref: 2.3.4 (3.2 / 3.7)

Performance Method: Perform

Task Standard: Fills in blanks on JPM Answer Sheet indicating that 0812 is the earliest time and 1000 is the latest time before exceeding Columbia's Administrative dose limit.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is operating in MODE 1 at full power. You have been selected to work with maintenance personnel on a valve located in contaminated zone in the South East corner of Reactor Building 422' by the R5 sump. Your accumulated dose for the year is 1800 mrem. The job will start at 0800.
INITIATING CUE:	Using the high and low values associated with the radiation field you will be working in, answer the two questions on the JPM Answer Sheet provided. When completed, hand the sheet to the examiner.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
	Determines R5 sump location on Survey Map	Refers to RWP and determines the valve is in a High Radiation Area.	S / U
	Calculates remaining dose to achieve admin dose limit in a high radiation area.	High Radiation Area radiation levels are 100 mrem/hr to 1000 mrem/hr.	S / U
		The Administrative dose limit at Columbia is 2 Rem (2000 mrem).	S / U
		2000 – 1800 = 200 mrem to reach the Administrative dose limit.	S / U
	Calculates minimum time to exceeding admin dose limit.	Question #1 – The minimum time to get 200 mrem in a 1000 mrem area is $1/5^{th}$ of an hour which is 12 minutes. Start time is 0800, therefore you could exceed your admin dose limit at 0812 (accept 0811 to 0814).	S / U *
	Calculates maximum time to exceeding admin dose limit.	Question #2 – The maximum time to get 200 mrem (at 100 mrem/hr) would be 2 hours. Start time is 0800 therefore the maximum stay time is until 1000 (accept 0955 to 1005).	S / U *
Termination Criteria: Student hands the completed form to the examiner.			
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

RESULTS OF JPM:
DETERMINE MINIMUM AND MAXIMUM STAY TIMES

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: Fills in blanks on JPM Answer Sheet indicating that 0812 is the earliest time and 1000 is the latest time before exceeding Columbia's Administrative dose limit.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is operating in MODE 1 at full power.

You have been selected to work with maintenance personnel on a valve located in the contamination zone in the South East corner of Reactor Building 422' by the R5 sump.

Your accumulated dose for the year is 1800 mrem.

The job will start at 0800.

Cue:

Using the high and low values associated with the radiation field you will be working in, answer the two questions on the JPM Answer Sheet provided.

When completed, hand the sheet to the examiner.

JPM ANSWER SHEET

Use the HIGH and LOW values associated with the radiation field you will be working in to answer the following two questions:

If the job starts at 0800….

1. …what time represents the earliest time that you could exceed Columbia's Administrative dose limit?

_____

2. …what time represents the latest time that you could stay in the area and still not exceed Columbia's Administrative dose limit?

_____

When completed, hand this sheet to the examiner.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: DETERMINE IF MODE CHANGE IS ALLOWED (ADMIN)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code	LO001633	Rev. No. 1
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 06/23/08

REVISED BY: Ron Hayden DATE: 09/20/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

APPROVED BY _____ DATE _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

DETERMINE IF MODE CHANGE IS ALLOWED

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N / A

Special Setup Instructions:

Need a copy of PPM 3.1.2 Startup Flow Chart Page 1.
Need a copy of current Technical Specifications and Bases.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: N/A

Safety Items: N/A

Task Number: SRO-0116

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: TS 3.8.1 and PPM 3.1.2 Rev. 76

Location: Classroom / Simulator

NUREG 1123 Ref: 2.1.20 4.6 / 4.6

Performance Method: Perform

Task Standard: The JPM answer sheet is filled out indicating that a mode change is NOT allowed due to HPCS-P-2 being out of service**.**

DETERMINE IF MODE CHANGE IS ALLOWED
JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is operating in MODE 4. A startup is underway following a short maintenance outage. The following conditions exist: • SRMs have normal indications and recorder speed has been raised to fast speed • All IRM indications are normal on Range 1 except IRM-A which has an upscale trip and is bypassed and recorder speed has been raised to fast speed • The Minimum and Maximum ECPs have been entered on the Control Rod Sequence Pull Sheet in the Control Room • A complete set of PPM 3.1.10 readings have been taken • OSP-INST-H101s have been completed and satisfied to enter MODE 2 • The Barrier Impairment Log has no MODE change limiting conditions • The Surveillance in Progress Log shows no MODE change limiting conditions • The LCO/INOP/RFO Log shows no limiting conditions for a MODE change • HPCS-P-2 is out of service for motor oil replacement • All surveillances are completed and up to date • There are 3 inoperable control rods that are disarmed at position 00 • A panel walk down has been completed • Offgas system warmup is in progress per SOP-OG-START • All ECCS systems are in a standby lineup • RRC-P-1A and RRC-P-1B are operating at 15 hz. • Containment was de-inerted • A risk assessment has been completed which established risk management actions for the following Out Of Service equipment: o Remote Shutdown Panel Power Transfer Switch associated with MS-RV-4A, MS-RV-4B, and MS-RV-4C o Lower Drywell Spray Outboard Isolation Valve, RHR-V-16B
INITIATING CUE:	A mode change to MODE 2 is planned. Determine if the change to MODE 2 is allowed. Notify the Shift Manager of your determination by filling in your justification for allowing or not allowing the planned change to MODE 2 on the JPM answer sheet provided.

DETERMINE IF MODE CHANGE IS ALLOWED

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
	Review PPM 3.1.2, Startup flow chart	Notes HPCS-P-2 being OOS inops the HPCS DG.	S / U *
	Review PPM 3.1.2, Startup flow chart	Reviews Tech Spec 3.8.1 and determines that LCO B is applicable which requires HPCS DG to be restored to operable status in 72 hours. Observes the NOTE associated with Tech Spec 3.8.1 which states "LCO 3.0.4.b is not applicable to DGs". Determines that a Mode change is NOT allowed and fills out this reason on the JPM answer sheet provided.	S / U *
Termination Criteria: Student hands filled out the JPM answer sheet and hands it to the examiner.			
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

DETERMINE IF MODE CHANGE IS ALLOWED
RESULTS OF JPM:

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The JPM answer sheet is filled out indicating that a mode change is NOT allowed due to HPCS-P-2 being out of service.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions*: Columbia is operating in MODE 4. A startup is underway following a short maintenance outage. The following conditions exist:*

- SRMs have normal indications and recorder speeds have been raised to fast speed
- All IRM indications are normal on Range 1 except IRM-A which has an upscale trip and is bypassed and recorder speed has been raised to fast speed
- The Minimum and Maximum ECPs have been entered on the Control Rod Sequence Pull Sheet in the Control Room
- A complete set of PPM 3.1.10 readings have been taken
- OSP-INST-H101s have been completed and satisfied to enter MODE 2
- The Barrier Impairment Log has no MODE change limiting conditions
- The Surveillance in Progress Log shows no MODE change limiting conditions
- The LCO/INOP/RFO Log shows no limiting conditions for a MODE change
- HPCS-P-2 is out of service for motor oil replacement
- All surveillances are completed and up to date
- There are 3 inoperable control rods that are disarmed at position 00
- A panel walk down has been completed
- Offgas system warmup is in progress per SOP-OG-START
- All ECCS systems are in a standby lineup
- RRC-P-1A and RRC-P-1B are operating at 15 hz.
- Containment was de-inerted
- A risk assessment has been completed which established risk management actions for the following Out Of Service equipment:
    - Remote Shutdown Panel Power Transfer Switch associated with MS-RV-4A, MS-RV-4B, and MS-RV-4C
    - Lower Drywell Spray Outboard Isolation Valve, RHR-V-16B

Cue:

A mode change to MODE 2 is planned.

Determine if the change to MODE 2 is allowed.

Notify the Shift Manager of your determination by filling in your justification for allowing or not allowing the planned change to MODE 2 on the JPM answer sheet provided.

A MODE CHANGE TO MODE 2 IS ALLOWED: _____

A MODE CHANGE TO MODE 2 IS NOT ALLOWED: _____

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	VERIFY ON-COMING CREW QUALIFICATIONS
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001769	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Chris Maxwell	DATE	10/02/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

VERIFY ON-COMING CREW QUALIFICATIONS

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Ensure the candidate has access to a copy of OI-54. Provide a copy of Attachment 8.8, Verifying Operator Qualifications.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0158

Validation Time: 15 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: OI-54 Rev.018

Location: Classroom/Simulator

NUREG 1123 Ref: 2.1.5 (SRO 3.9)

Performance Method: Perform

Task Standard: Determine none of the Equipment Operators for the oncoming crew are qualified Fire Brigade Leader (EOFL), and check the box for "The oncoming crew is not qualified to stand watch."

JPM CHECKLIST

INITIAL CONDITIONS:	Today is 3/11/12. You are the day shift CRS with the plant operating at 100% power. The following individuals have been assigned to cover the night shift starting 3/12/13: Shift Manager: Herb Hancock CRS: Paul Gregory STA: Christina Sanders EO: John Bailey, Pete Latigo, Jeremey Marquez, Amy Parker, Fred Smith RO: Pat Hughes, Ron McNair, Jeff Palmer
INITIATING CUE:	The Shift Manager directs you to verify the qualifications of the new crew starting night shift on 3/12/13 per OI-54. Determine if the oncoming crew is qualified to stand watch, and check the appropriate box on the JPM Answer Sheet. If the crew is qualified to stand watch, list the additional actions (if any) required to complete the qualification verification per OI-54. If the crew is not qualified to stand watch, list the reason(s) why. When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Determines none of the Equipment Operators assigned to the oncoming crew are qualified Fire Brigade Leader (EOFB).	On the JPM Answer Sheet, lists "no qualified Fire Brigade Leader (EOFB)" or words to that affect as the reason why the crew is not qualified to take the watch.		S / U*
	2	Determines the oncoming crew is not qualified to stand watch per OI-54.	Places a mark in the box next to "The oncoming crew is not qualified to stand watch" on the JPM Answer Sheet.		S / U *
Termination Criteria: Candidate hands in the completed JPM Answer Sheet.					
Transfer the following to the "Results of JPM" page: Any Unsat step(s) and JPM completion time.					

JPM RESULTS:
VERIFY ON-COMING CREW QUALIFICATIONS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Determine none of the Equipment Operators for the oncoming crew are qualified Fire Brigade Leader (EOFL), and check the box for "The oncoming crew is not qualified to stand watch."

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Today is 3/11/12. You are the day shift CRS with the plant operating at 100% power.

The following individuals have been assigned to cover the night shift starting 3/12/13:

Shift Manager	CRS	STA
Herb Hancock	Paul Gregory	Christina Sanders

EO	RO
John Bailey	Pat Hughes
Pete Latigo	Ron McNair
Jeremey Marquez	Jeff Palmer
Amy Parker	
Fred Smith	

Initiating Cue:

The Shift Manager directs you to verify the qualifications of the new crew starting night shift on 3/12/13 per OI-54.

Determine if the oncoming crew is qualified to stand watch, and check the appropriate box on the JPM Answer Sheet.

If the crew is qualified to stand watch, list the additional actions (if any) required to complete the qualification verification per OI-54.

If the crew is not qualified to stand watch, list the reason(s) why.

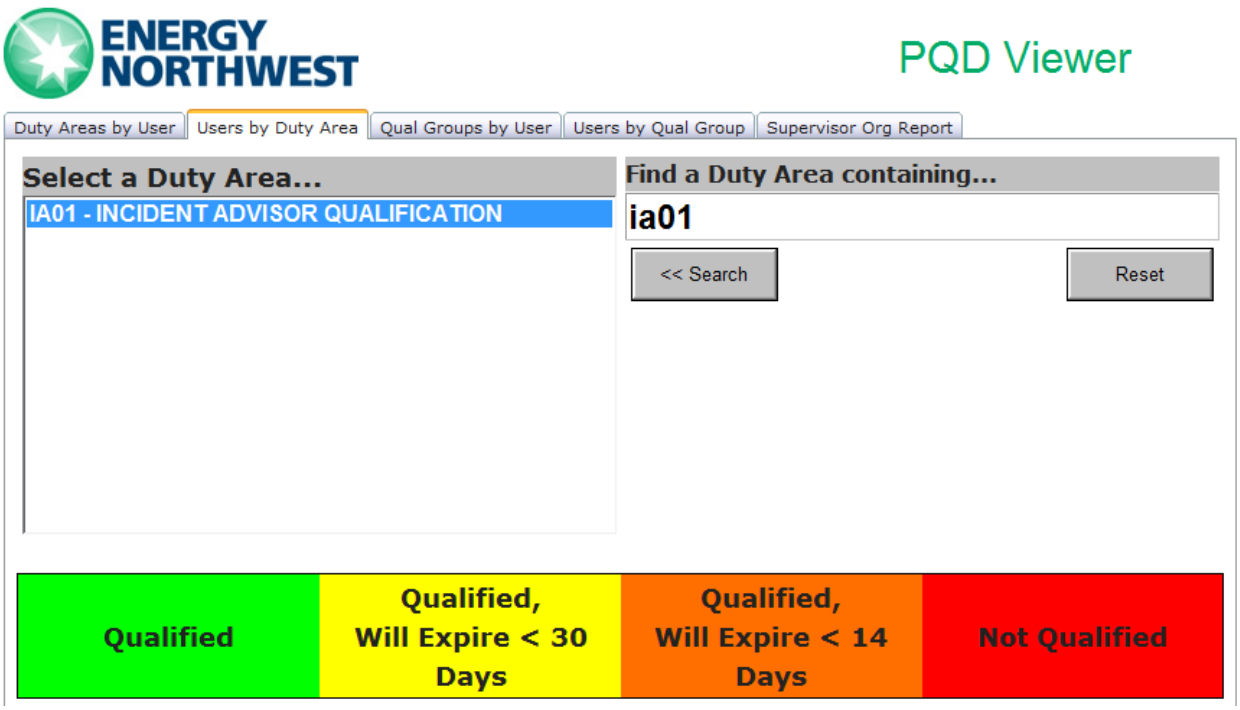
When you have completed the JPM Answer Sheet, return all JPM materials to your examiner.

☐ The oncoming crew is qualified to stand watch.

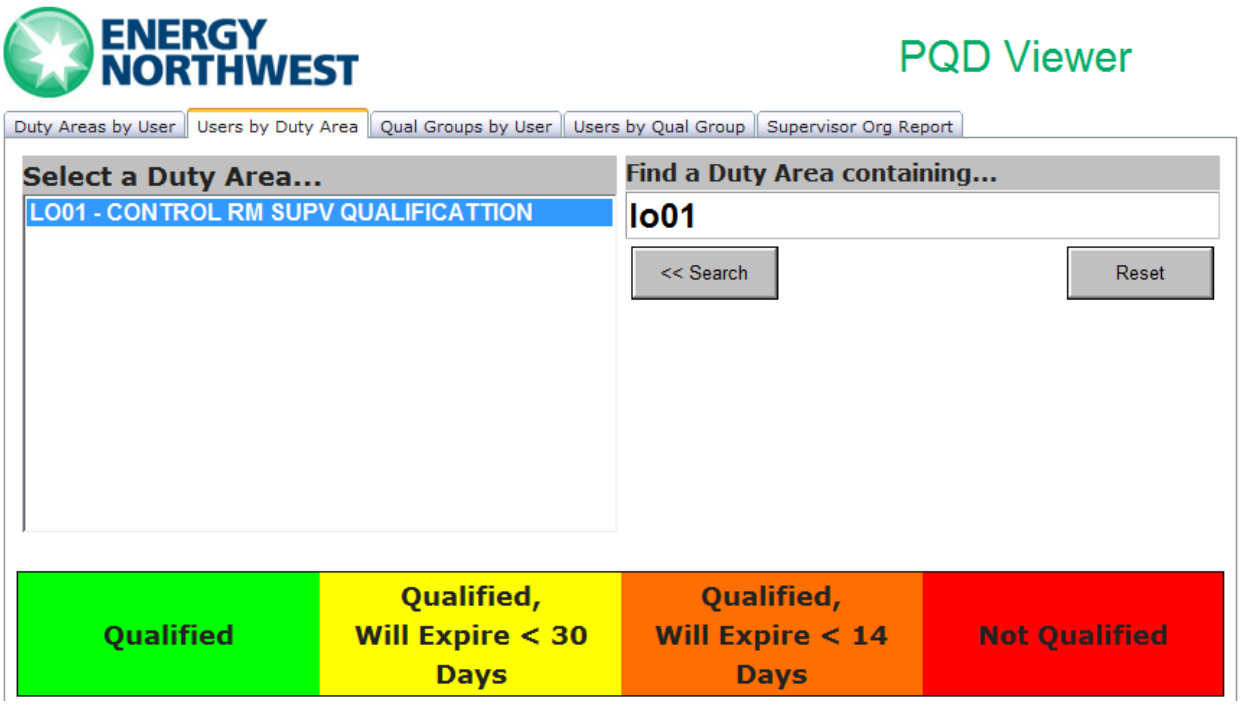
_____
_____
_____
_____
_____
_____
_____

☐ The oncoming crew is <u>not</u> qualified to stand watch.

