FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

NUREG-1021 - ES-501

ES-301-1 - ADMIN TOPICS OUTLINE

ES-301-2 - CONTROL ROOM SYSTEMS AND FACILITY WALK-THROUGH TEST OUTLINE

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

NUREG-1021 - ES-501

FINAL AS GIVEN
OPERATOR ACTIONS

F.1.g - FORM ES-D-2
OPERATOR ACTIONS

Facility: **SHNPP** Scenario Number: **1** Op-Test Number: ______

Examiners

______

______

______

Operators

(S-1) ______

(R-1) ______

(R-2) ______

Objectives: To evaluate the candidates' ability to respond to a NIS power range malfunction requiring manual rod control. To evaluate the candidates' ability to shutdown the HDPs. To evaluate the candidates' ability to respond to a SG level channel failure, a pressurizer pressure high failure with a subsequent failure of a pressurizer PORV to reseat, and a trip of the running condenser vacuum pump. During the required power reduction, the candidates will be evaluated on their ability to control reactivity. The candidates will be evaluated on their ability to diagnose and respond to a SGTR. Following the plant trip, the candidates will be required to respond to a failure of the turbine to trip when required. Post-trip complications will also include a failed open safety valve on the ruptured SG.

Initial Conditions: IC-6, 38% power BOL; Equipment OOS is RHR Pump 1B-SB.

Turnover: Power is 38% at BOL. Core burnup is 52 EFPD.

RHR Pump 1B-SB has been out of service for 64 hours and is not expected to be available within the next 8 hours. Technical Specification action 3.5.2.a has been entered and a shutdown at 5 MW/min is being performed to meet Technical Specifications.

Boron concentration is 1230 ppm. Bank D rods are at 152 steps.

Shift orders are to continue the power power reduction and be prepared to perfom a reactor shutdown within the next 4 hours. GP-006 has been completed through Step 15.

Event Number	Malfunction Number (1)	Event Type*	Event Description
1	IMF NIS08D 200 0	RO(I) SRO(I)	NIS PR Channel N-44 High Failure
2	NA	BOP(N) SRO(N)	Stop both HDPs per OP-136
3	NA	BOP(N) SRO(N)	Continued plant power reduction
		RO(R) SRO(R)	Reactivity control during power reduction

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

#1

INIT TO IC-6

\# B RHR OOS
MRF RHR023 RACK_OUT

\# TURBINE AUTO TRIP FAILURE
IMF TUR02

\# A MSL RAD MONITOR FAILED AS IS
MRF RMS169 0.29 0

\# NI-44 fails hi
TRG E1 = IMF NIS08D 200 0

\# LT-486 FAILS LOW
TRG E4 = ICOR LT:486 0 30

\# CVP A TRIP
TRG E5 = IMF CND04A

\# PT-444 FAILS HIGH AND PCV-444B FAILS TO RESEAT
TRG E6 = ICOR PT:444 2500 60
TRG E6 = IMF PRS03F 1 0 10

\# SGTR ON A SG
TRG E7 = IMF SGN05A 715 720

\# SG SAFETY ON A SG FAILS OPEN
TRG E9 = IMF SGN04A 100 0

Event Number	Malfunction Number (1)	Event Type*	Event Description
4	ICOR LT:486 0 30	BOP(I) SRO(I)	SG B controlling level channel LT-486 failed low
5	CND04A	BOP(C) SRO(C)	Condenser Vacuum Pump A trip
6	ICOR PT:444 2500 60	RO(C) SRO(C)	Pressurizer Pressure Channel P-444 high failure
	PRS03F 1 0 10	RO(C) SRO(C)	Pressurizer PORV PCV-444B fails to reseat following high failure of Pressurizer Pressure Channel P-444
7	SGN05A 715 720	RO(M) BOP(M) SRO(M)	Steam Generator Tube Rupture on SG A, ramped over 720 secs
	MRF RMS169 0.29 0	RO(M) BOP(M) SRO(M)	Failure of Steamline Radiation Monitor to respond to SGTR
8	TUR02	BOP(C) SRO(C)	Main Turbine fails to trip on Reactor Trip
9	SGN04A 50 0	BOP(C) SRO(C)	Steam Generator Safety fails open following isolation of ruptured SG
10	NA	SRO	Classify the Event

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

Simulator Setup & Actions Required for Scenario # 1

Event Number	Simulator Operator Actions
INITIAL CONDITIONS	IC-6, 38% power. Set pots BORON 4.04, RMUW 7.5. Press START on scaler timer. Place SG LVL ATWS PANEL BYPASS in BYPASS Equipment OOS is RHR Pump 1B-SB. Rackout breaker and hang tags. • MRF RHR023 RACK_OUT Malfunction for Event 7 ACTIVE AT SETUP • MRF RMS169 0.29 0 Malfunction for Event 8 ACTIVE AT SETUP • IMF TUR02
1	TRG E1 = IMF NIS08D 200 0
2	NONE
3	NONE
4	TRG E4 = ICOR LT:486 0 30
5	TRG E5 = IMF CND04A
6	TRG E6 = ICOR PT:444 2500 60 TRG E6 = IMF PRS03F 1 0 10
7	TRG E7 = IMF SGN05A 715 720 ACTIVE AT SETUP • MRF RMS169 0.29 0
8	ACTIVE AT SETUP • IMF TUR02
9	TRG E9 = IMF SGN04A 50 0
10	NONE

SHIFT TURNOVER SCENARIO # 1

Power is 38% at BOL. Core burnup is 52 EFPD.

RHR Pump 1B-SB has been out of service for 64 hours and is not expected to be available within the next 8 hours. Technical Specification action 3.5.2.a has been entered and a shutdown at 5 MW/min is being performed to meet Technical Specifications.

Boron concentration is 1230 ppm. Bank D rods are at 152 steps.

Shift orders are to continue the power power reduction and be prepared to perfom a reactor shutdown within the next 4 hours. GP-006 has been completed through Step 15.

Op-Test Number:	1	Event Number:	1
Event Description:	***NIS PR Channel N-44 High Failure***		

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnose High Failure of NIS PR Channel N-44 - ALB-013-04-1, POWER RANGE HIGH NEUTRON FLUX HIGH SP ALERT, alarming - ALB-013-04-2, POWER RANGE HIGH NEUTRON FLUX RATE ALERT, alarming - ALB-013-04-5, POWER RANGE CHANNEL DEVIATION, alarming - ALB-013-05-1, OVERPOWER ROD STOP, alarming - PR Channel N-44 indicating high - Control Rods stepping inward at maximum speed in AUTO
	SRO	Enters and directs the actions of AOP-001, Malfunction of Rod Control and Indication System
	RO	Verifies NO turbine runback in progress and places rod control in MAN ***NOTE: This is an IMMEDIATE ACTION of AOP-001.***
	RO	Determines rod motion caused by failure of N-44
	SRO	Directs the actions of OWP-RP-26 to address N-44 failure and to allow withdrawal of control rods in MAN