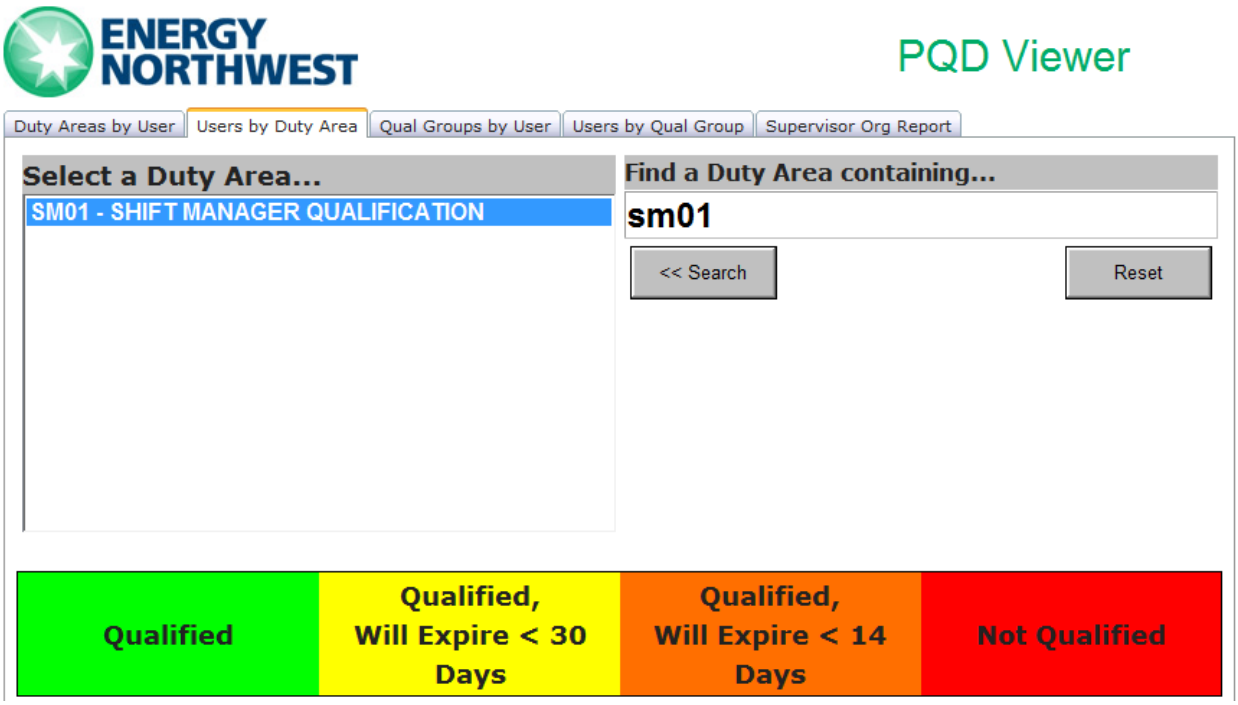
_____
_____
_____
_____
_____
_____
_____



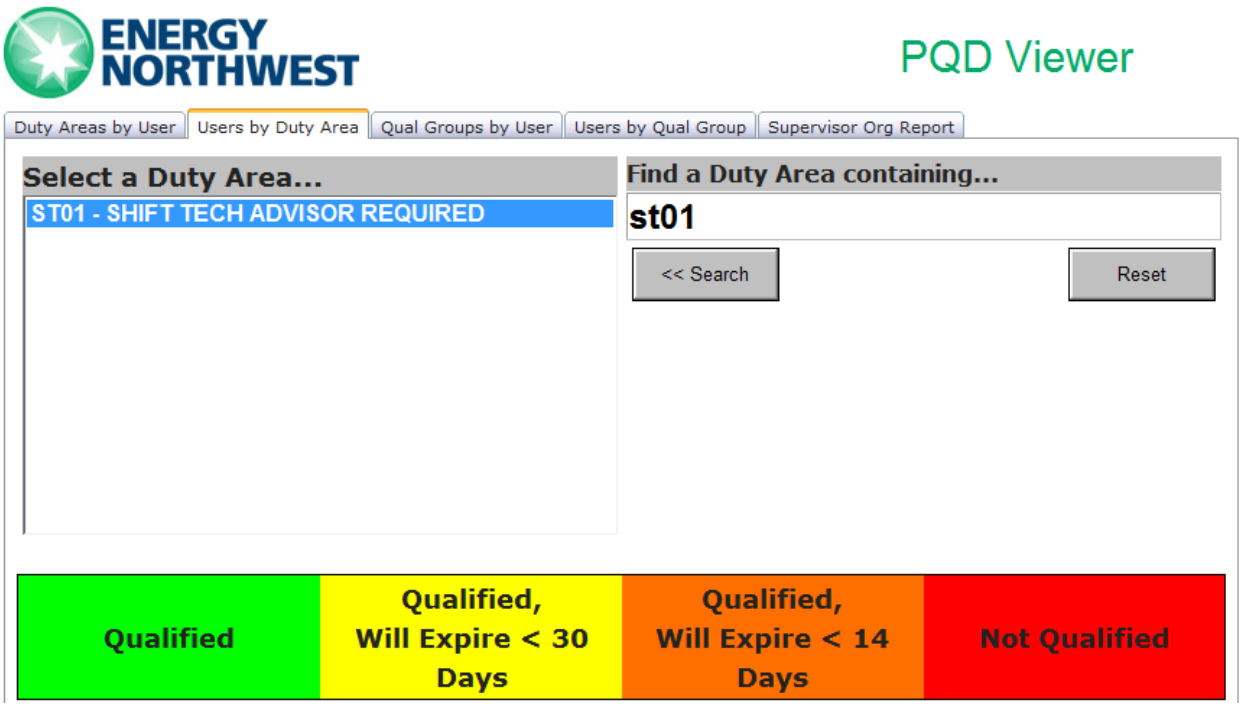
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	IA01	Y	ANDERSON, ROBERT A	12/31/13
2			N	GREGORY, PAUL T	3/15/13
3			Y	HANCOCK, HERB H	12/31/13
4			Y	KING, DARRIN S	12/31/13
5			N	LAPLACE, GENE W	12/31/13
6			N	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/31
9			Y	SANDERS, CHRISTINA D	12/31/13
10			Y	TATE, FRED G	3/31/13



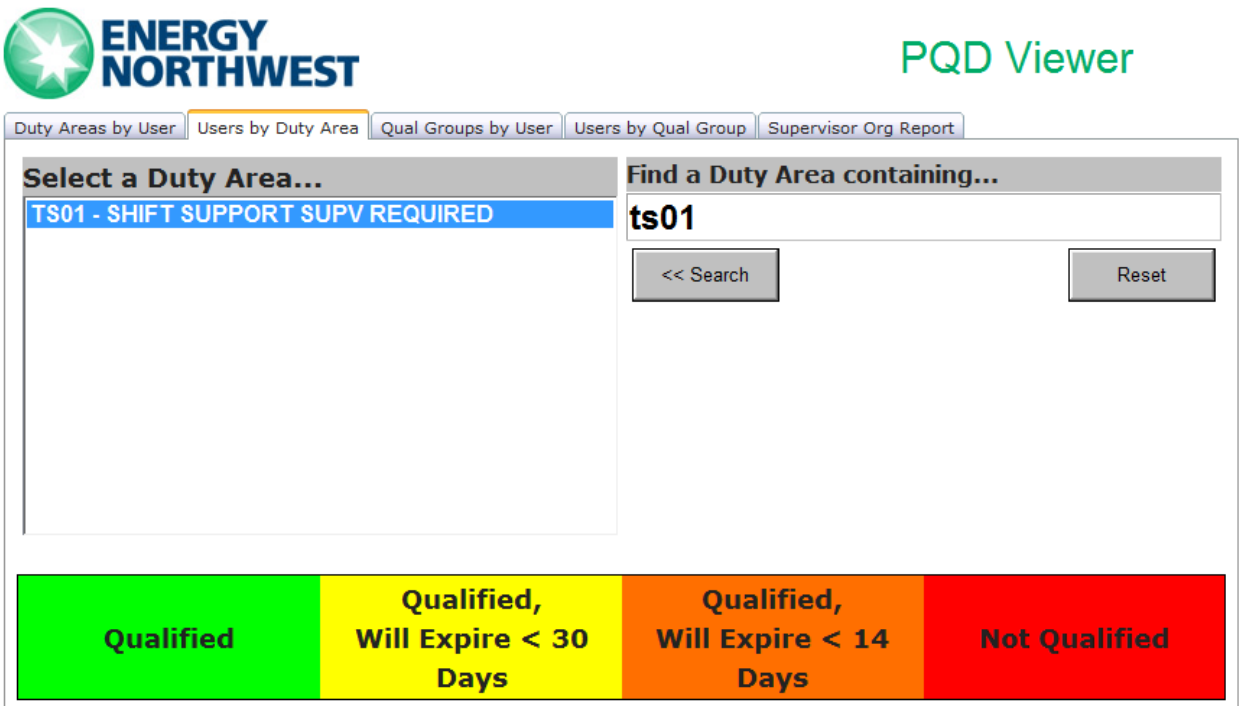
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	LO01	Y	ANDERSON, ROBERT A	12/31/13
2			Y	GREGORY, PAUL T	8/15/13
3			Y	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/31
9			Y	TATE, FRED G	3/31/13
10			Y	TURNER, RUSS R	12/31/13



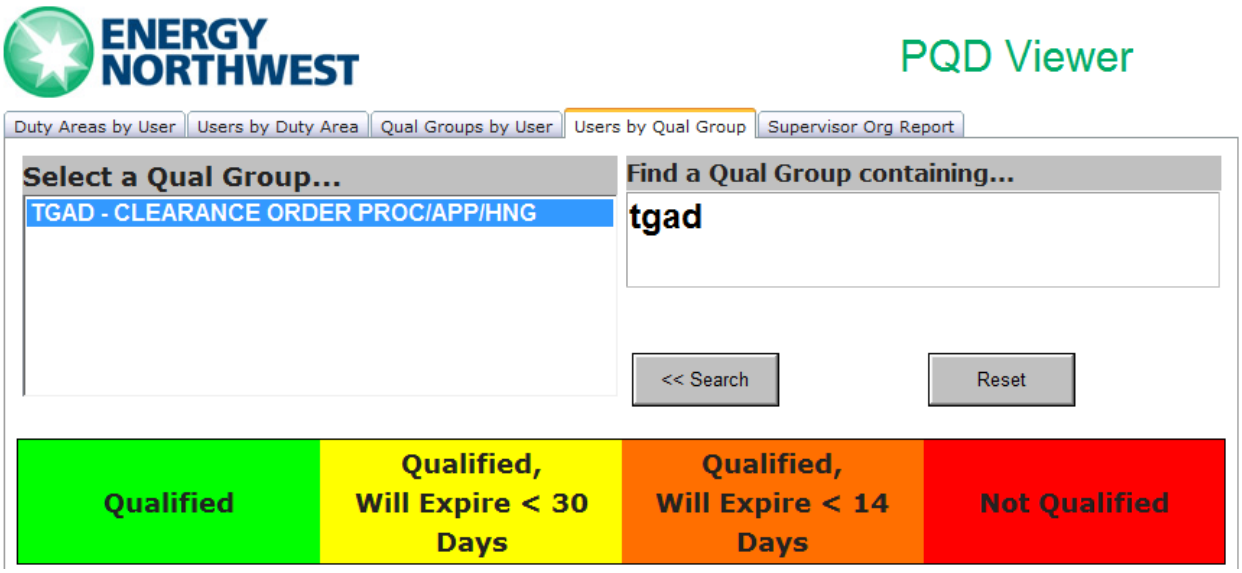
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	SM01	Y	ABNER, KEVIN S	12/31/13
2			Y	HANCOCK, HERB H	12/31/13
3			Y	HEART, DUSTIN T	3/31/13
4			Y	KELVIN, LYLE J	12/31/13
5			Y	KITTLES, DAWN B	12/31/13
6			Y	MUTH, JASON M	6/15/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SUMMERS, TOM S	8/15/31



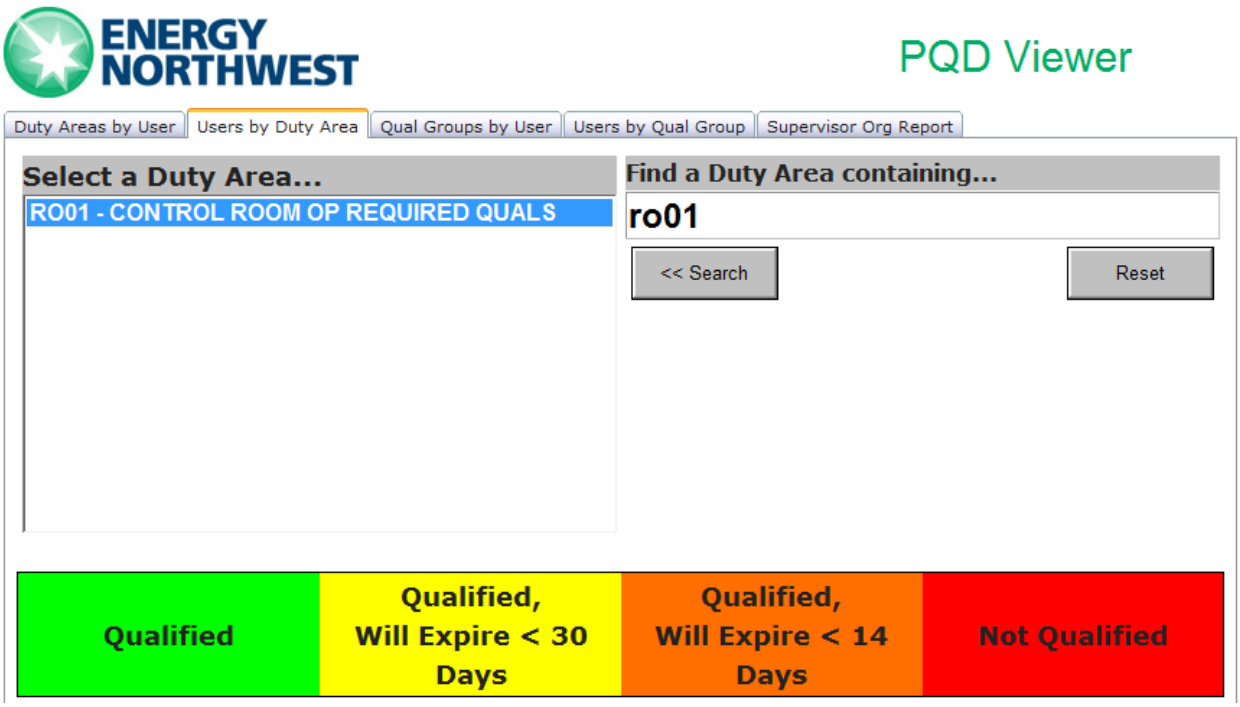
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	ST01	Y	ABNER, KEVIN S	12/31/13
2			Y	ANDERSON, ROBERT A	12/31/13
3			N	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SANDERS, CHRISTINA D	12/31/13
9			Y	SUMMERS, TOM S	8/15/31



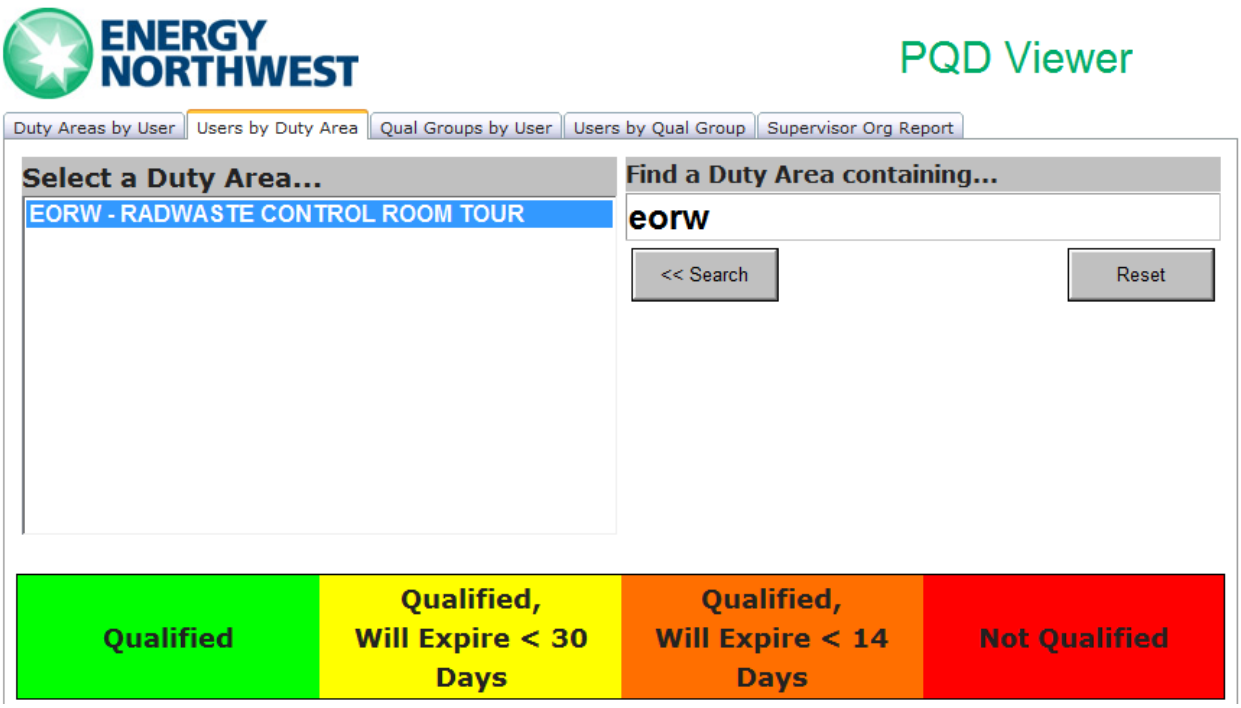
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TS01	Y	ANDERSON, ROBERT A	12/31/13
2			Y	GREGORY, PAUL T	5/15/13
3			Y	KING, DARRIN S	12/31/13
4			Y	LAPLACE, GENE W	12/31/13
5			Y	MARTEN, DOUG B	12/31/13
6			Y	PARK, CHAN H	12/31/13
7			Y	REED, JOHN R	5/31/13
8			Y	ROCKER, WILLIAM S	8/15/31
9			Y	TATE, FRED G	3/31/13
10			Y	TURNER, RUSS R	12/31/13



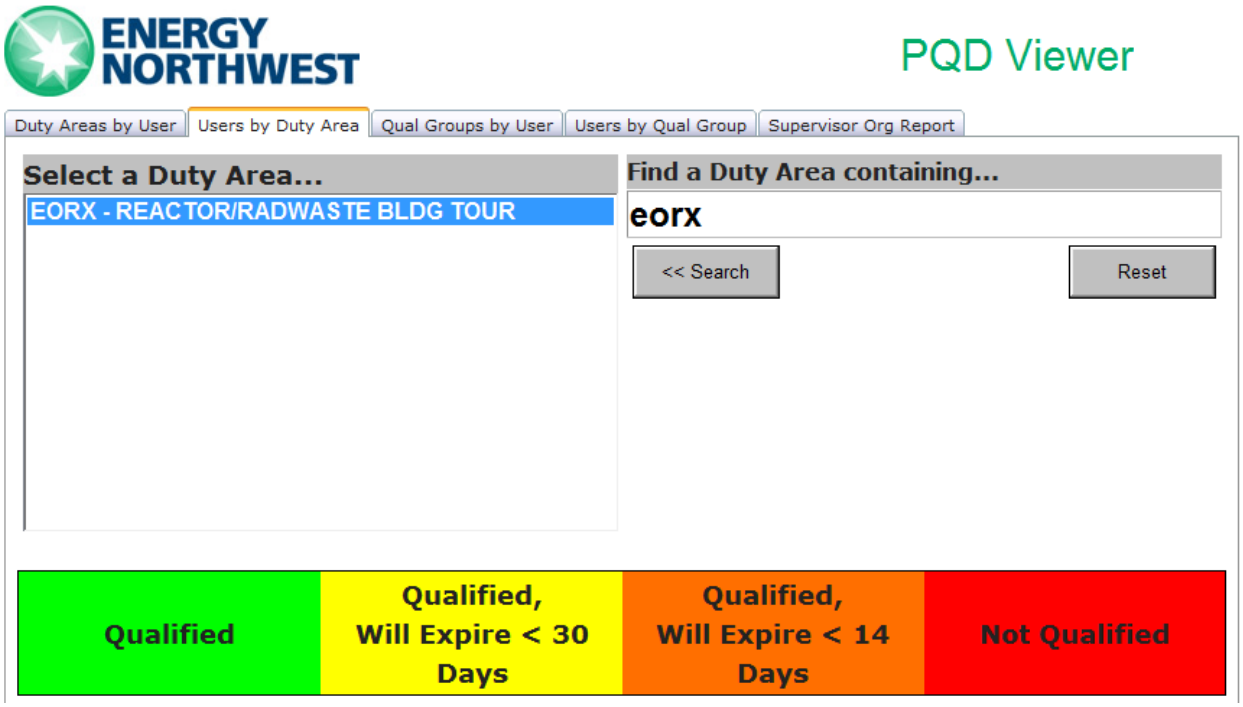
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TGAD	Y	ABNER, KEVIN S	12/31/13
2			Y	HANCOCK, HERB H	12/31/13
3			Y	HEART, DUSTIN T	3/31/13
4			Y	KELVIN, LYLE J	12/31/13
5			Y	KITTLES, DAWN B	12/31/13
6			Y	MUTH, JASON M	6/15/13
7			Y	ROYCE, GARY F	3/15/13
8			Y	SUMMERS, TOM S	8/15/31



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	RO01	Y	ALVAREZ, JASON L	12/31/13
2			Y	HARRIS, BYRON L	3/31/13
3			Y	HUGHES, PAT J	12/31/13
4			Y	JACKSON, HENRY N	10/31/13
5			Y	MCNAIR, RON S	12/31/13
6			Y	MULKY, PHLLIP P	12/31/13
7			Y	OLSON, DONALD B	3/15/31
8			Y	PALMER, JEFF D	12/31/13
9			Y	ROBERTS, JOHN T	12/31/13
10			Y	WRIGHT, STEVEN R	12/31/13

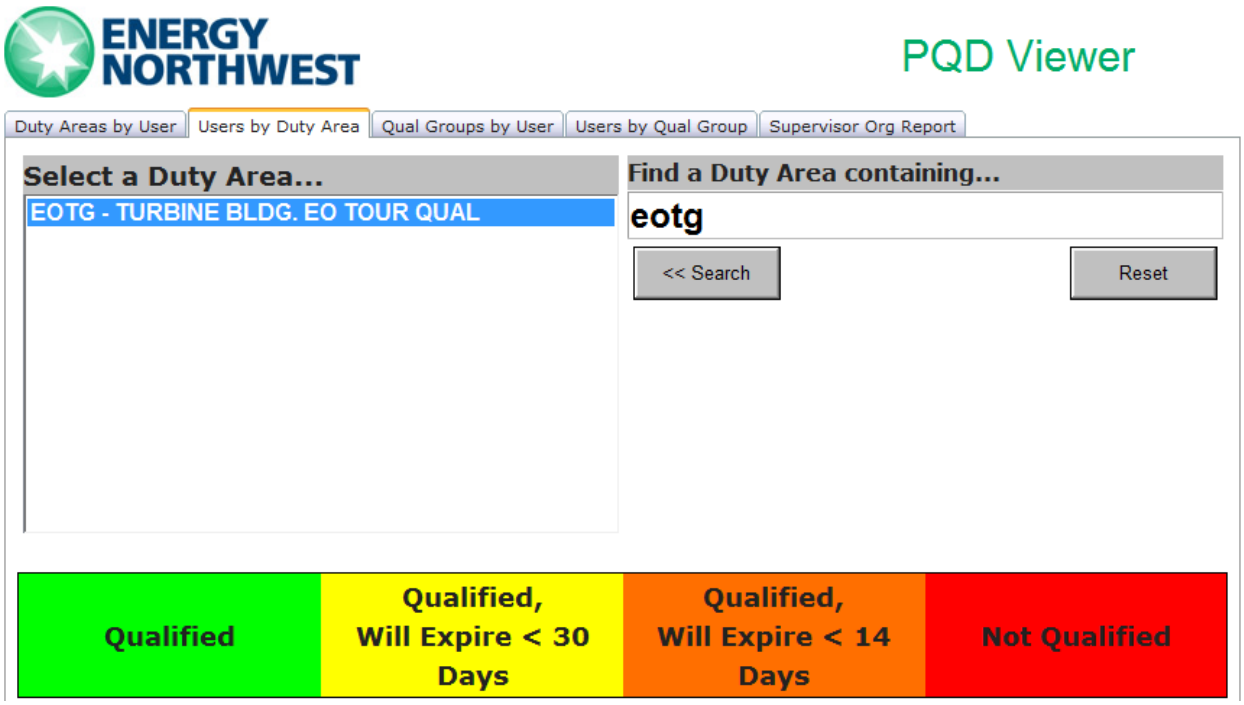


Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORW	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			N	SMITH, FRED P	12/31/13

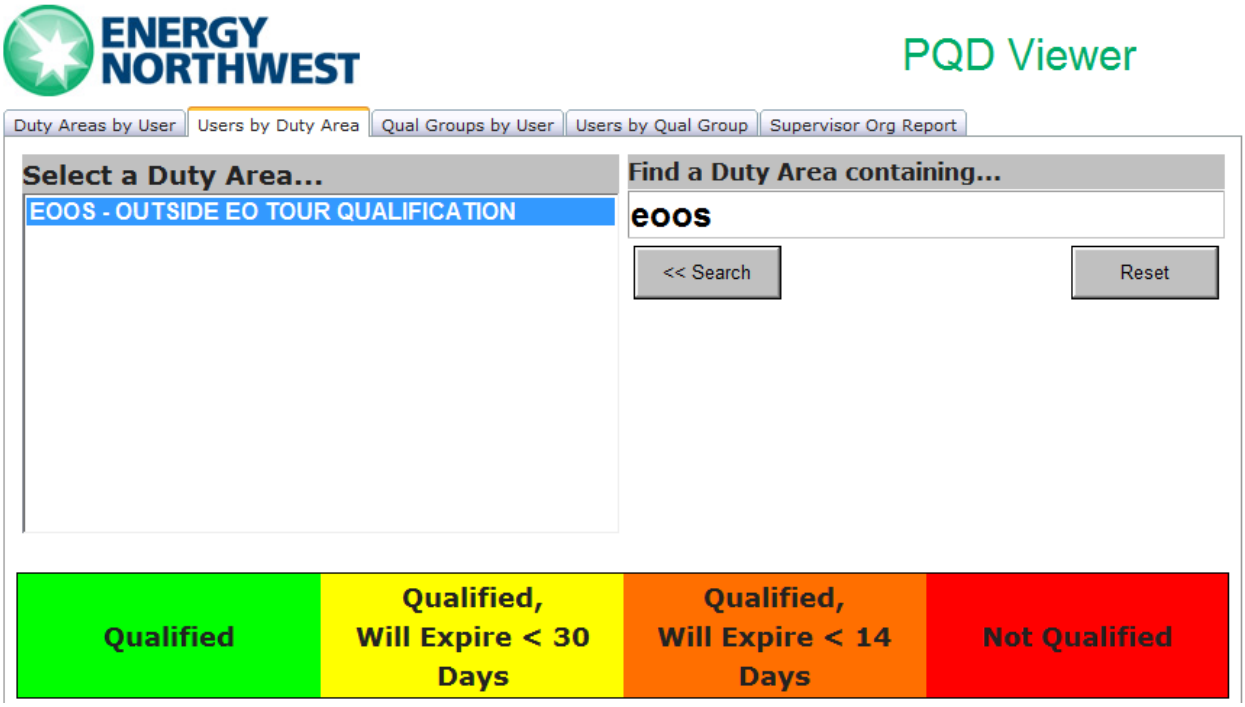


Qualified Individuals

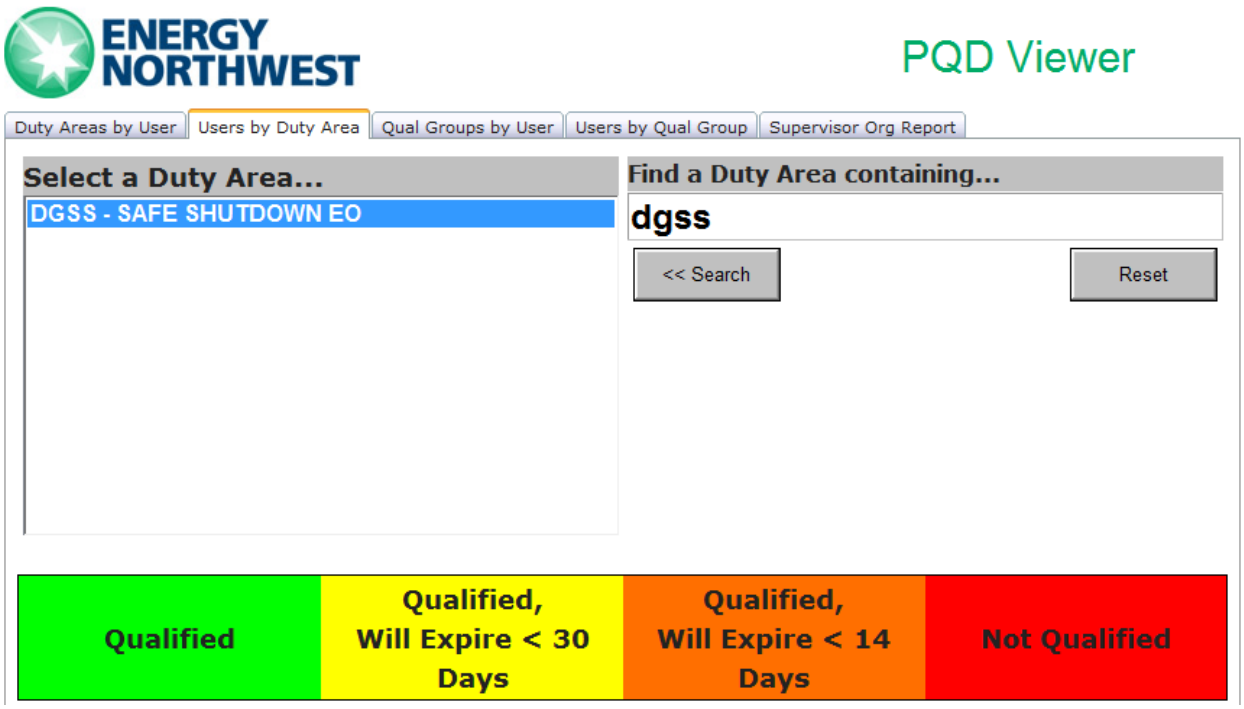
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EORX	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



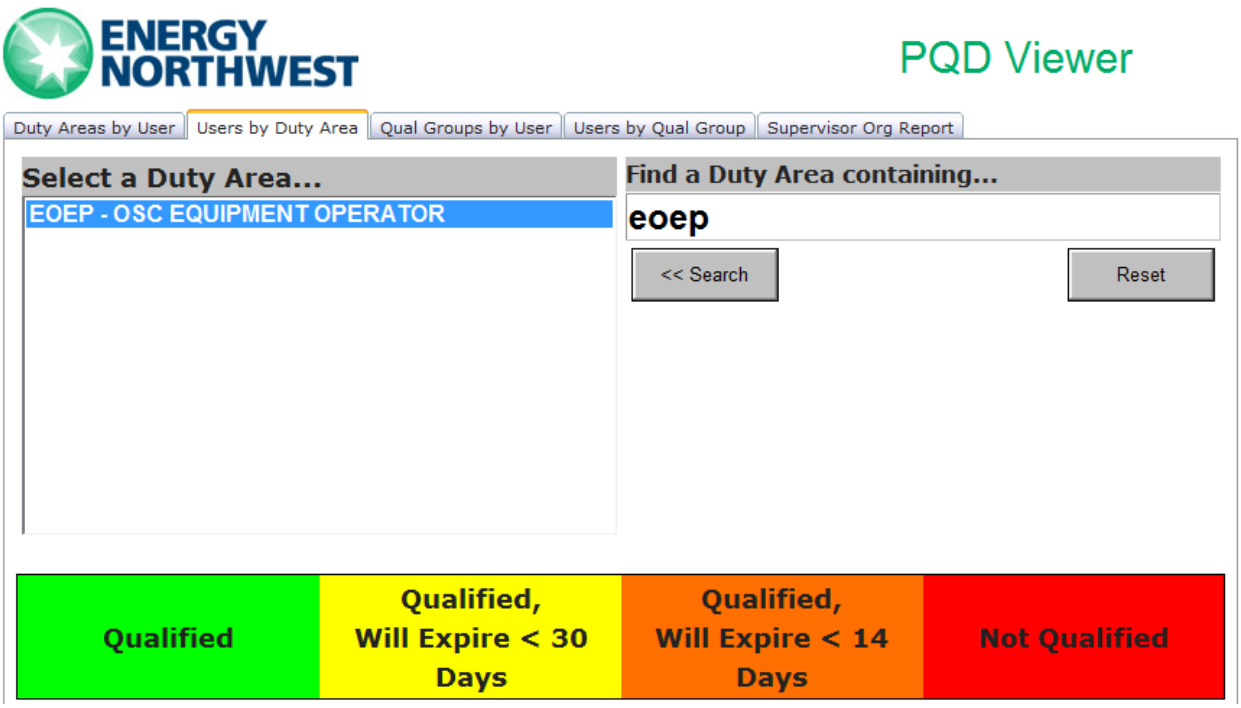
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOTG	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



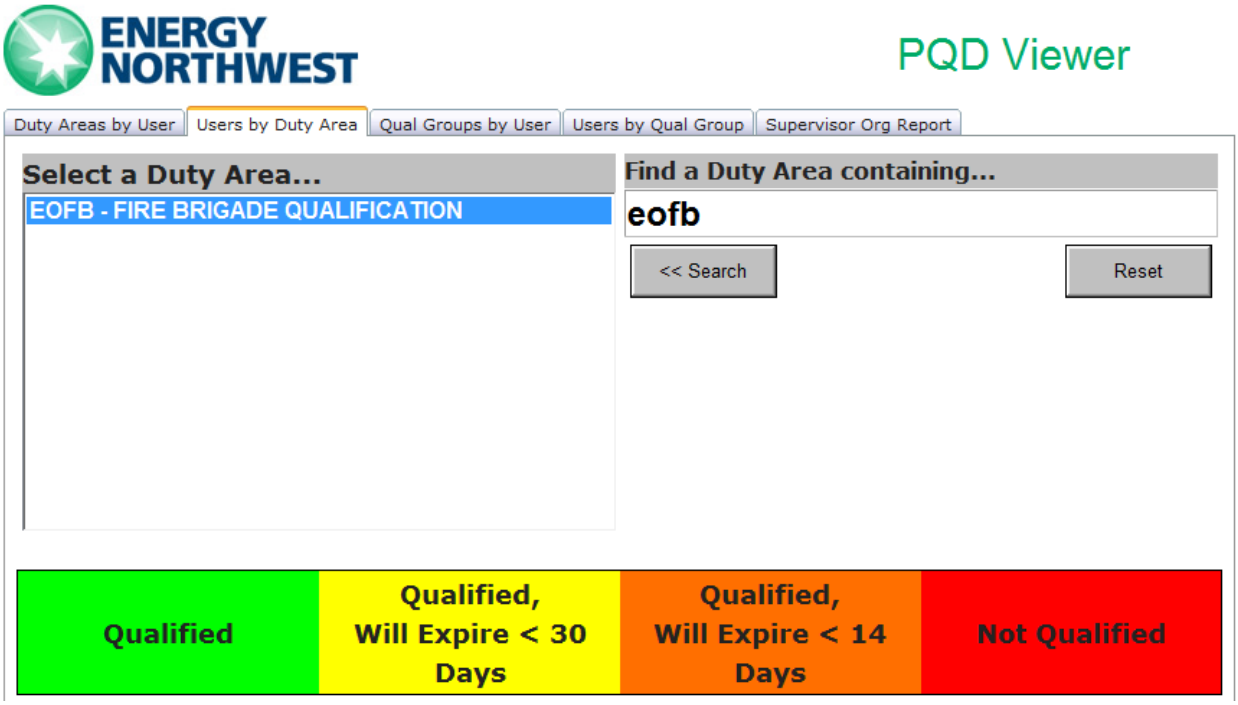
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOOS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



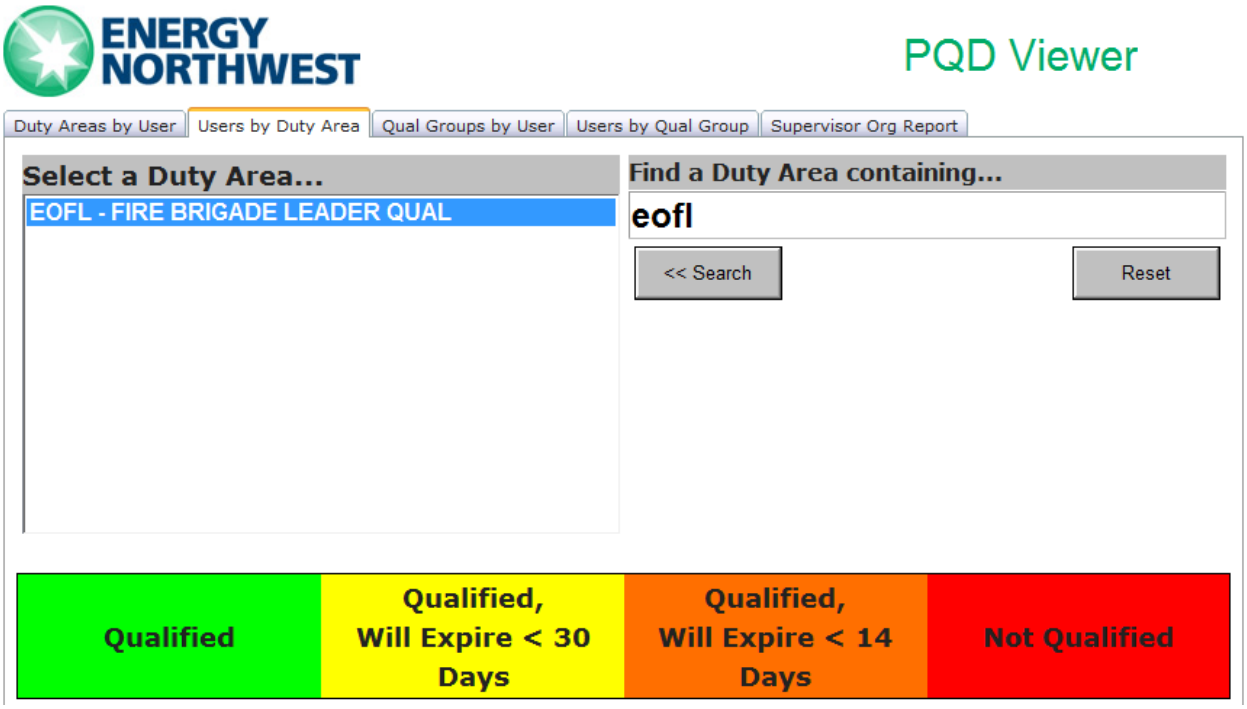
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	DGSS	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