Op-Test Number: ________ 1 Event Number: 1

Event Description: ***NIS PR Channel N-44 High Failure***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies ROD BANK SELECTOR switch in MAN
	RO	Verifies FW REG BYP VALVE Controllers in MAN - FK-479.1 - FK-489.1 - FK-499.1
	BOP	Places ROD STOP BYPASS switch to BYPASS PR N44 position on Detector Current Comparator Drawer
	BOP	Places UPPER SECTION and LOWER SECTION switches to PR N44 positions on Detector Current Comparator Drawer
	BOP	Places COMPARATOR CHANNEL DEFEAT switch to N44 position on Comparator and Rate Drawer

Op-Test Number: ______ 1	Event Number: 1	
Event Description: ***NIS PR Channel N-44 High Failure***		

Time	Position	Applicant's Actions or Behaviors
	RO	Withdraws control rods in MAN to restore Tave within 2°F of Tref as directed by SRO when ROD STOP BYPASS switch placed in BYPASS PR N44 position
	SRO	Refers to Tech Spec 3.3.1 (6 hour requirement)
	SRO	Initiates WR/JO

Op-Test Number: ________ 1	Event Number: 2
Event Description: ***Stop both HDPs per OP-136***	

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct the BOP to coordinate removing the HDPs from service per OP-136
	BOP	Create a plot on ERFIS to monitor Heater Drain Pump discharge flow, discharge pressure and heater level. FHD-1255A(B) PHD1255A(B) LHD1250A(B)
	BOP	Establish communications between the Main Control Room and the technician at 4A(B) pneumatic alternate level controller or the operator at the Heater Drain Pump discharge level controller.
	BOP	If desired, direct the AO to place the 4A(B) Feedwater Heater Sight Glass in service by slowly opening the applicable isolation valves listed below: a. 1HD-293-LI1-2 (1HD-299-LI1-2), LG-01HD-1250A (B)Instrument Valve. b. 1HD-293-HI1-2 (1HD-299-HI1-2), LG-01HD-1250A (B) Instrument Valve.
		NOTE: Due to safety concerns with sightglasses failing, this may not be performed. ***CUE: AO reports sight glass isolation valves are open.***

Op-Test Number: ________ 1 Event Number: 2

Event Description: ***Stop both HDPs per OP-136***

Time	Position	Applicant's Actions or Behaviors
	BOP	If using Maintenance to control the 4A(4B) pneumatic alternate level controller, perform the following: a. While monitoring Heater Drain Pump discharge flow, direct Maintenance to lower the set point on 4A(B) pneumatic alternate level controller to slowly reduce heater level 1 to 3 inches. b. When Heater Drain Pump discharge flow is less than or equal to 500 kpph, stop Heater Drain Pump A(B). c. Direct Maintenance to slowly adjust 4A(B) Feedwater Heater level to return the controller to the normal set point and stabilize level.
		NOTE: Step 'a' does not have to be completed before performing step 'b' to prevent a Heater Drain Pump from tripping on low flow.
		SIMULATOR OPERATOR INSTRUCTIONS: USE CND053 MAN and CND054 @ 5 (60 sec ramp) AND CND055 MAN and CND056 @ 5 (60 sec ramp).
	BOP	If using an operator to control the Heater Drain Pump discharge level controller, perform the following: a. While monitoring Heater 4A (4B) level and Heater Drain Pump flow, direct the operator to take manual control and slowly shut the Heater Drain Pump discharge level control valve. b. When Heater Drain Pump discharge flow is less than or equal to 500 kpph, stop Heater Drain Pump A(B). c. Direct the operator to place the Heater Drain Pump discharge level controller in Automatic.
		NOTE: Step 'a' does not have to be completed before performing step 'b' to prevent a Heater Drain Pump from tripping on low flow.
		SIMULATOR OPERATOR INSTRUCTIONS: USE CND041 MAN and CND042 @ 10 (60 sec ramp) AND CND043 MAN and CND044 @ 10 (60 sec ramp).

Op-Test Number: ________ 1 Event Number: 2

Event Description: ***Stop both HDPs per OP-136***

Time	Position	Applicant's Actions or Behaviors
	BOP	Direct the AO to verify the 4A and 4B Feedwater Heater Sight Glasses are isolated by shutting isolation valves listed below: a. 1HD-293-HI1-2, LG-01HD-1250A Instrument Valve. b. 1HD-293-LI1-2, LG-01HD-1250A Instrument Valve. c. 1HD-299-HI1-2, LG-01HD-1250B Instrument Valve. d. 1HD-299-LI1-2, LG-01HD-1250B Instrument Valve.
		NOTE: Due to safety concerns with sightglasses failing, this may not be performed. ***CUE: AO reports isolation valves are closed.***

Op-Test Number: ______ 1	Event Number: 3	
Event Description: ***Continued plant power reduction***		

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct the actions of GP-006
	SRO	Reviews Precautions and Limitations with crew
	BOP	Opens MSR Purge Vents 1HD-38 and 1HD-338 and closes MSR Normal Vents 1HD-37 and 1HD-337
	SRO	Directs RO to maintain Tave within 2^{o}F of Tref using manual rod control during power reduction
	RO	Controls reactivity during downpower evolution by adjusting rods in MANUAL and/or boron concentration as necessary

Op-Test Number: ________ 1 Event Number: 4

Event Description: ***SG B controlling level channel LT-486 failed low***

Time	Position	Applicant's Actions or Behaviors
		NOTE TO SIMULATOR OPERATOR: EVENT 3 SHOULD BE ACTIVATED AFTER POWER IS REDUCED APPROXIMATELY 5% AS DIRECTED BY EXAMINERS.
	BOP	Diagnose low failure of controlling SG 'B' level channel - SG B NR LVL/SP HI/LO DEV (ALB-14-2-1B) alarming - STEAM GEN B LOW LVL (ALB-14-5-4A) alarming - STEAM GEN B LOW-LOW LEVEL (ALB-14-5-4B) alarming - SG 'B' level, LI-486 SB, indicating 0% - SG B FW > STM FLOW MISMATCH (ALB-14-5-1A) alarming - SG 'B' feed flow > steam flow - SG 'B' feed reg valve opening - SG 'B' level rising on operable SG level channels
	SRO	Directs the BOP to take manual control of FK-488 and reduce feed flow
	BOP	Take manual control of FK-488 and reduce feed flow
		NOTE: High-High level trip occurs at 82.4%.
	BOP	Restore SG 'B' level with feed flow and steam flow matched

Op-Test Number: ________ 1 Event Number: 4

Event Description: ***SG B controlling level channel LT-486 failed low***

Time	Position	Applicant's Actions or Behaviors
	SRO	Refer to OWP-RP for SG 'B' level failure
	SRO	Refers to TS 3.3.1 (Item 13), 3.3.2 (Item 5), 3.3.3.6 (Item 7) - most limiting is 6 hour requirement to trip bistables
	SRO	Initiate a WR/JO and informs Ops Management

Op-Test Number: ________ 1 Event Number: 5

Event Description: ***Condenser Vacuum Pump A trip***

Time	Position	Applicant's Actions or Behaviors
	BOP	Diagnose trip of Condenser Vacuum Pump 'A' - CONDENSER VACUUM PUMP A TRIP (ALB-021-4-1) alarming - Condenser Vacuum Pump 'A' light indication - Slowly lowering condenser vacuum
	SRO	If condenser vacuum lowers, refers to and directs the actions of AOP-012, Partial Loss of Condenser Vacuum
	SRO	Directs BOP to start standby Vacuum Pump and directs AO to investigate cause of trip of vacuum pump
	BOP	Starts Condenser Vacuum Pump 'B'
	SRO	Initiates WR/JO