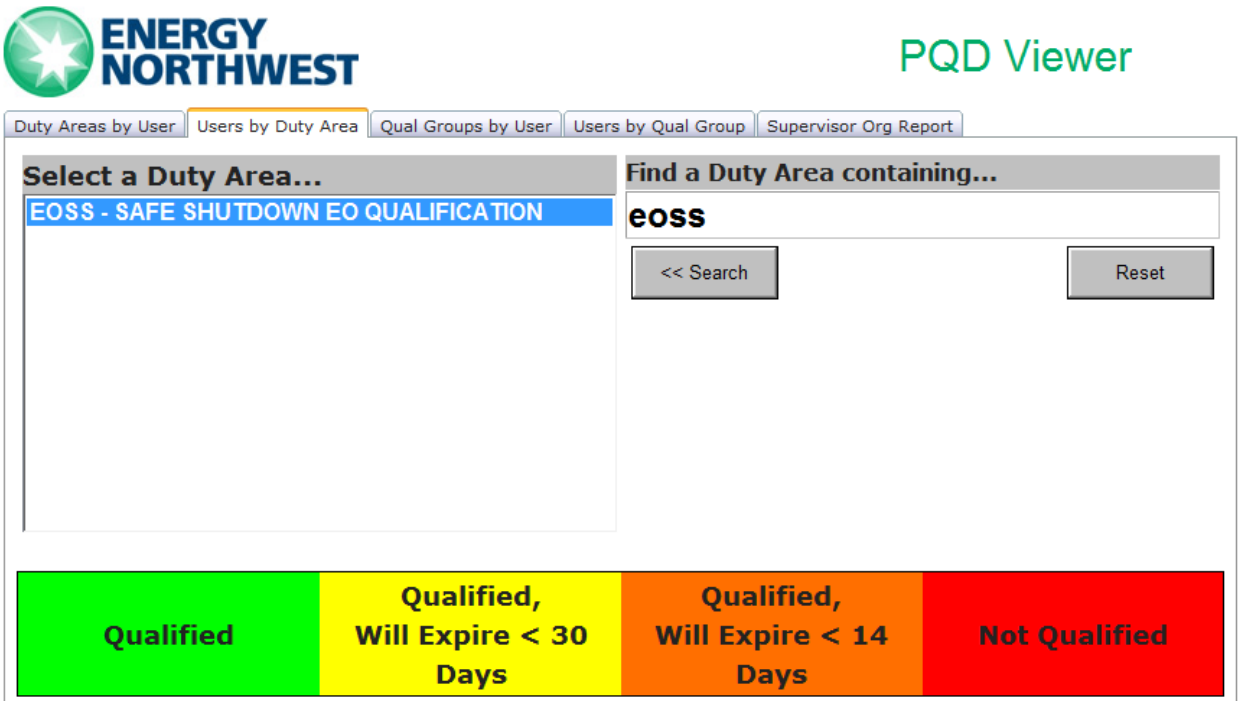
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOEP	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



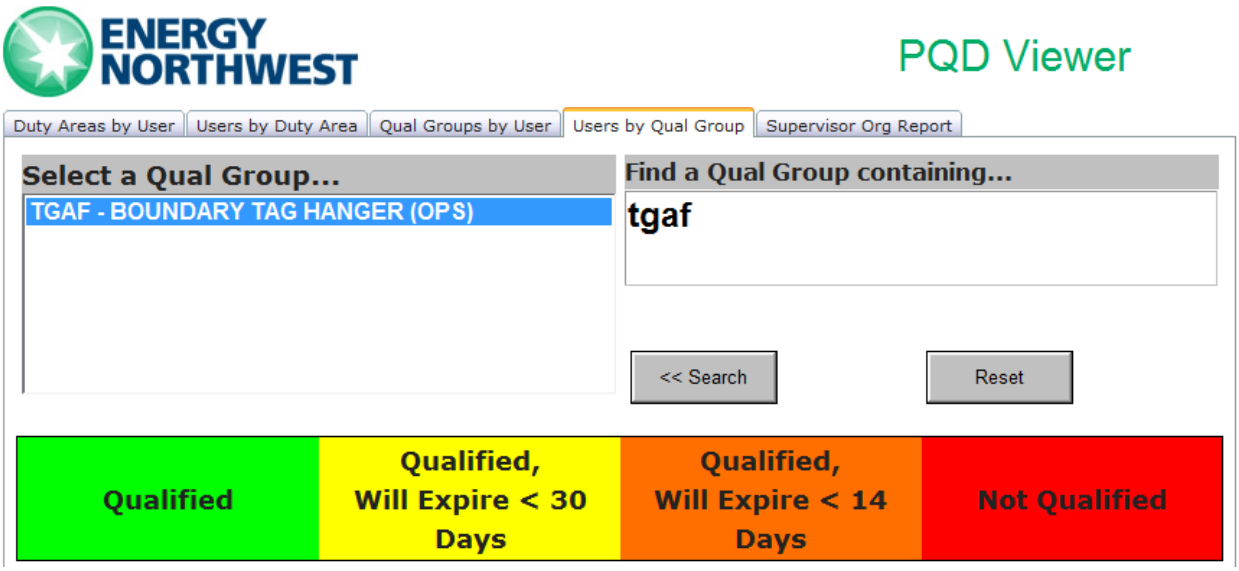
Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFB	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOFL	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			N	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			N	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			N	PARKER, AMY B	8/15/31
9			N	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	EOSS	Y	ALLEN, KIRBY J	12/31/13
2			N	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			N	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13



Qualified Individuals					
	Org Code	Duty Area	Qualified	Employee	Retrain By
1	52220	TGAF	Y	ALLEN, KIRBY J	12/31/13
2			Y	BAILEY, JOHN R	5/31/13
3			Y	DAVIS, MICHAEL M	12/31/13
4			Y	KIRBY, ROLLAND L	12/31/13
5			Y	LATIGO, PETE S	12/31/13
6			Y	MARQUEZ, JEREMEY H	12/31/13
7			Y	MARTIN, KEVIN F	5/31/13
8			Y	PARKER, AMY B	8/15/31
9			Y	SMITH, FRED P	12/31/13
10			Y	ZOELLER, BRYAN B	3/31/13

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	HALON BOTTLES LOW PRESSURE - DETERMINE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001588	Rev. No.	1
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	05/11/06
REVISED BY	Ron Hayden	DATE	09/20/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

DETERMINE THE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT TO TRACK EQUIPMENT STATUS

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Ensure the candidate has access to a set of Volume 1 procedures, including PPM 1.3.10B.
Have a copy of PPM 1.3.10B Attachment 9.1, Fire Protection System Impairment Notification, ready to give the candidate after the need to issue an impairment is identified.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0158

Validation Time:

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 15.3.6 Rev.007
PPM 1.3.10B Rev.014

Location: Classroom/Simulator

NUREG 1123 Ref: 2.2.14 (SRO 4.3)

Performance Method: Perform

Task Standard: It is determined that a Fire Protection System Impairment is required and the Fire Protection System Impairment Notification form is completed with the required information.

JPM CHECKLIST

INITIAL CONDITIONS:	You are the Production SRO with the plant operating at 100% power. PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed. The Fire Protection System Engineer has informed you that FP-TK-U679/1C and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled. All other tank pressures were SAT.
INITIATING CUE:	Based on the information provided, determine if any further actions are required. Initial the JPM Answer Sheet in the appropriate location to indicate your determination. If actions are required, fill in those actions on the JPM Answer Sheet. When you are done with your assessment and have filled in the required information, hand the JPM Answer Sheet to your examiner.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Refers to PPM 15.3.6 Section 7.1 for procedural guidance concerning Halon bottle low pressure.	Recognizes that the note after step 7.1.5 states: If pressure is UNSAT, a fire protection system impairment may be filled out and a WR initiated to replace or refill bottle.		S / U
	2	Documents required actions per PPM 15.3.6 and / or PPM 1.3.10B.	Initial are placed on the line next to: 'Initial here if actions are required' on the JPM Answer Sheet. Fills in 'Issue a Fire Protection System Impairment' (or similar to), as a required action on the JPM Answer Sheet. May fill in 'Initiate a Work Request' as a required action on the JPM Answer Sheet.		S / U * S / U * S / U

EVALUATOR: When the candidate returns the JPM Answer Sheet:

1. If it indicates that actions are required and one of those actions is to initiate a Fire Protection System Impairment then hand the candidate *STUDENT INFORMATION CARD* 2 and a copy of PPM 1.3.10B Attachment 9.1.

2. If it indicates that actions are NOT required inform the candidate that the termination point of the JPM has been reached.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	3	Completes the Fire Protection System Impairment:	Fills out the form.		S / U
	4	Date.	Fills in today's date.		S / U
	5	Reported By.	Fills in Fire Protection System Engineer.		S / U
	6	Impairment Permit Type (BI/FPSI) & Number.	Fills in FPSI #13-0025.		S / U *
	7	System(s) Impaired.	Places a mark next to Halon.		S / U *
	8	Description of Impairment.	Fills in FP-TK-U679/1C and FP-TK-U800/2.		S / U *
	9	Reason for Impairment.	Fills in 'Pressure does not meet the requirements of PPM 15.3.6" or 'Tank pressure low' (or similar to).		S / U *
	10	Building/Elevation/Location of Impairment.	Fills in Radwaste, 501', Main Control Room.		S / U *
	11	Compensatory Action(s) Taken.	Fills in None or leaves blank.		S / U
	12	Date Impairment Occurred.	Fills in today's date.		S / U
	13	Date Expected Return to Service.	Leaves blank.		S / U
Termination Criteria: Candidate hands in the completed Fire Protection System Impairment, Attachment 9.1 of PPM 1.3.10B.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

JPM RESULTS:
DETERMINE THE NEED FOR AND ISSUE A FIRE PROTECTION SYSTEM IMPAIRMENT

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: It is determined that a Fire Protection System Impairment is required and the Fire Protection System Impairment Notification form is completed with the required information.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

Initial Conditions:

You are the Production SRO with the plant operating at 100% power.

PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed.

The Fire Protection System Engineer informs you that FP-TK-U679/1C and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled.

The last Fire Protection System Impairment Notification completed was FPSI #13-0024.

Initiating Cue:

Based on the information provided, complete a Fire Protection System Impairment Notification.

When you have filled in the required information, return all JPM materials to your examiner.

FIRE PROTECTION SYSTEM IMPAIRMENT NOTIFICATION

Transmit by FAX to: NUCLEAR ELECTRIC INSURANCE LIMITED
NUCLEAR SERVICE ORGANIZATION
FAX# (302) 888-3095

Plant Columbia Generating Station Date _____

Reported By _____ Phone (509)

Impairment Permit Type (BI/FPSI) & Number _____

System(s) Impaired

( ) Wet Pipe ( ) Dry Pipe ( ) Firemain, Hydrants, Valves
( ) Deluge ( ) Preaction ( ) CO2 ( ) Halon
( ) Fire Pump ( ) Other _____

Description of Impairment (Include Valve/Equipment Tag No.) _____

Reason for Impairment _____

Building/Elevation/Location of Impairment (Include Area/Equipment Protected)

Compensatory Action(s) Taken _____

Date Impairment Occurred: _____ Date Expected Return to Service: _____

(Forward completed form to Fire Marshal; In-box located in SSS office)

Actual Date Returned to Service: _____

Closure Notification By: _____ Date _____

END

Attachment 9.1, Fire Protection System Impairment Notification

STUDENT JPM INFORMATION CARD

Initial Conditions:

You are the Production SRO with the plant operating at 100% power.

PPM 15.3.6 Section 7.1, Control Room Halon Annual Pressure Check, has just been completed.

The Fire Protection System Engineer informs you that FP-TK-U679/1C and FP-TK-U800/2 were discovered to be depressurized (0 psig), and must be replaced or refilled.

All other tank pressures were SAT.

Initiating Cue:

Based on the information provided, determine if any further actions are required.

Initial the JPM Answer Sheet to indicate your determination.

Additionally, if actions are required, fill in those actions on the JPM Answer Sheet.

When you have filled in the required information on the JPM Answer Sheet, hand it to your examiner.

JPM ANSWER SHEET

INITIAL HERE IF NO FURTHER ACTIONS ARE REQUIRED: _____

INITIAL HERE IF ACTIONS ARE REQUIRED:_____

IF ACTIONS ARE REQUIRED, THEY ARE: _____

_____

_____

_____

_____

_____

_____

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: APPROVAL OF CW AND PLANT SERVICE WATER BLOWDOWN

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.
Simulator Guide PQD Code		Rev. No.
JPM PQD Code	LO001725	Rev. No. 1
Exam PQD Code		Rev. No.

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Chris Maxwell DATE: 7/15/10

REVISED BY: Ron Hayden DATE: 09/23/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

APPROVED BY _____ DATE _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Each candidate should have access to PPM 12.2.9.
Each candidate should have access to SOP-CW-OPS.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0091

Validation Time: 10 minutes

Alternate Path: N/A

Time Critical: No

PPM Reference: PPM 12.2.9 Rev. 38 SOP-CW-OPS Rev. 15

Location: Classroom or Simulator

NUREG 1123 Ref: 2.3.6 2.0 / 3.8

Performance Method: Perform

Task Standard: The JPM Answer Sheet indicates that Circulating Water System blowdown would not be approved due to the required NPDES monitoring instruments not being available.

JPM CHECKLIST

INITIAL CONDITIONS:	• Columbia is operating at 100% power. • CW and TSW Halogenation has just been completed per PPM 12.2.9. • CW-PHR-1 is in service. • CBD-FR-10 was removed from service and Danger Tagged this morning. • CBD-FI-1A is isolated for calibration. • Halogen concentration has been verified LT 0.1 ppm TRH in two samples taken 20 minutes apart. • CW pH has been verified to be between 6.5 and 9.0.
INITIATING CUE:	Chemistry is requesting approval to commence Circulating Water System blowdown. Determine if you would approve Circulating Water System blowdown. When your decision is made, check the appropriate box on the JPM Answer Sheet indicating whether you would approve or would not approve the Circulating Water System blowdown. Additionally, if you indicate that you would not approve the blowdown, provide the bases for your disapproval. When done, hand the completed JPM Answer Sheet to the examiner.

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
	PPM 12.2.29 Step 8.4.3 Verify NPDES required flow instrumentation is available per SOP-CW-OPS (N/A the other.) a. With Circ Water pumps in operation. b. Without Circ Water in operation.	Refers to SOP-CW-OPS.	

*** Items are Critical Steps**

Comments	Element	Standard	Sat/Unsat
	SOP-CW-OPS step 5.8.3 Verify the following NPDES monitoring instruments or approved alternate instruments/methods are in service prior to initiating blowdown. N/A the method not used. <u>Primary Instruments:</u> • CW-PHR-1 (pH recorder) (CW-PNL-1) • CBD-FR-10 (CW Blowdown Flow) (H13-P840).	Recognizes that Primary Instrument CW-PHR-1, is in service. Recognizes that Primary Instrument CBD-FR-10 is not in service.	S / U S / U *
	<u>Approved Alternate Instrument/ Method</u> • Grab samples every 8 hours; • CBD-FI-1A (CBD Flow) (H13-P840).	Recognizes that the approved alternate instrument/method, CBD-FI-1A, is not in service.	S / U *
	Completes JPM Answer Sheet.	Determines the conditions required to initiate Circulating Water System blowdown have not been met and places a mark in the "NOT APPROVED" block on the JPM Answer Sheet. Indicates that the bases for the disapproval is that the required NPDES monitoring instruments are not available (or similar).	S / U * S / U *
Termination Criteria: Candidate hands the completed JPM Answer Sheet to the examiner.			
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.			

RESULTS OF JPM:
APPROVAL OF CIRCULATING AND PLANT SERVICE WATER BLOWDOWN

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The JPM Answer Sheet indicates that Circulating Water System blowdown would not be approved due to the required NPDES monitoring instruments not being available.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

- Columbia is operating at 100% power.
- Circ Water and TSW Halogenation has just been completed.
- CW-PHR-1 is in service.
- CBD-FR-10 was removed from service and Danger Tagged this morning.
- CBD-FI-1A is isolated for calibration.
- Halogen concentration has been verified LT 0.1 ppm TRH in two samples taken 20 minutes apart.
- CW pH has been verified to be between 6.5 and 9.0.

Cue:

Chemistry is requesting approval to commence Circulating Water System blowdown. Determine if you would approve Circulating Water System blowdown.

When your decision is made, check the appropriate box on the JPM Answer Sheet indicating whether you would approve or would not approve the Circulating Water System blowdown.

Additionally, if you indicate that you would not approve the blowdown, provide the bases for your disapproval.

When done, hand the completed JPM Answer Sheet to the examiner.

JPM ANSWER SHEET

☐ **APPROVED**

☐ **NOT APPROVED** _____

_____

_____

_____

When completed, hand this sheet to the examiner.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	RECLASSIFY A SECURITY EVENT (SAE) (TC)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LR001548	Rev. No.	7
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Steve Hutchison	DATE	10/31/02
REVISED BY	Ron Hayden	DATE	09/20/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

Have a blank CNF form, a copy of PPM 13.1.1 EAL Chart, and PPM 13.1.1A available.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: SRO-0529

Validation Time: 20 minutes

Alternate Path: No

Time Critical: 40 minutes

PPM Reference: 13.1.1 Rev. 42; PPM 13.1.1A Rev. 25

Location: Any

NUREG 1123 Ref: 2.4.41 2.9 / 4.6

Performance Method: Perform

Task Standard: A new CNF Form has been completed with required information.