Op-Test Number: 1 Event Number: 6

Event Description: ***Pressurizer PORV PCV-444B fails to reseat following high failure of Pressurizer Pressure Channel P-444***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnoses high failure of Pressurizer Pressure channel P-444 - PRESSURIZER HIGH PRESS DEVIATION CONTROL (ALB-009-3-1), alarming - PRESSURIZER RELIEF DISCHARGE HIGH TEMP (ALB-009-8-2), alarming - PRESSURIZER HIGH-LOW PRESS (ALB-009-5-1), alarming - PRESSURIZER RELIEF TANK HIGH-LOW LEVEL PRESS OR TEMP (ALB-009-8-1), alarming - PRZ heaters off - PRZ sprays open - PRZ PORV 444B open - PRZ pressure lowering on other channels
	SRO	Enters and directs the actions of AOP-019, Malfunction of RCS Pressure Control
	RO	Verifies proper operation of PRZ PORVs and determines PORV 444B failed to fully close as pressure lowers
		NOTE: This is an IMMEDIATE ACTION of AOP-019.

Op-Test Number: ________ 1 Event Number: 6

Event Description: ***Pressurizer PORV PCV-444B fails to reseat following high failure of Pressurizer Pressure Channel P-444***

Time	Position	Applicant's Actions or Behaviors
	RO	Takes manual control of pressurizer pressure by either: a. Placing master controller PK-444A in manual, or b. Placing heaters and spray valves in manual
	RO	Attempts to close PRZ PORV 444B by placing control switch in CLOSE
	RO	Closes PRZ PORV 444B isolation valve, RC-113
	RO	Restore pressurizer pressure to normal using manual control
	RO	Refers to Attachment 2 of AOP-019 for operation of PK-444A

Op-Test Number: ______ 1 Event Number: 6

Event Description: ***Pressurizer PORV PCV-444B fails to reseat following high failure of Pressurizer Pressure Channel P-444***

Time	Position	Applicant's Actions or Behaviors
	SRO	Refers to TS 3.4.4 - 1 hour requirement to remove power from block valve
	SRO	Initiate a WR/JO

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnoses Steam Generator Tube Rupture on SG A - Charging flow greater than letdown flow with constant Tavg and PRZ level - Increased VCT makeup system operation - Turbine building vent stack or condenser vacuum pumps effluent radiation monitor(s) increasing or alarming - SG blowdown radiation monitor increasing or alarming ***NOTE: It would normally be expected that steamline radiation monitors would respond, but affected monitor is failed "as is".***
	SRO	Enters and directs the actions of AOP-005, Radiation Monitoring System
	RO	Sounds local evacuation alarm and makes plant announcement
	BOP	Isolates SGBD using FK-8405A/B/C, at a minimum, and may also isolate SGBD using 9 valves on Panel 1 as time permits
	SRO	Enters and directs the actions of AOP-016, Excessive Primary Plant Leakage
	CREW	If RCS leakage is determined to be greater than automatic OR manual VCT makeup capability (120 gpm), THEN: a. Trips the reactor. b. Manually initiates safety injection c. Go To EOP Path-1.

Op-Test Number:	1	Event Number: 7
Event Description:	**_Steam Generator Tube Rupture on SG A, ramped over 720 secs_**	

Time	Position	Applicant's Actions or Behaviors
	RO	Verify Reactor Makeup Control System operates to maintain VCT level
	RO	Maintain pressurizer level by increasing charging and, if necessary, isolating letdown
	RO	Attempt to determine RCS leak rate
		NOTE: May be difficult to estimate leak rate due to increasing size of SGTR causing change in charging flow and pressurizer level.
	SRO	If time permits, refer to TS 3.4.6.2 for leakage limitations
	SRO	If time permits, Notify radiological personnel of tube rupture

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	SRO	If time permits, Attempt to quantify leakage to SG from RCS
	SRO	If time permits, Determine leaking SG(s) by: - Individual SGBD samples - Main steam line radiation monitor levels - Local surveys of SGBD lines
	SRO	If time permits, and if turbine building vent stack radiation monitor reaches the alert alarm, notify Chemistry to sample the stack for assessment of offsite dose impact
	SRO	Orders manual reactor trip and safety injection when leak exceeds makeup capabilities
	SRO	Enters and directs the actions of EOP PATH-1

Op-Test Number: ______ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	SRO	Initiates monitoring of CSFSTs
	RO	Manually trips the reactor and manually initiates safety injection
	BOP	Determines turbine failed to automatically trip and manually trips the turbine **(Event 8)**
		CRITICAL TO TRIP TURBINE TO PREVENT EXCESSIVE COOLDOWN AND DEPRESSURIZATION OF RCS THAT RESULTS IN LOSS OF SUBCOOLING.
	BOP	Determines 1A-SA and 1B-SB powered from offsite source
	RO	Determines SI manually actuated
	CREW	Begin monitoring of Foldout A

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	CREW	Verifies the following: - All CSIPs and 1A-SA RHR pump running - 2 CCW pumps running - All ESW and ESW booster pumps running - Containment pressure below 10 psig - Phase A isolation valves shut - SGBD and sample isolation valves shut - FW isolation has occurred and MFW pumps tripped
	BOP	Verifies both MDAFW pumps running
		NOTE: SRO may direct at this time that AFW flow be isolated to SG 'A' once level is above 10%.
	BOP	Verifies MSL isolation NOT required and MSL isolation valves open
	BOP	Verifies the following: - Both EDGs running - Containment Fan Coolers running in slow speed - CV isolation has occurred - CR ventilation aligned for emergency recirc
	RO	Verify proper SI alignment - SI flow > 200 gpm - RCS pressure > 190 psig

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies adequate AFW flow and/or adequate SG level, determines AFW valves properly aligned, and controls AFW flow to maintain proper SG level
	RO	Verifies proper SI alignment
	RO	Resets SI, Phase A, Phase B, and FW isolation
	BOP	Energize AC buses 1A1 and 1B1
	RO	Establish instrument air and nitrogen to containment
	SRO	Directs AO to place IA compressors in LOCAL

Op-Test Number: ______ 1 ______ Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	BOP	Align Containment Hydrogen Monitoring and Control Room Ventilation
	BOP	Reset MSRs
	RO	Verifies RCS temperature trending to 557°F
	RO	Ensure all unisolated PRZ PORVs shut
		NOTE: Unisolating the failed PORV could result in an uncontrolled depressurization.
	RO	Control RCS pressure and maintain normal seal injection
	CREW	Determine NO SG depressurizing in an uncontrolled manner or completely depressurized

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	CREW	Determine secondary radiation levels NOT normal
		NOTE: Previously alarming and/or high secondary radiation monitors may be lowering and/or no longer alarming due to monitors being isolated. This should NOT preclude making the determination that secondary radiation levels are abnormal.
	SRO	Transition to and direct the actions of EOP PATH-2, Entry Point J
	CREW	Begin monitoring Foldouts C and D
	SRO	Directs S-SO to evaluate EAL network and implements FRPs as required
		NOTE: No FRPs are anticipated to be required at this time.
	RO	Verify SR energizes

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	RO	Align CCW to sample system
	SRO	Direct chemistry to obtain boron and activity samples of all SGs and RCS
	CREW	Identify ruptured SG - Rising level with AFW isolated - Boron and activity samples, when available
	BOP	Isolates ruptured SG - Adjusts PORV controller to 88% and verifies proper operation - Shut blowdown isolation valves on 'A' SG - Shut 'A' MSIV and bypass - Shut 'A' SG main steam drain isolation before MSIV - Control feed flow to 'A' SG to maintain level 10% to 15%
		NOTE: Level is likely to be well above 15% due to the large size of the SGTR.
		NOTE TO SIMULATOR OPERATOR: INSERT EVENT 9 (SG SAFETY FAILS OPEN) IMMEDIATELY AFTER MSIV IS CLOSED PER PATH-2.

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnoses failed open SG safety valve **(Event 9)** - Lowering SG pressure - Lowering RCS temperature - Steam flow indicated
	SRO	Transitions to and directs the actions of EPP-014, Faulted Steam Generator Isolation - Based on foldout item for faulted SG
		NOTE: Only required performance actions are listed in following steps.
	BOP	Shuts MSIVs 'B' and 'C'
	BOP	Shuts AFW isolations to SG 'A' - 1AF-55 - 1AF-137
	BOP	Shuts MSIV Before Seat Drains on 'B' and 'C' - 1MS-266 - 1MS-301
	SRO	Transitions to PATH-2, Entry Point J, and directs the actions

Op-Test Number: ____ 1 ____ Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
		NOTE: Following actions may have already been taken during previous entry in PATH-2. Actions are NOT required to be repeated, but should be verified to still be in effect.
	SRO/RO/BOP	Verifies actions previously performed in PATH-2 still in effect - Monitoring Foldouts C and D - Evaluation of EAL network - Monitoring and implementation FRPs as required - SR energized - CCW aligned to sample system - Chemistry sampling to obtain boron and activity of all SGs and RCS - Identification of the ruptured SG
		NOTE: Following actions may have already been taken during previous entry in PATH-2 due to timing of diagnosis of faulted SG. Actions previously performed are NOT required to be repeated, but should be verified to still be in effect. Actions NOT previously performed are required to be performed.
	SRO	Monitors ruptured SG and determines it is also faulted and not required for RCS cooldown
	BOP	Verifies FW flow isolated to SG 'A'
	RO	Verifies PORV Block Valve for PORV 444B remains closed and verifies other PORV Block Valve open
	BOP	Verifies SGs 'B' and 'C' intact, levels > 10%, and at least 222.5 KPPH AFW flow available

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	BOP	Controls AFW flow to SGs 'B' and 'C' to control levels between 40% and 50%
	BOP	Verifies all emergency and non-emergency buses energized by offsite power
	RO	Verifies RCS pressure > 190 psig and stops RHR Pump 1A-SA
	BOP	Verifies SG 'A' MSIV and MSIV Bypass are closed

Op-Test Number: ________ 1 Event Number: 7

Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***

Time	Position	Applicant's Actions or Behaviors
	SRO	Determines SG pressure > 300 psig
		NOTE: If pressure determined to be < 300 psig at this time, a transition to EPP-020 would be required. ***IF TRANSITION MADE TO EPP-020 AT THIS TIME, TERMINATE SCENARIO.***
	RO	Trips RCPs based on Foldout Page Criteria (200 gpm SI flow and RCS pressure < 1360 psig)
		CRITICAL TO TRIP RCPs PRIOR TO COMMENCING RCS COOLDOWN.
	RO	Block low steamline pressure SI ***NOTE: MSIVs are already closed so taking this action will have no effect. However, it is likely that crew will perform this action.***
	SRO	Determines target cooldown temperature based on ruptured SG pressure

Op-Test Number: ______ 1	Event Number: 7	
Event Description: ***Steam Generator Tube Rupture on SG A, ramped over 720 secs***		

Time	Position	Applicant's Actions or Behaviors
	BOP	Dumps steam from intact SGs to cooldown to target temperature
		NOTE: RCS temperature may already be at or below target temperature due to faulted SG.
		TERMINATE SCENARIO WHEN TARGET TEMPERATURE IS REACHED FOLLOWING COOLDOWN.

Op-Test Number: ________ 1 Event Number: 8

Event Description: ***Main Turbine fails to trip on Reactor Trip***

Time	Position	Applicant's Actions or Behaviors
		NOTE: Actions for Event 8 are performed during Event 7.

Op-Test Number: ________ 1 Event Number: 9

Event Description: ***Steam Generator Safety fails open following isolation of ruptured SG***

Time	Position	Applicant's Actions or Behaviors
		NOTE: Actions for Event 9 are performed during Event 7.

Op-Test Number: 1	Event Number: 10
Event Description: ***Classify the Event***	

Time	Position	Applicant's Actions or Behaviors
	SRO	Classifies the event as a Site Area Emergency (EAL 2-1-3)
		NOTES: ***1) Based on SGTR with failed open safety valve with fuel intact. (2 FPBs Breached)*** ***2) Classification of the event following the scenario is considered 20% of the Performance Rating for JPM SRO-A.4.***

Facility: SHNPP	Date of Examination: 11-Dec-00
Examination Level: RO	Operating Test Number:

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	CONDUCT OF OPERATIONS	Determination of Inoperable Instrument During Daily Surveillance
		Perform a Manual Shutdown Margin Calculation
A.2	EQUIPMENT CONTROL	Determine Clearance Requirements
A.3	RADIATION CONTROL	Determine Entry Requirements for a Contaminated Area
A.4	EMERGENCY PLAN	Notify State and County Agencies

Facility:	SHNPP	Date of Examination:	11-Dec-00
Examination Level:	SRO-U	Operating Test Number:	

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	CONDUCT OF OPERATIONS	Determine Main Turbine Loading Information Using Operations Curve Book
		Perform a Manual Shutdown Margin Calculation
A.2	EQUIPMENT CONTROL	Review of Completed Operations Surveillance Test
A.3	RADIATION CONTROL	Determine Entry Requirements for a Contaminated Area
A.4	EMERGENCY PLAN	Perform an Emergency Action Level Classification and Recommend Protective Actions

Facility: **SHNPP** Date of Examination: **11-Dec-00**

Examination Level: **SRO-U** Operating Test Number: ______

B.1 Control Room Systems

	System/JPM Title	Type Code*	Safety Function (KA #)
a.	Obtain a Grab Sample on the Plant Vent Stack	NS	7 (073A4.02)
b.	Perform RHR IST Valve Testing	NSL	4P (005A4.01)
c.	Manually Align SI Following a LOSP	DASL	2 (006A4.02)
d.			
e.			
f.			
g.			

B.2 Facility Walk-Through

	System/JPM Title	Type Code*	Safety Function (KA #)
a.	Locally Reset the Turbine Driven Auxiliary Feed Pump	DRSL	4S (WE05EA1.1)
b.	Emergency Makeup to the Spent Fuel Pool	MAR	8 (033A2.03)
c.			