JPM CHECKLIST

INITIAL CONDITIONS:	The plant is operating at 100% power. One hour ago, the FBI notified security and plant management that a mid-western terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this a credible threat. An Unusual Event was declared 50 minutes ago.
INITIATING CUE:	Five minutes ago, security called and notified you that an explosive device has been discovered within Columbia's Vital Area, specifically in the 'A' Service Water Pump House. The device is of sufficient size that if it should detonate, SW-P-1A would be destroyed. All personnel have been evacuated from the area. Meteorological data: Stability Class E; Wind direction is from 245°; Wind speed 4 mph; It is not raining As the Emergency Director, determine if an EAL change is required. The electronic CNF form is not available. Complete a paper CNF if necessary. If a CNF is not required, initial the line at the bottom of the Student JPM Information Card and hand it to your examiner. If a CNF is required, present the completed form to the examiner. This is a time critical JPM and your time starts now.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Candidate is allowed 20 minutes to determine if a change in classification is needed and 20 minutes to complete the CNF form for a total of 40 minutes.					
	13	Complete the CNF Form	CNF Form is completed as follows:		
	14	Block 1	Checked Emergency or Drill		*S / U*
	15	Block 2	Filled in '2'		*S / U*
	16	Block 3	Filled in a name and a phone number		*S / U*
	17	Block 4	Checked 'b' for a Reclassification and filled in a Date and a Time		S / U * S / U
	18	Block 5	Checked 'c' Site Area Emergency		*S / U* *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	19	Block 6a	Left blank		*S / U*
	20	Block 6b	Checked Yes Checked Alternate EOF, Energy Northwest Office Complex, 3000 George Washington Way		S / U * S / U
	21	Block 7	Filled in: Wind Speed = 4 Wind Direction: from = 245° Precipitation = 'No' block checked Stability Class = E		S / U
	22	Block 8	Checked No Release		*S / U*
	23	Block 9	Checked N/A		*S / U*
	24	Block 10	Left blank		*S / U*
	25	Block 11	Checked No		*S / U*
	26	Block 12	Filled in: EAL - # 9.1.S.1 or 9.1.S.2 Description of Incident – Something similar to: Bomb found in Service Water pump house		*S / U* * *S / U* *
	27	Block 13	Checked 'a', 'b' or 'c'		*S / U*
Termination Criteria: Student presents the completed CNF to the examiner.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:
RECLASSIFY A SECURITY EVENT

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: A new CNF Form has been completed with required information.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The plant is operating at 100% power.

One hour ago, the FBI notified security and plant management that a mid-eastern terrorist group has threatened to interfere with the operation of Columbia Generating Station. The FBI considers this as a credible threat.

An Unusual Event was declared 50 minutes ago.

Initiating Cue:

Five minutes ago, security called and notified you that an explosive device has been discovered within Columbia's Vital Area, specifically in the 'A' Service Water Pump House. The device is of sufficient size that, if it should detonate, SW-P-1A would be destroyed. All personnel have been evacuated from the area.

Meteorological data:

- Stability class is E
- Wind direction is from 245°
- Wind speed is 4 mph
- It is not raining

As the Emergency Director, determine if an EAL change is required.

The electronic CNF form is not available. Complete a paper CNF if necessary.

If a CNF is not necessary, indicate that by initialing the bottom of this page and hand it to the examiner.

If a CNF is required, present the completed form to the examiner.

THIS IS A TIME CRITICAL JPM AND YOUR TIME STARTS NOW

A new CNF is not required: _____
(Initial)

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	ALIGN SERVICE WATER TO THE FUEL POOL HEAT EXCHANGERS (Control Room)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001756	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	09/19/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

None

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0304

Validation Time: 8 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: SOP-FPC-OPS Section 5.6 Rev. 5

Location: Control Room

NUREG 1123 Ref: 233000 A2.08 (2.9 / 3.1)

Performance Method: Simulate

Task Standard: Service Water has been aligned to FPC-HX-1A and to FPC-HX-1B.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia was operating in Mode 1 when a complete loss of RCC occurred. A reactor scram was inserted and efforts are underway to restore RCC cooling. SW-P-1A and SW-P-1B are running. Fuel Pool temperatures are rising. Free release of RCC heat exchanger water to the Service Water spray ponds has been approved. OSP-SW-M101 has been referenced for component flow requirements. OPS2 has been briefed and is on station.
INITIATING CUE:	The Control Room Supervisor has directed you to align Service Water to both Fuel Pool Cooling Heat Exchangers per SOP-FPC-OPS Section 5.6. Inform the CRS when Service Water has been aligned to both Fuel Pool Cooling heat exchangers. The performance of this JPM will be simulated. Control manipulations will not be performed.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
NOTE: Standby Service Water to FPC-HX-1A(B) is normally used if RCC flow is lost and restoration is not anticipated prior to 125° F in the Fuel Pool, as indicated on FPC-TI-7/8 at H13-P626 (FPC-1), or for evolutions that require the Fuel Pool to be cooled below the capabilities of the RCC system. Examples: Loading spent fuel into an ISFSI MPC or to raise stay time for divers. NOTE: If Standby Service Water is aligned to the FPC heat exchanger, it is acceptable to operate below the minimum flow specified in OSP-SW-M101(M102) as long as the minimum operability value specified in PPM 8.4.81 is maintained. NOTE: If RCC is lined up to SSW for GE 48 hours, then it is recommended RCC-RV-34A(B) (FPC-HX-1A(B) Shell Side Relief Valve) be scheduled for replacement and test as soon as possible after swapping back to RCC. This is due to the potential for loose debris in SSW causing RCC-RV-34A(B) to lift and leak.				
	1	Step 5.6.1 Verify free release of RCC Heat Exchanger water to the Service Water Spray Ponds.	Recognizes that discharge of RCC heat exchanger water into the Service Water spray ponds has been approved.		S / U *
	2	Step 5.6.2 If desired, then lineup Standby Service Water Cooling to FPC-HX-1A as follows:	Performs this step.		S / U *
	3	Step 5.6.2a Refer to OSP-SW-M101 for Standby Service Water Loop A for component flow requirements.	Given as complete in the Initial Conditions – does not perform.	If OSP-SW-M101 is referenced, refer candidate to Initial Conditions.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	4	Step 5.6.2b Verify SW-P-1A is running.	Given in Initial Conditions as running.	If candidate approaches front panel refer candidate to Initial Conditions.	S / U
	5	Step 5.6.2c If RCC cooling to FPC-HX-1B is not required, then close the following: • RCC-V-129 (Fuel Pool HX-A/B RCC Cooling Inlet) • RCC-V-130 (Fuel Pool HX-A/B RCC Cooling Outlet) • RCC-V-131 (Fuel Pool HX-A/B RCC Cooling Outlet)	Simulates turning the control switch for the following valves to close and verifies Green light on and Red light off: • RCC-V-129 • RCC-V-130 • RCC-V-131	As each control switch is turned: The switch is in the closed position. The Green light is on and the Red light is off.	S / U
	6	Step 5.6.2d If RCC cooling to FPC-HX-1B is required, or SW is to be aligned to both FPC-HX-1A and FPC-HX-1B, then close the following: • RCC-V-9A (FPC-HX-1A RCC Cooling Inlet) (FPC HX Room) • RCC-V-10A (FPC-HX-1A RCC Cooling Outlet) (FPC HX Room)	Directs OPS2 to perform Step 5.6.2d of SOP-FPC-OPS to close RCC-V-9A and RCC-V-10A.	If candidate approaches front panel to use the radio, direct candidate to simulate communications. OPS2 reports Step 5.6.2d is complete, RCC-V-9A and RCC-V-10A are closed.	S / U
NOTE: SW-V-187A and SW-V-188A keylock switch spring returns to NORMAL from OPEN, and maintains in CLOSE.					
	7	Step 5.6.2e Open SW-V-187A (FPC-HX-1A Backup Cooling SW-A Inlet) (H13-P626).	Simulates turning the control switch for SW-V-187A clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Close. The Red light is on and the Green light is off.	S / U *
	8	Step 5.6.2f Open SW-V-188A (FPC-HX-1A Backup Cooling SW-A Outlet) (H13-P626).	Simulates turning the control switch for SW-V-188A clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Close. The Red light is on and the Green light is off.	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	9	Step 5.6.3 If desired, then lineup Standby Service Water Cooling to FPC-HX-1B as follows:	Performs this step.		S / U
	10	Step 5.6.3a Refer to OSP-SW-M102 for Standby Service Water Loop B for component flow requirements.	Given as complete in the Initial Conditions – does not perform.	If OSP-SW-M101 is referenced, refer candidate to Initial Conditions.	S / U
	11	Step 5.6.3b Verify SW-P-1B is Running.	Given in Initial Conditions as running.		S / U
	12	Step 5.6.3c If RCC cooling to FPC-HX-1A is not required, then close the following: • RCC-V-129 (Fuel Pool HX-A/B RCC Cooling Inlet) • RCC-V-130 (Fuel Pool HX-A/B RCC Cooling Outlet) • RCC-V-131 (Fuel Pool HX-A/B RCC Cooling Outlet)	Recognizes that these valves were closed in a previous step – does not perform.	If candidate starts to perform this step, cue that the Green light is on and the Red light is off for RCC-V-129, RCC-V-130 and RCC-V-131.	S / U
	13	Step 5.6.3d If RCC cooling to FPC-HX-1A is required, or SW is to be aligned to both FPC-HX-1A and FPC-HX-1B, then close the following: • RCC-V-9B (FPC-HX-1B RCC Cooling Inlet) (FPC HX Room) • RCC-V-10B (FPC-HX-1B RCC Cooling Outlet) (FPC HX Room)	Directs OPS2 to perform Step 5.6.3d of SOP-FPC-OPS to close RCC-V-9B and RCC-V-10B.	If candidate approaches front panel to use the radio, direct candidate to simulate communications. OPS2 reports Step 5.6.3d is complete, RCC-V-9B and RCC-V-10B are closed.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
NOTE: SW-V-187B and SW-V-188B keylock switch spring returns to NORMAL from OPEN, and maintains in CLOSE.					
	14	Step 5.6.3e Open SW-V-187B (FPC-HX-1B Backup Cooling SW-B Inlet) (H13-P626).	Simulates turning the control switch for SW-V-187B clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Close. The Red light is on and the Green light is off.	S / U *
	15	Step 5.6.3f Open SW-V-188B (FPC-HX-1A Backup Cooling SW-B Outlet) (H13-P626).	Simulates turning the control switch for SW-V-188B clockwise to open. Verifies Red light on and Green light off.	The control switch was placed in Open and spring returned to Close. The Red light is on and the Green light is off.	S / U *
Termination Criteria: Student informs CRS that Service Water has been aligned to both Fuel Pool Cooling Heat Exchangers.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
ALIGN SERVICE WATER TO THE FUEL POOL COOLIN HEAT EXCHANGERS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: Service Water has been aligned to FPC-HX-1A and to FPC-HX-1B.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia was operating in Mode 1 when a complete loss of RCC occurred.
A reactor scram was inserted and efforts are underway to restore RCC cooling.
SW-P-1A and SW-P-1B are running.
Fuel Pool temperatures are rising.
Free release of RCC heat exchanger water to the Service Water spray ponds has been approved.
OSP-SW-M101 has been referenced for component flow requirements.
OPS2 has been briefed and is on station.

Initiating Cue:

The Control Room Supervisor has directed you to align Service Water to both Fuel Pool Cooling Heat Exchangers per SOP-FPC-OPS Section 5.6.

Inform the CRS when Service Water has been aligned to both Fuel Pool Cooling heat exchangers.

The performance of this JPM will be simulated.

Control manipulations will not be performed.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	RE-ESTABLISH SECONDARY CONTAINMENT/START RB HVAC (Control Room)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001757	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	09/13/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

None

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0497

Validation Time: 8 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: SOP-RB HVAC-RESTART-QC Rev. 0

Location: Simulator

NUREG 1123 Ref: 290001 A4.01 (3.3 / 3.4)

Performance Method: Perform

Task Standard: ROA-FN-1A and REA-FN-1A are running with REA-DPIC-1A in Automatic operation.

JPM CHECKLIST

INITIAL CONDITIONS:	A series of events occurred that resulted in no running Reactor Building Supply or Exhaust fan. PPM 5.3.1 was entered due to Reactor Building dP high. Prior to starting Standby Gas Treatment, the Control Room received information that Reactor Building HVAC could be restarted.
INITIATING CUE:	The Control Room Supervisor has directed you to restart RB HVAC by starting ROA-FN-1A and REA-FN-1A per SOP-RBHVAC-QC. Inform the CRS when SOP-RBHVAC-QC has been completed.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	28	Step 2.1 Place REA-DPIC-1A (1B) (ΔP Control RX Bldg/Outside) in MANUAL.	Simulates placing the toggle for REA-DPIC-1A to the Manual position.	The black lever is under the 'M'.	S / U *
	29	Step 2.2 Set REA-DPIC-1A (1B) output signal at approximately 60% of scale.	Simulates depressing the closed pushbutton on REA-DPIC-1A to have the red arrow indicator on the vertical meter at approximately 60% of scale.	Initially show the red arrow on the horizontal meter is above the 100. When the closed pushbutton is simulated being depressed indicate the red arrow is moving slowly down the scale. Stop moving the indication when the candidate indicates the pushbutton would be released (Accept 55% - 65% of scale). If asked, REA-DPR-1A output starts at 100 and follows the vertical meter reading as the closed pushbutton is depressed.	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	30	Step 2.3 Place the control switch for the following fans in PULL-TO-LOCK: • ROA-FN-1A (Reactor Bldg Supply Fan) • ROA-FN-1B (Reactor Bldg Supply Fan) • REA-FN-1A (Reactor Building Exhaust Fan) • REA-FN-1B (Reactor Building Exhaust Fan)	Simulates turning the black handles counter - clockwise and simulates pulling the black handles out to engage the Pull-To-Lock position for: ROA-FN-1A ROA-FN-1B REA-FN-1A REA-FN-1B	As each switch is simulated being placed in the PTL position: The switch has been turned counter - clockwise and pulled out and remains in that position. The black flag is displayed in the switches window.	S / U * S / U * S / U * S / U *
	31	Step 2.4 Verify the following valves are OPEN: • ROA-V-1 (RB Supply Outboard Isolation) • ROA-V-2 (RB Supply Inboard Iso) • REA-V-1 (RB Exhaust Inboard Iso) • REA-V-2 (RB Exhaust Outboard Isol)	Observes the Red light on and the Green light off for: ROA-V-1 ROA-V-2 REA-V-1 REA-V-2	As each valve is observed: The Red light is on and the Green light is off.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	32	Step 2.5 (2H) Simultaneously start REA-FN-1A (1B) and ROA-FN-1A (1B).	Simulates simultaneously pushing in the black handled control switches for ROA-FN-1A and REA-FN-1A. Simulates simultaneously turning the black handled control switches clockwise to the start position and then releases them.	**Simultaneous operation of ROA-FN-1A and REA-FN-1A IS a part of the critical step.** The control switches handles have been pushed in and turned clockwise. The Red light is on and the Green light is off for each of the fans. The red flag is displayed for both control switches.	S / U *
	33	Step 2.6 Manually adjust REA-DPIC-1A(1B) controller output until Reactor Building pressure on REA-DPR-1A (1B) is approximately -0.6″ W.G.	Simulates depressing the open pushbutton to adjust REA-DPIC-1A to achieve approximately -0.6”W.G.. on REA-DPR-1A.	Inform the candidate that REA-DPR-1A digital readout is 0. Initially indicate the red arrow on the vertical meter of REA-DPIC-1A is pointing at ‘0’. As the Open pushbutton is depressed, indicate the red arrow on the vertical meter moving slowly down the scale towards the -0.6 reading and inform the candidate that REA-DPR-1A digital output correlates to the red arrow indication. When the open pushbutton is simulated as being released, stop the indicated movement of the red arrow. (Accept -0.5” to -0.7”wg).	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	34	Step 2.7 Null REA-DPIC-1A (1B), and place it in AUTO.	Turns thumbwheel until REA-DPIC-1A is nulled or waits until red arrow lines up with green band. Simulates moving the black lever to the AUTO position (under the 'A').	Step 2.6 performance should have had the red arrow returning to the center of the green band. If not – ask candidate what indications he would observe that would indicate that REA-DPIC-1A is nulled (should be red arrow in center of green band on REA-DPIC-1A). Inform the candidate that REA-DPIC-1A indications are as stated or as left in the last step. The black lever has been moved and is now under the 'A'.	S / U S / U *
	35	Step 2.8 Place the control switch for the following non- running fans in the NORMAL-after- STOP position. • ROA-FN-1B(1A) • REA-FN-1B(1A)	Simulates pushing in the black handled control switches for ROA-FN-1B and REA-FN-1B (switches will automatically move to the Normal after stop position). May observe the control switches green flag displayed.	As each control switch is manipulated: The control switches has been pushed in and the black handles are now straight up and down. The green flag is displayed for each control switch.	S / U
Termination Criteria: Student informs CRS that SOP-RBHVAC-QC has been completed.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
RESTART RB HVAC TO ESTABLISH SECONDARY CONTAINMENT

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: ROA-FN-1A and REA-FN-1A are running with REA-DPIC-1A in Automatic operation.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A series of events occurred that resulted in no running Reactor Building Supply or Exhaust fan.

PPM 5.3.1 was entered due to Reactor Building dP high.

Prior to starting Standby Gas Treatment, the Control Room received information that Reactor Building HVAC could be restarted.

Initiating Cue:

The Control Room Supervisor has directed you to restart RB HVAC by starting ROA-FN-1A and REA-FN-1A per SOP-RBHVAC-QC.

Inform the CRS when SOP-RBHVAC-QC has been completed.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	SHUTDOWN DG-2; FAILURE TO STOP; TRIP DG-2 USING MECHANICAL OVERSPEED TRIP (Plant, Alt Path)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LR001663	Rev. No.	5
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	11/2/05
REVISED BY	Ron Hayden	DATE	08/29/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: PPE

Task Number: RO-0429; 1297 EO-0671; 2091

Validation Time: 15 Minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-DG2-SHUTDOWN Section 5.1 Rev. 10

Location: PLANT – DG-2 Room

NUREG 1123 Ref: 264000A4.04 (3.7 / 3.7)

Performance Method: Simulate

Task Standard: DG-2 has been tripped utilizing the mechanical overspeed trip mechanism.