*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol Room, (S)imulator, (L)ow-Power, (R)CA

Facility: **SHNPP** Date of Examination: **11-Dec-00**

Examination Level: **RO** Operating Test Number: ______

B.1 Control Room Systems		
System/JPM Title	Type Code*	Safety Function (KA #)
a. Obtain a Grab Sample on the Plant Vent Stack	NS	7 (073A4.02)
b. Perform RHR IST Valve Testing	NSL	4P (005A4.01)
c. Establish High Head SI Flow	MASL	2 (006A4.07)
d. Restore Off-Site Power to an Emergency Bus	DS	6 (062A4.01)
e. Secure One Train of CCW to the RHR HXs	NS	8 (008A4.01)
f. Place Containment Cooling in 118°F Mode	MAS	5 (022A4.01)
g. Perform Control Rod Exercise Test	NAS	1 (003AA1.05)
B.2 Facility Walk-Through		
a. Locally Reset the Turbine Driven Auxiliary Feed Pump	DRSL	4S (WE05EA1.1)
b. Emergency Makeup to the Spent Fuel Pool	MAR	8 (033A2.03)
c. Inhibit Both Trains of SSPS	DL	7 (012A4.05)

*Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol Room, (S)imulator, (L)ow-Power, (R)CA

Facility: **SHNPP** Scenario Number: **2** Op-Test Number: ______

Examiners

______

______

______

Operators

(S3) ______

(R3) ______

(R1) ______

Objectives: To evaluate the candidates' ability to perform a power reduction at EOL. To evaluate the candidates' ability to respond to a trip of a Main Feedwater Pump, resulting in a turbine runback, a controlling channel of SG pressure failure, a trip of the running CCW Pump with a failure of the standby pump to automatically start, and a Tavg Median failure. To evaluate the response to a spurious safety injection on a single train with a subsequent failure of the reactor to trip automatically and a failure of any charging pump to start. Post-trip response will be evaluated based on a trip of a motor-driven AFW pump and an overspeed trip of the turbine-driven AFW pump, followed by a loss of Bus 1A-SA, resulting in a loss of heat sink event. The candidates will be required to depressurize to allow feeding the SGs with a condensate pump.

Initial Conditions: IC-15. 80% power EOL; Equipment out of service is EDG 1A-SA.

Turnover: 80% power, EOL. Core burnup is 439 EFPD.

Equipment out-of-service is EDG 1A-SA. Technical Specification 3.8.1.1.b was entered 14 hours ago. OST-1023 was last completed 1 hour ago.

Boron concentration is 271 ppm. 200 gallons of boric acid have been added per the Reactivity Plan since the power reduction began. Bank D rods are at 199 steps. 'A' BTRS demineralizer is aligned for service.

Shift orders are to continue the plant shutdown at a rate of 5 MW/min and to be in Hot Standby within the next 6 hours as directed by plant management. GP-006 has been completed through Step 8.

Event Number	Malfunction Number (1)	Event Type*	Event Description
1	NA	BOP(N) SRO(N)	Down Power Ramp
		RO(R) SRO(R)	Control of reactivity during down power ramp
2	CFW16B	BOP(C) SRO(C)	Main Feedwater Pump 'B' trip
	NA	RO(R) SRO(R)	Control of reactivity during turbine runback

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

(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

INIT TO IC-15

#2

```
#  A EDG OOS
MRF DSG005 LOCAL
MRF DSG006 MAINTAIN

#  FAILURE OF REACTOR AUTOMATIC TRIP
IMF RPS01B 3 1

#  FAILURE OF STANDBY CCW TO AUTO START
MRF CCW047 0 0

#  FAILURE OF B CSIP TO AUTO START ON SEQUENCER
ICOR ZDSQ94:4B FAIL_ASIS

#  B MFP TRIP
TRG E2 = IMF CFW16B

#  C SG PT FAILS HIGH
TRG E3 = ICOR PT:495 1300 0

#  A CCW PUMP TRIP
TRG E4 = IMF CCW01A

#  MEDIAN TAVG FAILS HIGH
TRG E5 = IMF RCS06A 650

#  INADVERTANT TRAIN B SI
TRG E6 = IMF SIS01A 1

#  TRIP OF B  MDAFW PUMP
TRG E6 = IMF CFW01B

#  TRIP OF TDAFW PUMP
TRG E6 = IMF CFW01C

#  LOSS OF BUS 1ASA
TRG E6 = IMF EPS05A

#  LOSS OF MFP A
TRG E5 = IMF CFW16A
```

Event Number	Malfunction Number (1)	Event Type*	Event Description
3	PT:495 1300 0	BOP(I) SRO(I)	Controlling Channel of SG C pressure PT-495 high failure
4	CCW01A	RO(C) SRO(C)	Operating CCW Pump Trip with failure of standby pump to automatically start
	CCW047 0 0	RO(C) SRO(C)	(Failure of standby pump to automatically start)
5	RCS06A 650	RO(I) SRO(I)	High failure of RCS Median Select T-avg circuit
6	SIS01A 1	RO(C) SRO(C)	Inadvertant Train 'A' Safety Injection with Failure of Reactor to Automatically Trip
	RPS01B 3 1	RO(C) SRO(C)	(Failure of reactor to automatically trip)
	ZDSQ94:4B FAIL_ASIS	RO(C) SRO(C)	Failure of CSIP 1B-SB to automatically start on Safety Injection
7	CFW01B	BOP(C) SRO(C)	Trip of AFW Pump 1B-SB breaker (Results in loss of heat sink with Events 8 and 9)
8	CFW01C	RO(M) BOP(M) SRO(M)	Overspeed trip of Turbine Driven AFW Pump
9	EPS05A	RO(M) BOP(M) SRO(M)	Loss of Emergency Bus 1A-SA resulting in loss of heat sink
10	CFW16A	RO(M) BOP(M) SRO(M)	Loss of Main Feed Pump A
11	NA	SRO	Classify the Event

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

Simulator Setup & Actions Required for Scenario # 2

Event Number	Simulator Operator Actions
INITIAL CONDITIONS	IC-15, 80% power. Set pots BORON 0.89, RMUW 7.5. Press START on scaler timer. Equipment OOS is EDG 1A-SA. Rackout breaker and hang tags. • MRF DSG021 LOCAL • MRF DSG022 MAINTAIN Part of Malfunction for Event 4 ACTIVE AT SETUP • MRF CCW047 0 0 Part of Malfunction for Event 6 ACTIVE AT SETUP • IMF RPS01B 3 1 • ICOR ZDSQ94:4B FAIL_ASIS
1	NONE
2	TRG E2 = IMF CFW16B
3	TRG E3 = ICOR PT:495 1300 0
4	TRG E4 = IMF CCW01A ACTIVE AT SETUP • MRF CCW047 0 0
5	TRG E5 = IMF RCS06A 650
6*	TRG E6 = IMF SIS01A 1 ACTIVE AT SETUP • IMF RPS01B 3 1 • ICOR ZDSQ94:4B FAIL_ASIS
7*	TRG E6 = IMF CFW01B
8*	TRG E6 = IMF CFW01C
9*	TRG E6 = IMF EPS05A
10*	TRG E6 = IMF CFW16A
11	NONE

Events 6, 7, 8, 9 and 10 should be activated at the same time.

SHIFT TURNOVER SCENARIO # 2

80% power, EOL. Core burnup is 439 EFPD.

Equipment out-of-service is EDG 1A-SA. Technical Specification 3.8.1.1.b was entered 14 hours ago. OST-1023 was last completed 1 hour ago.

Boron concentration is 271 ppm. 200 gallons of boric acid have been added per the Reactivity Plan since the power reduction began. Bank D rods are at 199 steps. 'A' BTRS demineralizer is aligned for service.

Shift orders are to continue the plant shutdown at a rate of 5 MW/min and to be in Hot Standby within the next 6 hours as directed by plant management. GP-006 has been completed through Step 8.

Op-Test Number: ______ Scenario Number: 2 Event Number: 1

Event Description: ***#REF!***

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct the actions of GP-006
	SRO	Reviews Precautions and Limitations with crew
	BOP	When less than 75% Turbine load, contact AO and verify the SGBD Regenerative Heat Exchanger Condensate Outlet is aligned to the CPD effluent per OP-127
	RO	Controls reactivity during downpower evolution by adjusting rods and/or boron concentration as necessary by borating per OP-107, Chemical and Volume Control System - Determines 37 gallons required per Reactivity Plan - Sets FIS-113, Boric Acid Batch Counter, for 37 gallons - Sets ICS-283, FK-113 Boric Acid Flow, for desired value (typically approximately 5 gpm) - Places RMW CONTROL to STOP - Places RMW MODE SELECTOR to BOR - Places RMW CONTROL to START - When desired boric acid added, align system for AUTO
	BOP	Controls turbine load during power reduction

Op-Test Number: ________ Scenario Number: 2 Event Number: 2

Event Description: ***Main Feedwater Pump 'B' trip***

Time	Position	Applicant's Actions or Behaviors
		NOTE TO SIMULATOR OPERATOR: EVENT 2 (FWP TRIP) SHOULD BE ACTIVATED AFTER POWER IS REDUCED APPROXIMATELY 3% AS DIRECTED BY THE EXAMINERS.
	CREW	Diagnoses trip of Main Feed Water Pump 'B' - Breaker position indicates pump trip - FW PUMP A/B O/C TRIP - GND OR BKR FAIL TO CLOSE (ALB-016-1-4) alarming - FW PUMP A/B AUTO START OR DISCHARGE HI-HI PRESS (ALB-016-1-5) alarming - SG A STM > FW FLOW MISMATCH (ALB-014-4-1B) alarming - SG B STM > FW FLOW MISMATCH (ALB-014-5-1B) alarming - SG C STM > FW FLOW MISMATCH (ALB-014-6-1B) alarming - TURBINE RUNBACK OPERATIVE (ALB-020-2-2) alarming - Feedwater flow lowering - SG level lowering
	SRO	Enters and directs the actions of AOP-010, Feedwater Malfunctions
	BOP	Verify turbine runback to less than 60% load in progress

Op-Test Number:	____	Scenario Number:	2	Event Number:	2

Event Description: ***Main Feedwater Pump 'B' trip***

Time	Position	Applicant's Actions or Behaviors
	BOP	Isolate SG Blowdown. ***NOTE: This action may not be performed since power was below 80%.***
	BOP	Reduce turbine load until total feedwater flow less than or equal to 6.7 mpph
	BOP	Takes manual control of Main FW Reg Valves to prevent high-high SG level trip
	RO	Control reactivity during turbine runback by adjusting rods and/or boron concentration as necessary
	BOP	Verify hotwell level being maintained between 71% and 76%
	BOP	When target load is reached and plant is stable, place SG Blowdown in service per OP-127, Steam Generator Blowdown, if previously removed from service

Op-Test Number: ________ Scenario Number: 2 Event Number: 2

Event Description: ***Main Feedwater Pump 'B' trip***

Time	Position	Applicant's Actions or Behaviors
	BOP	Momentarily place the tripped MFW Pump control switch in STOP
	SRO	If load was changed by greater than 15% rated thermal power in any one hour, then notify Chemistry to initiate surveillances per TS 3.4.8
	SRO	Initiate WR/JO
	SRO	Enters and directs the actions of AOP-015, Secondary Load Rejection
	BOP	Resets C7A and C7B by placing Steam Dump Mode Selector to RESET

Op-Test Number: ________ Scenario Number: 2 Event Number: 3

Event Description: ***Controlling Channel of SG C pressure PT-495 high failure***

Time	Position	Applicant's Actions or Behaviors
		NOTE TO SIMULATOR OPERATOR: ENSURE ALL FEED REG VALVES HAVE BEEN RETURNED TO AUTOMATIC CONTROL PRIOR TO INSERTING THIS EVENT.
	BOP	Diagnose high failure of controlling SG 'C' pressure channel - LOOP A HI STEAM LINE DP LOW-P1 (ALB-014-1-2) alarming - LOOP B HI STEAM LINE DP LOW-P3 (ALB-014-2-2) alarming - SG C STM > FW FLOW MISMATCH (ALB-014-6-1B) alarming - SG 'C' actual feed flow > steam flow - SG 'C' feed reg valve opening - SG 'C level rising
	SRO	Directs the BOP to take manual control of FK-498 and reduce feed flow
	BOP	Take manual control of FK-498 and reduce feed flow
	BOP	Restore SG 'B' level with feed flow and steam flow matched

Op-Test Number: ______	Scenario Number: 2	Event Number: 3
Event Description: ***Controlling Channel of SG C pressure PT-495 high failure***		

Time	Position	Applicant's Actions or Behaviors
	SRO	Refer to OWP-ESF for SG 'C' pressure failure
	BOP	Selects Channel 495 for control in accordance with OWP-ESF ***NOTE: Also likely to select Channel 496 for SG feed flow although not required.***
	SRO	Refers to TS 3.3.1 (Item 14), TS 3.3.2 (Item 1.e), and TS 3.3.3.6 (Item 6) - 6 hour requirement to trip bistables most limiting
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 2 Event Number: 4

Event Description: ***Operating CCW Pump Trip with failure of standby pump to automatically start***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnose trip of CCW Pump 1A-SA and failure of CCW Pump 1B-SB to automatic start - Numerous alarms on ALB-005 due to no CCW flow - Breaker indication on CCW Pump 1A-SA - Failure of CCW Pump 1B-SB to start at 61 psig
	SRO	Enters and directs the actions of AOP-014, Loss of Component Cooling Water - Directs RO to start CCW Pump 1B-SB
	RO	Start CCW Pump 1B-2B
	RO	Reopen 1CC-252, if closed, to restore CCW to RCP Thermal Barrier HX per AOP-018, Reactor Coolant Pump Abnormal Conditions, Attachment 3, Step 3
	RO	Monitors RCP parameters on computer to verify proper cooling
	SRO	Refers to TS 3.7.3 (72 hour action)

Op-Test Number:	________	Scenario Number:	2	Event Number:	4

Event Description: ***Operating CCW Pump Trip with failure of standby pump to automatically start***

Time	Position	Applicant's Actions or Behaviors
	SRO	Initiate WR/JO
		NOTE: If AO is dispatched to investigate auto start failure, report that the discharge PT isolation (1CC-112) was found shut.