JPM CHECKLIST

INITIAL CONDITIONS:	DG-2 was started as part of an engineering test procedure. There are no ECCS Signals present. Munro Control Center has been informed of the intent to remove DG-2 from service. DG-2 is not required to be operable.
INITIATING CUE:	The CRS has directed you to locally shutdown DG-2 per SOP-DG2-SHUTDOWN. Inform the CRS when DG-2 has been shutdown. The performance of this JPM will be simulated. Control manipulations will not be performed.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
CUE: Cue response of simulated actions based on procedure and student actions.					
	1	Step 5.1.1 Verify there are no ECCS signals present (Annunciator 4.800.C5-1.2 clear).	Given in Initial Conditions - Should not perform.	If asked about ECCS signals inform student to refer to Initial Conditions.	S / U
	2	Step 5.1.2 Notify the Munro Control Center, Mead, WA, (509) 465-1837/1839 or 1-877-836-6632 of the intent to remove the diesel generator from the distribution system.	Given in Initial Conditions - Should not perform.	If notification is attempted inform student to refer to Initial Conditions.	S / U
	3	Step 5.1.3 If shutting down from the Control Room…..	Diesel Room Shutdown - N / A.	If performed inform student to refer to Initiating Cue.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	4	Step 5.1.4 If shutting down from the Diesel Room, then perform the following: a. Verify the Diesel Engine Control Selector is in the LOCAL position (E-CP-DG/RP2).	Observes the Diesel Engine Control Selector switch.	Indicate that the switches arrow is pointing to CONTROL RM.	S / U *
	5		Simulates placing the Diesel Engine Control Selector in the LOCAL position (turns CCW).	The switches arrow is pointing to LOCAL.	S / U *
	6	Step 5.1.4b Place CB-DG2/8 Mode Selector switch in the LOCAL position (H13-P800).	Simulates contacting the Control Room and requests they place CB-DG2/8 Mode Selector switch in the LOCAL position.	The selector switch for CB-DG2/8 is in the LOCAL position.	S / U
	7	Step 5.1.4c Gradually reduce DG-2 output to 200 KW, over approximately a one minute period, using Diesel Gen 2 Governor control switch.	Simulates lowering output to 200 KW using the governor control switch (turns CW).	Indicate 400 KW on DG-W-DG2/L If lowered properly, lower indication to 200 KW over approximately a one minute period.	S / U
	8	Step 5.1.4d Reduce reactive load to 200 KVAR using Diesel Gen 2 Voltage Regulator control switch.	Simulates lowering reactive load to 200 KVAR using Voltage Regulator control switch (turns to LOWER – CW).	Indicate 300 KVAR on DG-VARM-DG2/LOC. If lowered properly, slowly lower indication to 200 KVAR.	S / U
	9	Step 5.1.5 Open CB-DG2/8, Diesel Gen 2 output breaker at the controlling station (E-CP-DG/RP2 or H13-P800).	Simulates opening CB-DG2/8 by turning E-CB-DG2/8 local control switch to the TRIP position (CCW).	Green light on, Red light out, Green flag displayed. A loud noise is heard to your left.	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	10	Step 5.1.6 Verify E-CB-DG2/8 close permit light is illuminated (H13-P800).	Contacts Control Room to verify the close permit light is on.	The closed permit light is on.	S / U
	11	Step 5.1.7 Adjust the generator output voltage to 4200 volts using Diesel Gen 2 Voltage Regulator control switch.	Simulates adjusting output voltage to 4200 volts using the Voltage Regulator (turns CW to LOWER).	Indicate 4300 volts If lowered properly, slowly lower indication to 4200 volts	S / U
	12	Step 5.1.8 Adjust frequency to 60 Hz using Diesel Gen 2 Governor control switch.	Simulates adjusting frequency to 60 Hz using the Governor control switch (turns CW to LOWER).	When checked frequency indicates 62 Hz. If lowered properly inform student frequency now indicates 60 Hz.	S / U
	13	Step 5.1.9 Place Engine Speed Selector switch to IDLE.	Simulates placing the Engine Speed Selector to IDLE (turns CW).	The switches arrow is pointing to IDLE. Noise level has been reduced from the diesel room.	S / U *
	14	Step 5.1.10 Verify DG-2 speed at 375-425 RPM on DG-SI-DG2 (E-CP-DG/RP2).	Verifies speed is between 375 and 425.	Indicate 400 rpm on DG-SI-DG2.	S / U
	15	Step 5.1.11 Allow the diesel to idle for at least 15 minutes.	Verbalizes intention to wait 15 minutes.	15 Minutes have elapsed.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	16	Step 5.1.12 Stop DG-2 by one of the following methods: N/A the other. • If DG-2 is being operated from the Control Room…. • If DG-2 is being operated from E-CP-DG/RP2, then depress the Diesel Engine 1B1/1B2 Stop P/B.	Simulates depressing the green 1B1/1B2 stop pushbutton (towards bottom of panel on the left side).	The green pushbutton depressed. The same noise level as before is coming from the diesel room. Indicate 400 rpm on DG-SI-DG2.	S / U *
	17		Contacts the Control Room and informs them that DG-2 did not stop when the green 1B1/1B2 stop pushbutton was depressed.	Acknowledge the report Direct the student to trip DG2 utilizing the Mechanical Overspeed Trip.	S / U
	18		Obtains procedure from the book racks and identifies that section 5.3 should be performed.	Hand student a copy of Section 5.3	S / U
DO NOT ALLOW STUDENT TO CLIMB ONTO DG-2. The remainder of the JPM should be performed using Figure 1 of Section 5.3 and pointing to the Mechanical Overspeed Trip mechanism from the floor as required to ensure proper step performance					
	19	Step 5.3.1 Locate the mechanical overspeed trip mechanism on engine 1B2 preferred (engine 1B1 alternate).	Locates the overspeed trip mechanism on engine 1B2.		S / U *
	20	Step 5.3.2 Unlatch the engine overspeed trip reset lever by pushing it down onto the overspeed trip limit switch and hold the reset lever in this downward unlatched position.	Simulates pushing the engine overspeed trip lever down onto the overspeed trip limit switch and verbalizes it would be held in this position.	The engine overspeed trip lever is pointing down and towards you at a 90° angle (as you see it).	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	21	Step 5.3.3 While holding the reset lever in the unlatched position, then push/rotate the small trip lever away from the solenoid trip mechanism. The trip lever must be rotated in the CW direction when looking at it from the governor actuator's position.	Simulates holding the reset lever in the unlatched position and pushing/rotating the small trip lever away from the solenoid trip mechanism. Verbalizes that the lever is rotated in the clockwise direction when looking at it from the governor actuator's position.	The small trip lever rotates in the clockwise direction.	S / U *
	22	Step 5.3.4 Release the reset lever and it should rotate to the TRIPPED position.	Simulates releasing the reset lever and verbalizes that it should rotate to the TRIPPED position.	The reset lever moves upward. Noise in the room quickly fades and is now quiet.	S / U *
	23	Step 5.3.5 Verify both engines trip.	Verbalizes the verification method used to ensure both engines have tripped.	As required based on verification method to indicate engines have tripped.	S / U
	24	Step 5.3.6 Verify both engines coast down, and eventually stop rotating.	Visually ensures diesel shaft has stopped rotating.	The shaft is not rotating.	S / U
Termination Criteria: When the student informs CRS that DG-2 has been tripped utilizing the mechanical overspeed trip mechanism inform the student that the termination point of the JPM has been reached.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
SHUTDOWN DG-2; FAILURE TO STOP; TRIP DG-2 USING MECHANICAL OVERSPEED TRIP

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: DG-2 has been tripped utilizing the mechanical overspeed trip mechanism.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

DG-2 was started as part of an engineering test procedure.

There are no ECCS signals present.

Munro Control Center has been informed of the intent to remove DG-2 from service.

DG-2 is not required to be operable.

Initiating Cue:

The CRS has directed you to locally shutdown DG-2 per SOP-DG2-SHUTDOWN.

Inform the CRS when DG-2 has been shutdown.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	BYPASS RCIC TRIPS AND ISOLATIONS (Control Room & Plant)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LR000218	Rev. No.	11
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	STAFF	DATE	1994
REVISED BY	Ron Hayden	DATE	08/28/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
	SAT Coordinator		
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

This JPM starts in the Control Room and then proceeds to RCIC pump room stairwell.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: NONE

Safety Items: Hard Hat Safety Glasses

Task Number: RO-0545

Validation Time: 9 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: 5.6.1 Rev. 22

Location: Plant

NUREG 1123 Ref: 295003 AA1.03 (4.4 / 4.4)

Performance Method: Simulate

Task Standard: RCIC high area temperature isolation and high exhaust pressure trips have been prevented per PPM 5.6.1.

JPM CHECKLIST

INITIAL CONDITIONS:	A station blackout has occurred. RCIC is operating normally and is restoring RPV level.
INITIATING CUE:	The CRS has directed you to prevent RCIC high area temperature isolation and a high exhaust pressure trip per PPM 5.6.1 steps 6.16 and 6.17. Inform the CRS when RCIC high area temperature isolation and high exhaust pressure trips have been prevented. Control manipulations will not be performed. All actions and steps will be simulated.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
THE EOP DRAWER IN THE CONTROL ROOM SHOULD NOT BE OPENED. A DISCUSSION OF WHERE THE PROCEDURE AND TOOLS ARE FOUND IS SUFFICIENT. AFTER DISCUSSION HAND STUDENT COPY OF PROCEDURE AND CUE THAT STUDENT ALSO HAS PLASTIC BAG CONTAINING REQUIRED TOOLS.					
	36	Step 6.16 Prevent a RCIC high area temperature isolation (160°F) and RCIC pump room area high differential temperature (50°dT) by performing the following:	Performs this step.		S / U
	37	• Place test switch LD-RMS-S2A to TEST (RCIC-V-8 Isol Pipe Area Temp) (H13-P632) (Key 117/2-632).	Simulates inserting key and turning the test switch, LD-RMS-S2A, clockwise to Test.	The switch is turned and is pointed to Test.	S / U *
	38	• Place test switch LD-RMS-S2B to TEST (RCIC-V-63/76 Isol Pump Area Temp) (H13-P642) (Key 127/2-642).	Simulates inserting key and turning the test switch, LD-RMS-S2B, clockwise to Test.	The switch is turned and is pointed to Test.	S / U *
	39	Step 6.17 Prevent a RCIC high exhaust pressure trip (25 psig) by performing the following:	Performs this step.		S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	40	Step 6.17.1 Close RCIC-V-756A, (RCIC-PS-9A Instrument Isolation Valve).	Simulated closing RCIC-V-756A by turning valve clockwise.	The handwheel has stopped rotating in the clockwise direction.	S / U *
	41	Step 6.17.2 Remove the pipe cap between RCIC-PS-9A and RCIC-V-756A.	Verbalizes that plant keys would be used to unlock pre-staged wrenches. Simulates removal of the pipe cap using pre-staged crescent wrenches by turning it counter clockwise.	The wrenches are unlocked. The pipe cap is no longer attached to the pipe.	S / U *
	42	Step 6.17.3 Close RCIC-V-756B, (RCIC-PS-9B Instrument Isolation Valve).	Simulated closing RCIC-V-756B by turning it clockwise.	The handwheel has stopped rotating in the clockwise direction.	S / U *
	43	Step 6.17.4 Remove the pipe cap between RCIC-PS-9B and RCIC-V-756B.	Simulates removal of the pipe cap using pre-staged crescent wrenches by turning it counter clockwise.	The pipe cap is no longer attached to the pipe.	S / U *
Termination Criteria: Student informs CRS that RCIC high temperature isolation and high exhaust pressure trips have been prevented per PPM 5.6.1.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
BYPASS RCIC TRIPS AND ISOLATIONS

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: The RCIC high area high temperature isolations and high exhaust pressure trips have been prevented.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

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Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A station blackout has occurred.

RCIC is operating normally and is restoring RPV level.

Initiating Cue:

The CRS has directed you to prevent RCIC high area temperature isolation and high exhaust pressure trip per PPM 5.6.1 steps 6.16 and 6.17.

Inform the CRS when RCIC high area temperature isolation and high exhaust pressure trips have been prevented.

CONTROL MANIPULATIONS
<u>WILL NOT</u> BE PERFORMED.

ALL ACTIONS AND STEPS WILL BE SIMULATED.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: OPERATIONS TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: EMERGENCY DRYWELL VENTING (PPM 5.5.21) (Control Room)

LESSON LENGTH: 0.5 hrs MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
JPM PQD Code	LR000163	Rev. No.	10
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 1992

REVISED BY: Ron Hayden DATE: 8/29/12

TECHNICAL REVIEW BY _____ DATE _____

INSTRUCTIONAL REVIEW BY _____ DATE _____

SAT Coordinator

APPROVED BY _____ DATE _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

N/A

Special Setup Instructions:

N/A

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: Flashlight, PPE

Safety Items: High voltages inside panels

Task Number: RO-0691

Validation Time: 6 Minutes

Alternate Path: No

Time Critical: No

PPM Reference: PPM 5.5.21 Rev. 7

Location: Control Room

NUREG 1123 Ref: 223001A4.07 (4.2/4.1)

Performance Method: Simulate

Task Standard: The Reactor Building has been evacuated and Emergency Drywell Venting has commenced.

JPM CHECKLIST

INITIAL CONDITIONS:	A LOCA has occurred. Conditions exist that require the Drywell to be vented. The B SGT train has been prepared for venting. PPM 5.5.21, Section 4.0 steps 4.1 through step 4.3 have been completed.
INITIATING CUE:	The CRS has directed you to vent the drywell per PPM 5.5.21, starting with step 4.4. Inform the CRS when Drywell Venting has been started. Inform the CRS when you have commenced venting the drywell. The performance of this JPM will be simulated. Control manipulations will not be performed.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
EVALUATOR: Do not allow Student to open the EOP drawer in the Control Room. A discussion of the location of jumpers necessary to complete the procedure is sufficient.					
	1	Step 4.4 Override CEP-V-1A (Drywell Exhaust Outboard Isolation) isolation logic by installing a jumper between terminal 14 and terminal 15 at H13-P813, TB H5.	At H13-P813, simulates installing a jumper between terminals 14 and 15 on TB H5.	A jumper has been installed on the terminal board and terminal points indicated.	S / U *
	2	Step 4.5 Override CEP-V-2A (Drywell Exhaust Inboard Isolation) isolation logic by installing a jumper between terminal 14 and terminal 15 at H13-P813, TB H27.	At H13-P813, simulates installing a jumper between terminals 14 and 15 on TB H27.	A jumper has been installed on the terminal board and terminal points indicated.	S / U *
	3	Step 4.6 Verify CEP-V-11 is closed (Exhaust To RB Plenum).	Observes Green light on and Red light off for CEP-V-11.	Green light is on, Red light is off.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	4	Step 4.7 Lineup the selected SGT Train A(B) as follows (H13-P827) (H13-P811):			S / U
	5	Step 4.7.1 Verify SGT-V-2A (2B) is open (Inlet from Reactor Building).	Observes SGT-V-2B's Red light on, green light off.	Red light is on, Green light is off, red flag displayed.	S / U
	6	Step 4.7.2 Verify SGT-V-3A2 (3B1) is open (Fan A1 (B2) Inlet).	Observes SGT-V-3B1's (for Fan B2) red light on, green light off.	Red light is on, Green light is off, red flag displayed.	S / U
	7	Step 4.7.3 Open SGT-V-5A1 (5B2) (Exhaust To Stack).	Simulates taking the control switch for SGT-V-5B2 to OPEN and observes Red light on, Green light off.	The Red light comes on and then the Green light goes off, red flag displayed.	S / U *
Evaluator Note: Student should not go to the front of the control room to perform step 4.8.					
	8	Step 4.8 Evacuate all personnel from the Reactor Building before continuing in this procedure.	Verbalizes intent of making announcement to evacuate all personnel from the Reactor Building.	When verbalized or student walks towards the front of Control Room, cue that all personnel have been evacuated from the Reactor Building.	S / U *
	9	Step 4.9 Open SGT-V-1A (1B) (Inlet From Containment) H13-P827) (H13-P811).	Simulates taking the control switch for SGT-V-1B to OPEN and verifies Red light on Green light off.	The Red light comes on and then the Green light goes off, red flag displayed.	S / U *
	10	Step 4.10 Open CEP-V-1A (Drywell Exhaust Outboard Isolation) (H13-P813).	Simulates taking the control switch for CEP-V-1A to OPEN and verifies Red light on, Green light off.	The Red light comes on and then the Green light goes off, switch returns to NORM.	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	11	Step 4.11 Open CEP-V-2A (Drywell Exhaust Inboard Isolation) (H13-P813).	Simulates taking the control switch for CEP-V-2A to OPEN and verifies Red light on, Green light off.	The Red light comes on and then the Green light goes off, switch returns to NORM.	S / U *
Termination Criteria: Student informs the CRS that Drywell Venting has commenced.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:
EMERGENCY DRYWELL VENTING

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The Reactor Building has been evacuated and Emergency drywell venting has commenced.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A LOCA has occurred.

Conditions exist that require the Drywell to be vented.

The B SGT train has been prepared for venting by performing PPM 5.5.21, Sect. 4.0 through step 3.

Cue:

The CRS has directed you to vent the drywell per PPM 5.5.21, starting with step 4.4. Inform the CRS when Drywell Venting has been started.

Inform the CRS when you have commenced venting the drywell.

The performance of this JPM will be simulated.

Control manipulations <u>WILL NOT</u> be performed.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	INITIAL LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	CONDUCT REFUEL POSITION ONE-ROD-OUT INTERLOCK CFT OSP-NSSE-W402 (Simulator, Alt Path)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001754	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	12/06/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE
INSTRUCTIONAL REVIEW BY		DATE
APPROVED BY		DATE
	Operations Training Manager	

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

IC where reactor is shutdown.