Op-Test Number: ________ Scenario Number: 2 Event Number: 5

Event Description: ***High failure of RCS Median Select T-avg circuit***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnose high failure of RCS Median Select Tavg circuit - Rods inserting - TR-408 Red Pen at max output - RCS LOOPA/B/C TAVG HI/LO DEV (ALB-010-6-3A/7-3A/8-3A) all alarming - RCS TREF/TAVG HIGH-LOW (ALB-010-6-4B) alarming - PRESSURIZER CONTROL LOW LEVEL DEVIATION (ALB-009-2-2) alarming - Charging flow FI-122A.1 increasing - FK-122 output increasing
	SRO	Enter and direct the actions of AOP-001, Malfunction of Rod Control and Indication System
	RO	Verify no turbine runback occurring and place Rod Control Selector Switch in Manual and verify rod motion stops ***NOTE: This is an IMMEDIATE ACTION of AOP-001.***
	RO	Verify PRZ pressure control system responding properly
	RO	Manually withdraw control rods to restore RCS temperature

Op-Test Number: ______	Scenario Number: 2	Event Number: 5
Event Description: ***High failure of RCS Median Select T-avg circuit***		

Time	Position	Applicant's Actions or Behaviors
	RO	Manually control PZR level and restore to program per alarm responses
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 2 Event Number: 6

Event Description: ***Inadvertant Train 'A' Safety Injection with Failure of Reactor to Automatically Trip***

Time	Position	Applicant's Actions or Behaviors
		NOTE TO SIMULATOR OPERATOR: ENSURE ALL SG LEVELS HAVE BEEN RETURNED TO APPROXIMATELY 66% PRIOR TO INSERTING THIS EVENT. IT IS ALSO PREFERABLE TO ENSURE THAT ALL FEED REG VALVES ARE IN AUTOMATIC CONTROL.
	CREW	Diagnoses Reactor Trip signal - Reactor Trip annunciator - Safety Injection annunciator
	SRO	Enters and directs the actions of EOP PATH-1
	RO	Determines reactor failed to automatically trip - Reactor trip breakers closed - Rod bottom lights off - Neutron flux NOT decreasing
	RO	Manually trips the reactor and verifies trip - Reactor trip breakers open - Rod bottom lights on - Neutron flux decreasing
		CRITICAL STEP TO MANUALLY TRIP THE REACTOR FROM THE CONTROL ROOM AND NOT RELY ON LOCAL TRIP.

Op-Test Number:		Scenario Number: 2	Event Number: 6	

Event Description: ***Inadvertant Train 'A' Safety Injection with Failure of Reactor to Automatically Trip***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies turbine tripped - All turbine throttle valves shut - All turbine governor valves shut
	BOP	Verifies only emergency safeguards bus 1B-SB powered from offsite
	RO	Determines single train of SI actuated and manually actuates of Safety Injection OR aligns ALL individual components during the performance of EOP PATH-1 (No power available to Train 'A' equipment)
		CRITICAL STEP TO ACTUATE OR ALIGN BOTH TRAINS OF SAFEGUARDS EQUIPMENT PRIOR TO COMPLETION OR TRANSITION OUT OF EOP PATH-1.
	CREW	Monitor Foldout A
	RO	Determines CSIP 1B-SB failed to automatically start, notifies SRO, and starts pump when directed
	SRO	Directs RO to start CSIP 1B-SB

Op-Test Number: ________ Scenario Number: 2 Event Number: 6

Event Description: ***Inadvertant Train 'A' Safety Injection with Failure of Reactor to Automatically Trip***

Time	Position	Applicant's Actions or Behaviors
	CREW	Verifies the following: - Train 'B' RHR pump running - Train 'B' CCW pump running - Train 'B' ESW and ESW booster pumps running - Containment pressure below 10 psig - Train 'B' Phase A isolation valves shut - Train 'B' SGBD and sample isolation valves shut - FW isolation has occurred and MFW pumps tripped
	CREW	Diagnoses loss of Bus 1A-SA AND loss of all feedwater flow to SGs - SI causes FW Isolation - AFW Pump 1B-SB tripped - TDAFW Pump tripped - AFW Pump 1A-SA loss of power ***NOTE: May send operators to investigate any or all of these failures. Reports should be returned, after the appropriate time, that the equipment sent to check will NOT be available for an extended period of time.***
		NOTE: A transition to FRP-H.1 should only be made when directed by PATH-1 or upon exiting PATH-1.
	BOP	Determines Main Steam Isolation NOT required and MSIVs open
	BOP	Verifies Train 'B' EDG running unloaded

Op-Test Number: ________ Scenario Number: 2 Event Number: 6

Event Description: ***Inadvertant Train 'A' Safety Injection with Failure of Reactor to Automatically Trip***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies Train 'B' fan coolers running in slow speed
	RO	Verifies Train 'B' Containment Ventilation Isolation Valves shut
	BOP	Verifies Train 'B' Control Room Ventilation aligned for Emergency Recirc
	RO	Verifies SI flow greater than 200 gpm and RCS pressure > 190 psig
	BOP	Determines NO AFW capability and all SG levels < 10%

Op-Test Number: ______	Scenario Number: 2	Event Number: 7
Event Description: ***Loss of Heat Sink***		

Time	Position	Applicant's Actions or Behaviors
	SRO	Transitions to and directs the actions of FRP-H.1 ***NOTE: During the implementation of FRP-H.1 the SRO may be required to direct resetting SI and Phase A to allow establishing instrument air and nitrogen to containment to allow for pressure control of the RCS.***
	CREW	Begins monitoring of foldout for FRP-H.1
	SRO	Verifies heat sink required - RCS pressure > SG pressure - RCS temperature > 350 °F
	SRO	If any of the following occurs. immediately perform Steps 12 through 21 for RCS bleed and feed: - SG wide range level any two less than 10% - PRZ pressure ≥ 2335 psig due to loss of secondary heat sink - RCS temperature AND pressure increasing due to loss of secondary heat sink
	RO	Stop running RHR pump

Op-Test Number: ________ Scenario Number: 2 Event Number: 7

Event Description: ***Loss of Heat Sink***

Time	Position	Applicant's Actions or Behaviors
	SRO	Contact personnel to assist in troubleshooting / repair of AFW pump(s) and / or restoration of Bus 1A-SA
	RO	Stop all RCPs
		CRITICAL STEP TO STOP ALL RCPs TO MINIMIZE HEAT INPUT TO THE RCS.
		NOTE: The following series of steps are performed to attempt feeding the SGs with Main Feed per Attachment 3.
	BOP	Verifes Condensate system in operation
	RO	Reset SI
	RO	Reset FW Isolation

Op-Test Number: ______ Scenario Number: 2 Event Number: 7

Event Description: ***Loss of Heat Sink***

Time	Position	Applicant's Actions or Behaviors
	BOP	Place feed bypass valve controllers in manual with zero output
	BOP	Reset and open preheater bypass valves
	BOP	Open FW Pump recirc valve for MFW pump 'A' ***NOTE: MFW Pump 'B' tripped earlier in the scenario and is not available.***
	BOP	Attempts to start MFW Pump 'A'
	BOP	Determines MFW Pump 'A' fails to start