Special Setup Instructions:

Have a signed in copy of the surveillance ready for each student.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0251; SRO-0263

Validation Time: 15 Minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: OSP-NSSE-W402 Rev. 3

Location: Simulator

NUREG 1123 Ref: 2012002 A4.05 (3.1 / 3.0)

Performance Method: Perform

Task Standard: OSP-NSSE-W402 Sections 7.1 and 7.2 have been completed. Control Rod 18-47 was used as the withdrawn control rod and has been re-inserted to the full in position.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia is shutdown. OSP-NSSE-W402 is scheduled to be performed. SRM-A and SRM-B have been verified operable per SR 3.3.1.2.2 and SR 3.3.1.2.4. Refueling has not begun.
INITIATING CUE:	The CRS has directed you to perform OSP-NSSE-W402, Refuel Position One-Rod-Out Interlock CFT. Inform the CRS when you have completed the surveillance.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
EVALUATOR NOTE: If at any time during the review of the surveillance or the performance of the JPM the candidate requests the designated control rod inform him that control rod 38-19 is to be withdrawn. If at any time prior to JPM step 11 the candidates recognizes the control rod is NOT in an operable quadrant provide JPM step 11's cue.					
	1	Step 7.1 Preparation	Performs this step.		S / U
	2	Step 7.1.1 Verify the following (H13-P603) (SR 3.9.2.1):	Performs this step.		S / U
	3	Step 7.1.1a. Reactor Mode Switch Locked in REFUEL.	Rotates the Mode Switch clockwise until the arrow is pointing to the REFUEL position. May inform the CRS that the Mode Switch is in REFUEL.		S / U *
	4	Step 7.1.1b. Reactor Mode Switch key removed.	Removes the key from the Mode Switch.		S / U
Note: If no control rods are withdrawn and there is fuel in the vessel perform section 7.2 and mark section 7.3 N/A. If a control rod is already withdrawn (i.e. rods withdrawn for drive replacement or blade shuffle) perform section 7.3 and mark section 7.2 N/A.					
	5	Step 7.2 No Rods Withdrawn and Fuel in the Vessel.	Performs this step.		S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	6	Step 7.2.1 Verify all control rods indicate fully inserted (H13-P603).	Observes all Green lights on the full core display on or observes the "00" indications for all rods on RWM.		S / U
	7	Step 7.2.2 Verify the RODS NOT FULL IN (FI) indicator LED's at Activity Control Numbers 1 and 2 are extinguished (H13-P616).	Observes that the RODS NOT FULL IN red lights in Activity Control Numbers 1 and 2 are not on.		S / U
Note: In the following step EITHER the GRAPPLE LOAD (PG) indicator LEDs OR the OVER CORE (PC) indicator LEDs extinguished will prevent causing a ROD BLOCK. Both are acceptable, but not required.					
	8	Step 7.2.3 Verify GRAPPLE LOAD (PG) indicator LEDs, OR OVER CORE (PC) indicator LEDs at Activity Control Numbers 1 and 2 are extinguished (H13-P616).	Observes that the GRAPPLE LOAD (PG) indicator LEDs, OR OVER CORE (PC) indicator LEDs at Activity Control Numbers 1 and 2 are not on.		S / U
NOTE: For an SRM to be considered operable in the following step, one of the following conditions is required to be satisfied per TSP-SRM-W401 (SR 3.3.1.2.4). • Minimum count rate of 0.7 cps provided signal to noise ratio GE 20:1; or • Minimum count rate of 3 cps provided signal to noise ratio is GE 2:1.					
	9	Step 7.2.4 Verify the SRMs in the core quadrant of activity and an adjacent quadrant are operable prior to rod withdrawal (SR 3.3.1.2.2).	Refers to Initial Conditions to find SRM-A and SRM-B are given as operable.		S / U
	10	Step 7.2.5 If a control rod can be withdrawn for testing, then select a single control rod, designated by the CRS for surveillance purposes, located in quadrant with an operable SRM.	Verbalizes this step and requests designated control rod from the CRS.	Control Rod 38-19 has been designated for surveillance purposes.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	11	**Faulted Step** Recognizes that control rod 38-19 is NOT in one of the operational SRM quadrants given in the initial conditions.	Informs the CRS that control rod 38-19 is not in an operable SRM quadrant.	Repeat back the report. Then cue: The appropriate notifications and investigations have been made. Use control rod 18-47 and continue with OSP-NSSE-W402 at step 7.2.5.	S / U *
	12	Step 7.2.5 If a control rod can be withdrawn for testing, then select a single control rod, designated by the CRS for surveillance purposes, located in quadrant with an operable SRM. Control Rod Number _____	Selects control rod 18-47. Verifies control rod 18-47 is in an quadrant with an operable SRM.		S / U *
	13	Step 7.2.6 If a control rod cannot be withdrawn for testing, then select control rod 14-07 (H13-P603).	Does not perform this step.		S / U
	14	Step 7.2.7 Verify the green FULL IN indicator for the rod selected is illuminated on the full core display (vertical section of H13-P603).	Observes the Green FULL IN light is on for control rod 18-47.		S / U
	15	Step 7.2.8 If a control rod can be withdrawn for testing, then withdraw the selected control rod to notch position 02.	Momentarily depresses the Withdraw pushbutton. Observes control rod 18-47 moves to position 02.		S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	16	Step 7.2.9 If unable to withdraw a control rod for testing, then disconnect PIP cable 8815/ C12A-009 from jack J14-07 (Back of H13/P615).	Does not perform this step.		S / U
	17	Step 7.2.10 Verify the RODS NOT FULL IN (FI) indicator LED's for Activity Control Numbers 1 and 2 illuminate (H13-P616).	Observes that the RODS NOT FULL IN (FI) indicator LED's for Activity Control Numbers 1 and 2 are on.		S / U
	18	Step 7.2.11 Verify the control rod position indication for the control rod on the four control rod group display does not read XX.	Observes position indication on the four control rod group display does not read XX (reads 02).		S / U
	19	Step 7.2.12 Verify the green FULL IN indicator for the rod selected is not illuminated on the full core display (vertical section of H13-P603).	Observes the full core display and notes the Green FULL IN light is not on for control rod 18-47.		S / U
	20	Step 7.2.13 Attempt to select a different control rod. Control Rod Number _____	May ask CRS for a different control rod to complete this step. Or Selects any of the other control rods.	If the CRS is asked for a control rod direct control rod 38-19 selection.	S / U *
	21	Step 7.2.14 Verify the following:	Performs this step.		S / U
	22	Step 7.2.14a. SELECT BLOCK at H13-P603.	Observes the amber SELECT BLOCK light came on.		S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	23	Step 7.2.14b. Selection of the second control rod is prohibited.	Verifies the control rod could not be selected as the light for that rod does not illuminate.		S / U
	24	Step 7.2.15 If a control rod was withdrawn for testing, then perform the following:	Performs this step.		S / U
	25	Step 7.2.15a. Select the control rod which was withdrawn to notch position 02.	Selects control rod 18-47.		S / U
	26	Step 7.2.15b. Insert the control rod to FULL IN.	Momentarily depresses the Insert pushbutton. Observes control rod 18-47 at position 00 and the Green Full In light on.		S / U *
NOTE: Reconnecting cable will require multiple seatings and collar tightening to ensure connection.					
	27	Step 7.2.16 If PIP cable J14-07 was disconnected, then perform the following:	Does not perform this step.		S / U
Termination Criteria: The student informs the CRS that OSP-NSSE-W402 has been completed.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:
CONDUCT REFUEL POSITION ONE-ROD-OUT INTERLOCK CFT, OSP-NSSE-W402

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: OSP-NSSE-W402 Sections 7.1 and 7.2 have been completed. Control Rod 18-47 was used as the withdrawn control rod and has been re-inserted to the full in position.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia is shutdown.

OSP-NSSE-W402 is scheduled to be performed.

SRM-A and SRM-B have been verified operable per SR 3.3.1.2.2 and SR 3.3.1.2.4.

Refueling has not begun.

Initiating Cue:

The CRS has directed you to perform OSP-NSSE-W402, Refuel Position One-Rod-Out Interlock CFT.

Inform the CRS when you have completed the surveillance.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	SL-71 LOCKOUT; START RCC-P-1B (Simulator) (Alt Path)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001755	Rev. No.	0
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	09/17/12
REVISED BY		DATE	

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
	SAT Coordinator		
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Any IC where SM-7 is being powered from SM-1

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: R0-0048

Validation Time: 10 minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-ELEC-4160V-OPS Rev. 9
SOP-ELEC-SM1/SM7 Rev. 15

Location: Simulator

NUREG 1123 Ref: 400000 A2.01 (3.3 / 3.4)

Performance Method: Perform

Task Standard: RCC-P-1B has been manually started**.**

JPM CHECKLIST

INITIAL CONDITIONS:	A plant shutdown is in progress. All conditions, limitations, and prerequisites for this evolution are completed.
INITIATING CUE:	The CRS has directed you to transfer SM-7 from SM-1 to the Backup Transformer. Inform the CRS when SM-7 is being powered from the Backup Transformer.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
When student identifies SOP-ELEC-4160V-OPS section 5.7 is required hand him a copy of the procedure section.					
Caution – Operation of SM-7 on TR-B should only be for maintenance or testing purposes when operating in Mode 1, 2, or 3 to minimize the reduction of offsite power sources. Caution – If TR-B is supplying SM-7 and SM-8 at the same time in Modes 1, 2, 3 then TR-S is considered inoperable. (Tech Spec 3..1) Note: It may be necessary to transfer SM-7 to the Backup Transformer (TR-B) to start a large plant load. SM-7 should be transferred to TR-B to start a large load or when any of the following conditions exist….					
	44	Step 5.7.1 Verify E-CB-TRB Closed.	Observes Red light on and Green light off for E-CB-TRB.		S / U
	45	Step 5.7.2 Verify TR-B voltage GE 115 KV.	Observes voltage GT 115 KV phase A, phase B and phase C on the TR-B Voltage meters.		S / U
	46	Step 5.7.3 Verify E-CB-B7 white Lockout Circuit Avail light illuminated.	Observes white Lockout Circuit Available light on for E-CB-B7.		S / U
	47	Step 5.7.4 Verify E-CB-B7 READY TO XFR light illuminated.	Observes the white READY TO XFR light for E-CB-B7 light is on.		S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	48	Step 5.7.5 Verify E-CB-B7 green light illuminated and green flag displayed.	Observes the Green light on and Red light off for E-CB-B7. Observes Green flag displayed.		S / U
	49	Step 5.7.6 Verify E-CB-7/1 white Lockout Circuit Avail light illuminated.	Observes the white Lockout Circuit Available light on for E-CB-7/1.		S / U
	50	Step 5.7.7 Verify E-CB-7/1 red light illuminated.	Observes the Red light on for E-CB-7/1.		S / U
	51	Step 5.7.8 Place E-CB-B7 Sync Selector switch in Manual.	Rotates the Sync Selector switch counter-clockwise to the MAN position.		S / U *
	52	Step 5.7.9 Verify voltage present on both incoming and running buses.	Observes voltage on incoming and running volt meters.		S / U
NOTE: The blue Sync Permit light for E-CB-B7 is illuminated from initiation of breaker closure until closure actually occurs. NOTE: E-CB-7/1 should automatically trip when E-CB-B7 closes. NOTE: H13-P800.C.1.1-7, Bkr 7-1 Trip will alarm when the following step is performed. NOTE: H13-800.C4.305 TR-B- Rev Pwr Relay may alarm when the following step is performed.					
	53	Step 5.7.10 Close E-CB-B7.	Turns the control switch for CB-B7 clockwise and observes the Red light on and Green light off for CB-B7.		S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	54	**Faulted Step** Recognizes some of the annunciators that alarming are not associated with SM-7 transfer to TR-B: • Bus 71 Gnd • Xfmr TR-7/71 Wdg Temp High • Bkr 7/71 Trip	Acknowledges alarms and informs the CRS. Observes that breaker 7/71, the Bus 71 Feeder – 480V is opened (Green light on Red light off) and inform the CRS. Refers to ARP for Bkr 7/71 Trip. Refers CRS to ABN-ELEC-SM-1/SM7.	If ARPs for additional alarms are not referenced, cue candidate to investigate alarms. After CRS is referred to ABN-ELEC-SM1/SM7 cue candidate to perform the applicable subsequent operator actions of ABN-ELEC-SM1/SM7.	S / U *
	55	ABN-ELEC-SM1/SM7 Section 4.5 Loss of E-SL-71	Performs this section.		S / U
	56	Step 4.5.1 Verify RCC-P-1B and RCC-P-1C are operating.	Observes RCC-P-1B is not running (Green light is on and the Red light off). Turns the control switch for RCC-P-1B clockwise to start and observes the Red light on and Green light off. Observes RCC-P-1C is running (Red light on and Green light off). May inform the CRS that normal RCC system flow has been restored.		S / U S / U * S / U
Termination Criteria: When RCC-P-1B has been started, inform the candidate that the termination point of the JPM has been reached.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
SL-71 LOCKOUT; START RCC-P-1B

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: RCC-P-1B has been manually started.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A plant shutdown is in progress.

All conditions, limitations, and prerequisites for this evolution are completed.

Initiating Cue:

The CRS has directed you to transfer SM-7 from SM-1 to the Backup Transformer.

Inform the CRS when SM-7 is being powered from the Backup Transformer.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	INITIATE RCIC FOR INJECTION (Simulator) (Alt Path)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LR000302	Rev. No.	11
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	1997
REVISED BY	Ron Hayden	DATE	12/06/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
	SAT Coordinator		
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Reset to a 100% IC. Take MODE switch to SHUTDOWN. When RPV Level starts to recover and is at -10 inches, trip both RFW pumps.

Special Setup Instructions:

Insert a malfunction prior to starting the JPM that fails the RCIC controller to control in Auto (OVR-RCI001C and set it to 0 and OVR-CNH-RCI002E and set it at 50%).

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0268**;** RO-0656

Validation Time: 6 minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-RCIC-INJECTION-QC Rev. 5

Location: Simulator

NUREG 1123 Ref: 217000A2.10 (3.1/3.1)
217000A2.11 (3.1/3.2)

Performance Method: Perform

Task Standard: RCIC is injecting with system flow at a minimum of 600 gpm

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia was scrammed due to an electrical problem associated with the Main Generator. PPM 5.1.1, RPV Level Control has been entered due to low RPV water level. As RPV level started to recover, both Reactor Feed Pumps tripped.
INITIATING CUE:	The CRS has directed you to initiate the RCIC system for RPV injection. Return RPV level to a +13" to +54" level band. Inform the CRS when you have established an injection flow rate of 600 gpm.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	1	Step 2.1.1 If not already operating, then perform the following:	Performs this step.		S / U
	2	Step 2.1.1a Verify the RCIC Manual Initiation pushbutton is armed.	Rotates RCIC-RMS-S36 to ARM by turning collar clockwise.		S / U *
	3	Step 2.1.1b Depress and hold the RCIC Manual Initiation pushbutton.	Depresses and holds the Manual Initiation pushbutton.		S / U *
	4	Step 2.1.1c When all applicable RCIC valves have repositioned, then release the RCIC Manual Initiation pushbutton.	Observes RCIC valves repositioning and when satisfied that all have repositioned, releases the pushbutton.	(Releasing pushbutton is the critical part of this step - refer to JPM step 5 for non-critical part of step).	S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
NOTE: When RCIC initiates the following occurs:					
	5	RCIC-V-45 (Steam to Turbine) opens RCIC-V-46 (Lube Oil Cooler Water Supply) opens RCIC-P-2 (Barometric Condsr Vacuum Pump) starts RCIC-V-13 (RPV Injection) opens RCIC-V-25 and RCIC-V-26 (Steam Line Warmup Drains to Main Condenser) close RCIC-V-4 and RCIC-V-5 (Cond Pump Discharge to EDR) close SW-P-1B starts (20 second time delay)	Observes: RCIC-V-45 Red light on and Green light off RCIC-V-46 Red light on and Green light off RCIC-P-2 Red light on and Green light off RCIC-V-13 Red light on and Green light off RCIC-V-25 and RCIC-V-26 Green light on and Red light off RCIC-V-4 and RCIC-V-5 Green light on and Red light off SW-P-1B Red light on and Green light off		S / U
	6	**Faulted Step** Recognizes failure of RCIC to inject to the RPV.	Recognizes that no flow has started to RPV. Diagnoses that the problem is associated with RCIC-FIC-600 as it is not on scale. May inform the CRS.	If CRS is informed: Take actions necessary to inject to the RPV with RCIC at 600 gpm.	S / U
	7	Takes manual control of RCIC-FIC-600 and adjusts RCIC system flow.	Places RCIC-FIC-600 in MANUAL and increases system flow to at least 600 gpm by depressing the controllers open pushbutton.		S / U *
Termination Criteria: When RCIC injection flow is established at least at 600 gpm inform the student that the termination point of the JPM has been reached.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
INITIATE RCIC FOR RPV INJECTION

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: RCIC is injecting with system flow at a minimum of 600 gpm.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia was scrammed due to an electrical problem associated with the Main Generator.

PPM 5.1.1, RPV Level Control has been entered due to low RPV water level.

As RPV level started to recover, both Reactor Feed Pumps tripped.

Initiating Cue:

The CRS has directed you to initiate the RCIC system for RPV injection.

Return RPV level to a +13”to +54.5” level band.

Inform the CRS when you have established an injection flow rate of 600 gpm.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE	LICENSED OPERATOR TRAINING/STA REQUALIFICATION TRAINING
COURSE TITLE	JOB PERFORMANCE MEASURE
LESSON TITLE	OPEN INBOARD MSIVs TO RE-ESTABLISH THE MAIN CONDENSER AS A HEAT SINK (Simulator)
LESSON LENGTH	.5 HRS

INSTRUCTIONAL MATERIALS INCLUDED

LESSON PLAN PQD CODE		Rev. No.	
SIMULATOR GUIDE PQD CODE		Rev. No.	
JPM PQD CODE	LO001638	Rev. No.	1
EXAM PQD CODE		Rev. No.	

DIVISION TITLE	Nuclear Training		
DEPARTMENT	Operations Training		
PREPARED BY	Ron Hayden	DATE	06/05/08
REVISED BY	Ron Hayden	DATE	09/13/12

TECHNICAL REVIEW BY		DATE	
INSTRUCTIONAL REVIEW BY		DATE	
APPROVED BY		DATE	
	Operations Training Manager		

Verify materials current IAW SWP-TQS-01 prior to use

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Any IC with the reactor at rated pressure
Ensure Stopwatch is available if timing is desired

Special Setup Instructions:

Post scram. Close the Inboard MSIVs (MS-V-22A –D). Close MS-V-146 to keep dP within 50 psig. And maintain RPV Pressure LT 960 psig.

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0311

Validation Time: 7 minutes

Alternate Path: No

Time Critical: NO

PPM Reference: SOP-MSIV-OPS Section 5.2 Rev. 16

Location: Simulator

NUREG 1123 Ref: 239001A4.01 (4.2/4.0)

Performance Method: Perform

Task Standard: The Inboard MSIVs are open.

JPM CHECKLIST

INITIAL CONDITIONS:	A loss of CIA pressure caused the CRS to direct a manual scram. The inboard MSIVs went closed due to low CIA pressure. CIA pressure has been restored. Health Physics has been notified of this evolution.
INITIATING CUE:	The CRS has directed you to equalize around and open the Inboard MSIVs per SOP-MSIV-OPS Section 5.2. Do NOT take and record the stroke time using Attachment 6.1. You have permission to N/A those steps. Notify the CRS when all of the MSIVs are open.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Note: This section is to be used only when the MSIV to be opened is wetted. Use section 5.5 or 5.6 to open MSIVs that require wetting.					
	57	Step 5.2.1 If not in Modes 1 or 2, then verify DEH pressure setpoint is GT RPV pressure prior to opening MSIVs.	Observes RPV pressure on MS-PR-1C (or other recorder). Observes DEH touch screen and notes DEH pressure setpoint. Verifies DEH setpoint is GT RPV Pressure.		S / U
	58	Step 5.2.2 Notify Health Physics the equalizing/opening of the MSIV's has the potential of changing radiological conditions.	Given in Initial Conditions as being completed.	If performed, refer candidate to Initial Conditions.	S / U
	59	Step 5.2.3 Verify the applicable MSIV control switch is Closed.	Observes all switches for the Inboard MSIVs are in the closed position.		S / U
Note: Differential pressure across the MSIV can be determined by RPV pressure MS-LR/PR-623A or B on H13-P601 and main steam supply header pressure MS-PR-1C pen 1 on H13-P820. Caution: Do not open the MSIVs with GT 50 psi differential pressure across them.					

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	60	Step 5.2.4 Verify the differential pressure across the MSIV is LT 50 psid.	Observes pressure on MS-LR/PR-623A/B on H13-P601 and MS-PR-1C on H13-P820 and verifies LT 50 psid.		S / U
	61	Step 5.2.5 If the reactor is in Mode 1 or 2,…..	Not in MODE 1 or 2 – does not perform this step.		S / U
	62	Step 5.2.6 Reset the isolation logic as follows:	Performs this step.		S / U
	63	Step 5.2.6a DEPRESS MS-RMS-S33 (Channel A and B Isolation Reset Pushbutton) (H13-P601).	Depresses the Channel A and B Isolation Reset Pushbuttons.		S / U *
	64	Step 5.2.6b DEPRESS MS-RMS-S33 (Channel C and D Isolation Reset Pushbutton) (H13-P601).	Depresses the Channel C and D Isolation Reset Pushbuttons.		S / U *
Note: Timing of MSIVs are required each time the MSIVs are stroked. The MSIVs may be timed using either a stop watch or TDAS as determined by the CRS. Note: The recorded data is for information only to be used for monitoring and trending purposes, there is no specific acceptance criteria. Note: The opening stroke time should be measured from the time the control switch is turned to Auto until the green (closed) light extinguishes. Note: Perform one of the following steps, depending on which valve is closed. N / A the other step.					
	65	Step 5.2.7 Perform the following to Open the Outboard MSIV: N/A those not opened.	All Outboard MSIVs are opened – does not perform this step.		S / U
	66	Step 5.2.8 Perform the following to Open the Inboard MSIV: N/A those not opened.	Performs this step.		S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	67	Step 5.2.8a Perform the following for MS-V-22A: 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22A control switch in Auto 4) Verify MS-V-22A Opens 5) Record open time on Attachment 6.1	1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22A clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform	If candidate wants to record opening times refer him to the Initiating Cue.	1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U
	68	Step 5.2.8b Perform the following for MS-V-22B: 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22B control switch in Auto 4) Verify MS-V-22B Opens 5) Record open time on Attachment 6.1	1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22B clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform		1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	69	Step 5.2.8c Perform the following for MS-V-22C: 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22C control switch in Auto 4) Verify MS-V-22C Opens 5) Record open time on Attachment 6.1	1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22C clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform		1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U
	70	Step 5.2.8d Perform the following for MS-V-22D: 1) Verify CIA header pressure is stabilized at normal system pressure on CIA-PI-20. 2) Verify H13-P840.A5-5.3, CIA Header Press Low is clear. 3) Place MS-V-22D control switch in Auto 4) Verify MS-V-22D Opens 5) Record open time on Attachment 6.1	1) Observes CIA-PI-20 on H13-P840 and notes pressure is stable and is a normal pressure (about 180 psig). 2) Observes H13-P840.A5-5.3 is not in an alarmed condition (is off). 3) Turns the control switches for MS-V-22D clockwise to the Open position. 4) Observes the Red light comes on and the Green light goes off. 5) Does not perform		1) S / U 2) S / U 3) S / U * 4) S / U 5) S / U
Termination Criteria: Student informs CRS that all MSIVs are open.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM
OPEN INBOARD MSIVs TO RE-ESTABLISH MAIN CONDENSER AS A HEAT SINK

Examinee (Print): _____

Evaluator (Print): _____

Task Standard: The Inboard MSIVs are open.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

A loss of CIA pressure caused the CRS to direct a manual scram.
The inboard MSIVs went closed due to low CIA pressure.
CIA pressure has been restored.
Health Physics has been notified of this evolution.

Initiating Cue:

The CRS has directed you to equalize around and open the Inboard MSIVs per SOP-MSIV-OPS Section 5.2.

DO NOT take and record the stroke times. You have permission to N/A those steps.

Notify the CRS when all of the MSIVs are open.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: LOWER RPV PRESSURE USING DEH; BPV FAILS OPEN (Alt Path) (Sim)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
JPM PQD Code	LO001721	Rev. No.	1
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 07/08/10

REVISED BY: Ron Hayden DATE: 12/06/12

TECHNICAL REVIEW BY: _____ DATE: _____

INSTRUCTIONAL REVIEW BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Reset to IC where reactor is scrammed and RPV/P is approximately 960 psig.
Insert the following malfunctions to have initiate on a Trigger with the severity 100%:
MAL-DEH-013B
MAL-DEH-013C
MAL-DEH-013D

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM. If any steps have changed, the JPM should be revised.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0348

Validation Time: 10 minutes

Alternate Path: Yes

Time Critical: No

PPM Reference: SOP-DEH-QC Rev. 4
ABN-PRESSURE Rev. 6

Location: Simulator

NUREG 1123 Ref: 241000 A4.02 (4.1/4.1)

Performance Method: Perform

Task Standard: RPV Pressure was being lowered to 550 psig at the rate of 50 psig per minute. Additionally, one MSIV in each main steam line was closed prior to RPV pressure reaching 500 psig.

JPM CHECKLIST

INITIAL CONDITIONS:	Columbia has just scrammed due to low RPV level. Another operator is returning RPV Level back to the normal operating band.
INITIATING CUE:	The CRS has directed you to lower RPV pressure to 550 psig at the rate of 50 psig per minute using DEH in Automatic per SOP-DEH-QC. Inform the CRS when RPV pressure is 550 psig.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	71	Step 2.1.1 Initiate Pressure setpoint change as follows (Turbine Start-Up, Reactor Start Display) or (Main Display).	Determines that one of the three screens is displayed. May select a different screen.		S / U
	72	Step 2.1.1a Select PRESSURE TARGET.	Touches and verifies PRESSURE TARGET selected.		S / U *
	73	Step 2.1.1b Enter desired pressure.	Touches and verifies 5 – 5 – 0 displayed.		S / U *
	74	Step 2.1.1c Select OK.	Touches and verifies OK selected.		S / U *
	75	Step 2.1.1d If a change in pressure rate is desired, then perform the following:	Continues with procedure step.		S / U
Time	**Step**	**Element**	**Standard**	**Cue**	**Sat/Unsat**

	76	Step 2.1.1d 1) Select PRESSURE RATE.	Touches and verifies PRESSURE RATE selected.		S / U *
	77	Step 2.1.1d 2) Enter desired PRESSURE RATE.	Touches and verifies 5 – 0 displays.		S / U *
	78	Step 2.1.1d 3) Select OK.	Touches and verifies OK selected.		S / U *
	79	Step 2.1.1e Select GO.	Touches and verifies GO selected.		S / U *
	80	Step 2.1.1f Select YES.	Touches and verifies YES selected.		S / U *
Trigger 1 initiates when RPV Pressure reaches 950 psig					
	81	Step 2.1.1g Verify PRESS DEMAND and THROTTLE PRESS change at the PRESSURE RATE.	Observes changing RPV Pressure at desired rate.		S / U

Time	Step	Element	Standard	Cue	Sat/Unsat
	82		When RPV Pressure reaches 950 psig may observe pressure drop is faster than previous or may note that three of the four bypass valves are at 100% Open. **It takes approximately 2 minutes 30 seconds to get to 500 psig.**	If candidate informs CRS that three bypass valves have failed open and is waiting for direction inform the candidate to perform the required procedural actions. If candidate attempts to refer to a procedure, inform him to perform the required actions from memory.	S / U *
	83		Candidate may attempt to take manual control of Bypass valves but will be unsuccessful in closing them.		S / U
	84	Per Immediate Actions of ABN-PRESSURE - Step 3.1: If DEH failure is suspected and RPV Pressure is dropping rapidly, then FAST CLOSE the MSIVs before pressure drops below 500 psig.	May refers to Quick Card.		S / U
	85	Quick Card Step 2.1.1 If isolating one Main Steam line, then verify reactor power is LE 65%.	Recognizes that the reactor is shutdown.		S / U
	86	Quick Card Step 2.1.2 If isolating multiple Main Steam lines, then verify the reactor is shutdown or verify a reactor scram has occurred.	Recognizes that the reactor is shutdown.		S / U

Time	Step	Element	Standard	Cue	Sat/Unsat
	87	Quick Card Step 2.1.3 Place the applicable MSIV control switch(es) to close: • MS-V-22A • MS-V-22B • MS-V-22C • MS-V-22D • MS-V-28A • MS-V-28B • MS-V-28C • MS-V-28D	Turns each MSIV control switch counter-clockwise to the Close position and verifies Green lights on and Red lights off.		S / U * **To pass this critical step at least one MSIV in each of the four Main Steam lines must be closed prior to RPV pressure reaching 500 psig**
Termination Criteria: When candidate informs the CRS that the MSIVs have been closed and the RPV depressurization has been stopped, inform him that the termination point of the JPM has been reached.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:
LOWER RPV PRESSURE USING DEH

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: RPV Pressure was being lowered to 550 psig at the rate of 50 psig per minute. Additionally, one MSIV in each main steam line was closed prior to RPV pressure reaching 500 psig.

Overall Evaluation	JPM Completion Time
SAT / UNSAT (Circle One)	**Minutes**

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

Columbia has just scrammed due to low RPV level.

Another operator is returning RPV Level back to the normal operating band.

Initiating Cue:

The CRS has directed you to lower Reactor Pressure to 550 psig at the rate of 50 psig/minute using DEH in Automatic per SOP-DEH-QC.

Inform the CRS when RPV pressure is 550 psig.

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: INITIAL LICENSED OPERATOR TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: MANUALLY INITIATES CONTAINMENT ISOLATIONS FOR THE TIP SYSTEM (Simulator) (Alt Path)

LESSON LENGTH: .5 HRS MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
JPM PQD Code	LO001599	Rev. No.	2
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ron Hayden DATE: 05/18/06

REVISED BY: Ron Hayden DATE: 12/06/12

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:

Operations Training Manager

Verify materials current IAW SWP-TQS-01 prior to use.

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs; Malfunctions; Triggers; Overrides:

Reset to a 100% IC.
Ensure GDS screen on P601 is displayed.
Fail TIP-V-5 open.
Trip both RFW pumps.
Ensure RPV level drops to LT -50".
After the scram, place mode switch in shutdown.

Special Setup Instructions:

None

JPM Instructions:

Verify Current Procedure against JPM and ensure procedure critical steps match if procedure is different revision than listed in JPM. If critical steps have changed, the JPM should be revised.

The evaluator and student shall use current procedure. The evaluator should mark off steps as they are completed, note comments, and transfer the comments to the "Results of JPM" page.

Tools/Equipment: None

Safety Items: None

Task Number: RO-0314

Validation Time: 15 Minutes

Prerequisite Training: N/A

Time Critical: No

PPM Reference: ABN-TIPS Rev. 2

Location: Simulator

NUREG 1123 Ref: 223002 A2.03 A3.01 A3.02

Performance Method: Perform

JPM CHECKLIST

INITIAL CONDITIONS:	The plant was operating at full power when both RFW pumps tripped. RPV level dropped to less than –50 inches.
INITIATING CUE:	The CRS has directed you to ensure all isolations for –50 inches RPV level signal per EOP 5.1.1. Another licensed operator has verified initiations and DG starts. Inform the CRS when EOP isolations for –50 inches have been verified.

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
Candidate is not given any reference material to start this JPM. Candidate may refer to GDS screen or quick card to determine required isolations. GDS will indicate TIP-V-5 is opened. The indicating lights for the valve on H13-P601 will also indicate valve is opened.					
	88	Identifies all isolations are not complete.	Refers to GDS screen or quick card and notes TIP-V-5 is not closed and informs the CRS.	You are directed to take the necessary actions to isolate the penetration per ABN-TIPS. Hand the candidate his procedure copy.	S / U *
CUE: When the first note is read, inform candidate that no TIP operations are or were being performed.					
NOTE: If the failure to isolate occurred during TIP operation, this procedure may be entered at step 4.5. **NOTE**: If the affected drive unit is not known, then it may require that all of the Tip units need to be checked.					
	89	Step 4.1 If necessary, then close the following TIP Drive Unit Breakers: • E-CB-PP8CAA/22 (TIP-DRIVE-1A) • E-CB-PP8CAA/23 (TIP-DRIVE-1B) • E-CB-PP8CAA/24 (TIP-DRIVE-1C) • E-CB-PP8CAA/25 (TIP-DRIVE-1D) • E-CB-PP8CAA/26 (TIP-DRIVE-1E)	Verbalizes this step.	When step is verbalized, inform candidate that the TIP Drive Unit Breakers are all closed.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	90	Step 4.2 Verify the following for each Drive Control Unit (A through E) (H13-P607): • The Mode switch is in the OFF position	Observes the Mode switch for drive E is in the OFF position. **(Note: Other drives may also be verified/operated during the remainder of the JPM).**		S / U
	91	• The Manual Drive switch is in the OFF position	Observes the Manual Drive switch for drive E is in the OFF position.		S / U
	92	• The Manual Valve Control switch is in the CLOSED position	Observes the Manual Valve Control switch for drive E is in the CLOSED position.		S / U
	93	Step 4.3 Place the MODE switch to the MAN position for each Drive Control Unit (A through E)	Turns the Mode switch for drive E to the MAN position.	(Only placing the Mode switch to MAN for drive E is critical)	S / U *
	94	Step 4.4 Verify the following:	Performs this step.		S / U
	95	• The READY light is illuminated	Observes the white READY light is on for drive E.		S / U
	96	• The IN-SHIELD light is illuminated. (If any detectors are NOT IN-SHIELD, proceed to the following step).	Observes the white In-Shield light is on for drive E.		S / U
	97	• The detector position is at the posted IN-SHIELD location, + 1”.	Verbalizes this step.	Cue: The detector position is at the posted IN-SHIED location.	S / U
	98	Step 4.5 Refer to Technical Specification 3.6.1.3.	Refers CRS to Tech Spec 3.6.1.3.	Roleplay as necessary.	S / U

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	99	Step 4.6 If any detector is not in-shield, then retract each affected detector to the IN-SHIELD position as follows: • Place the Manual Drive Control switch on the appropriate Drive Control Unit to the REV position • Verify the IN-SHIELD light is illuminated	Recognizes that all detectors are IN-SHIELD – step is not performed.	If candidate performs this step cue that the detector position is at the posted IN-SHIED location.	S / U
	100	Step 4.7 If the detector is still not IN-SHIELD, then consider manually cranking the affected detector to the IN-SHIELD position from the Drive Mechanism per PPM 10.27.74.	Recognizes that all detectors are IN-SHIELD – step is not performed	If candidate performs this step cue that the detector position is at the posted IN-SHIED location.	S / U
	101	Step 4.8 If the detector is still not IN-SHIELD OR the isolation valve has failed to close, then isolate the affected TIP line(s) as follows:	Performs this step as the isolation valve has failed to close.		S / U
	102	Step 4.8.1 Obtain permission from the CRS/Shift Manager to fire the applicable squib valve(s).	Requests permission of the CRS to fire the squib valve. The Candidate may already assume he has permission.	If CRS's permission is requested, give permission to fire the squib valve.	S / U
	103	Step 4.8.2 Place the key lock valve control switch (key number 31,32,33,34,35) on the appropriate valve control drawer to the FIRE position for the channel(s) that did not isolate.	Obtains key #35 from the key locker outside the Shift Managers office. Places the TIP shear valve (TIP-V-5) to the FIRE position.		S / U *

*** Items are Critical Steps**

Time	Step	Element	Standard	Cue	Sat/Unsat
	104	Step 4.8.3 Verify the applicable squib Monitor lights are illuminated.	Observes the squib and shear valve monitor lights illuminated for TIP-V-5.		S / U
Termination Criteria: Termination Criteria: Inform the Candidate that the termination point for the JPM has been reached.					
Transfer the following to the "Results of JPM" page: Any Unsat step - indicate if step was a Critical Step; JPM completion time.					

RESULTS OF JPM:

MANUALLY INITIATES CONTAINMENT ISOLATIONS FOR THE TIP SYSTEM

Examinee (Please Print): _____

Evaluator (Please Print): _____

Task Standard: The line associated with TIP-V-5 has been isolated per ABN-TIP.

Overall Evaluation	Exam Code
SAT / UNSAT (Circle One)	

Verified Procedure #/Rev. Used for JPM (Initial Box)	Validation/Critical Time	JPM Completion Time
	15 Minutes / NA	

COMMENTS:

Evaluator's Signature: _____ **Date:** _____

STUDENT JPM INFORMATION CARD

Initial Conditions:

The plant was operating at full power when both RFW pumps tripped.

RPV level dropped to less than –50 inches.

Cue:

The CRS has directed you to ensure all isolations for a -50 inch RPV level signal per EOP 5.1.1.

Another licensed operator has verified initiations and DG starts.

Inform the CRS when EOP isolations for -50 inches have been verified.