Op-Test Number: ________ Scenario Number: 2 Event Number: 7

Event Description: ***Loss of Heat Sink***

Time	Position	Applicant's Actions or Behaviors
		NOTE: The following series of steps are performed to feed the SGs with Condensate Booster Pumps per Attachment 4.
	RO	Depressurize the RCS to 1950 psig using one PRZ PORV.
	RO	Blocks low PRZ pressure SI and low steamline pressure SI
	BOP	Depressurize at least 1 SG to < 500 psig using SG PORV ***NOTE: Preferable to use only 1 SG, but acceptable to use more than 1. Must use either SG 'B' or SG 'C' due to SG 'A' not being available due to loss of power to PORV.***
		CRITICAL TO ALLOW FEEDING WITH A CONDENSATE BOOSTER PUMP.
	BOP	Verify at least one condensate and condensate booster pump running

Op-Test Number: ______	Scenario Number: 2	Event Number: 7		
Event Description: ***Loss of Heat Sink***				

Time	Position	Applicant's Actions or Behaviors
	BOP	Open the LP heater bypass valves - 1CE-330 - 1CE-359
	BOP	Open the HP heater bypass valve - 1FW-110
	BOP	Open Main FW Pump discharge valves - 1FW-29 - 1FW-60
	RO	Reset SI ***NOTE: May have previously performed to allow depressurizing RCS.***
	BOP	Reset FWI

Op-Test Number: ________ Scenario Number: 2 Event Number: 7

Event Description: ***Loss of Heat Sink***

Time	Position	Applicant's Actions or Behaviors
	BOP	Place FRV Bypass Valve controllers in MAN and zero output
	BOP	Shut MFW Pump recirc valves
	BOP	Control Condensate Booster Pump in MAN at 600 psig
	SRO BOP	Establish condensate flow to the SGs per the guidance of Attachment 1 (feed limits based on level)
	SRO	If SG level > 5% NR, establish FW flow using the feed reg bypass valves, OR, if SG level < 5% NR, direct an AO to locally establish FW flow using the feed reg bypass valves
		NOTE: Expected that local action will be required based on SG levels.
		TERMINATE THE SCENARIO WHEN FLOW HAS BEEN ESTABLISHED TO THE SGs AND SG WR LEVEL INCREASES.

Op-Test Number: ________ Scenario Number: 2 Event Number: 8

Event Description: ***Overspeed trip of Turbine Driven AFW Pump***

Time	Position	Applicant's Actions or Behaviors
		NOTE: ACTIONS FOR EVENT 8 ARE INCLUDED AS PART OF RESPONSE DURING EVENT 7.

Op-Test Number:	______	Scenario Number:	2	Event Number:	9
Event Description:	*Loss of Emergency Bus 1A-SA resulting in loss of heat sink*				

Time	Position	Applicant's Actions or Behaviors
		NOTE: ACTIONS FOR EVENT 9 ARE INCLUDED AS PART OF RESPONSE DURING EVENT 7.

Op-Test Number: ______	Scenario Number: 2	Event Number: 10
Event Description: ***Classify the Event***		

Time	Position	Applicant's Actions or Behaviors
		NOTE: ACTIONS FOR EVENT 10 ARE INCLUDED AS PART OF RESPONSE DURING EVENT 7.

Op-Test Number: ________ Scenario Number: 2 Event Number: 11

Event Description: ***Classify the Event***

Time	Position	Applicant's Actions or Behaviors
	SRO	Classifies the event as an ALERT (EAL 8-1-2)
		NOTES: ***1) Based on the time period that the rods were withdrawn due to the failure of the automatic reactor trip signal. An Alert may not be declared, but conditions would have existed for the Alert during this time frame.*** ***2) Classification of the event following the scenario is considered 20% of the Performance Rating for JPM SRO-A.4.***

Facility: **SHNPP** Scenario Number: **3** Op-Test Number: ______

Examiners

______

______

______

Operators

(S2) ______

(R2) ______

(R3) ______

Objectives: To evaluate the candidates' ability to raise power and control reactivity. To evaluate the candidates' ability to respond to a failed feed flow channel, a trip of the running CSIP, a failed VCT level channel, and a partial loss of condenser vacuum. To evaluate the candidates' response to a steamline break inside containment which will require a plant trip with the failure of the reactor to trip from the Control Room. Post-trip complications will include a failure of both trains of Containment Spray to actuate, requiring manual operation and alignment.

Initial Conditions: IC-5; 49% power BOL; Equipment OOS is HDP A.

Turnover: Power is 49% at BOL, 6 hours following a startup with a power ramp of 3 MW/min.

Train 'A' of condensate and condensate booster pumps is in service. HDPs are not operating.

HDP A is out of service for oil replacement due to contaminants and is expected to be returned to service within the next hour.

Boron concentration is 1510 ppm. The Reactivity Plan has been completed through Step 13. Bank D rods are at 149 steps.

Shift orders are to continue raising power at the current rate and restore HDP A to service when it becomes available. GP-005, Step 140, has been completed.

Event Number	Malfunction Number (1)	Event Type*	Event Description
1	NA	BOP(N) SRO(N)	Up Power Ramp / Start of Second Condensate Train
		RO(R) SRO(R)	Control of reactivity during up power ramp
2	FT:477 0 0	BOP(I) SRO(I)	Controlling channel of SG A feed flow FT-477 fails low

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

Event Number	Malfunction Number (1)	Event Type*	Event Description
3	CVC05A	RO(C) SRO(C)	Trip of CSIP A
	NA	RO(N) SRO(N)	Restoration of Letdown Following Stabilization of CVCS
4	LT:112 100 5	RO(I) SRO(I)	VCT level channel LT-112 failed high
5	CND03 18	BOP(C) SRO(C)	Partial loss of condenser vacuum
6	MSS01C 8E6 1200	RO(M) BOP(M) SRO(M)	Main steamline break inside of Containment with failure of Reactor to Trip from Control Room
	RPS01B 3 3	RO(M) BOP(M) SRO(M)	(ATWS)
7	ZRPK505A FAIL_ASIS ZRPK505B FAIL_ASIS ZRPK519A FAIL_ASIS ZRPK519B FAIL_ASIS	RO(C) SRO(C)	Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment
8	NA	SRO	Classify the Event

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor
(1) See Attachment, "Simulator Setup & Actions Required for Scenario," for details on setup.

Simulator Setup & Actions Required for Scenario # 3

Event Number	Simulator Operator Actions
INITIAL CONDITIONS	IC-5, 49% power. Set pots BORON 5.04, RMUW 7.5. Press START on scaler timer. Equipment OOS is HDP 'A'. Rackout breaker and hang tags. • MRF CND065 RACK_OUT Part of Malfunction for Event 6 ACTIVE AT SETUP • IMF RPS01B 3 3 Malfunction for Event 7 ACTIVE AT SETUP • ICOR ZRPK505A FAIL_ASIS • ICOR ZRPK505B FAIL_ASIS • ICOR ZRPK519A FAIL_ASIS • ICOR ZRPK519B FAIL_ASIS
1	NONE
2	TRG E2 = ICOR FT:477 0 0
3	TRG E3 = IMF CVC05A
4	TRG E4 = ICOR LT:112 100 5
5	TRG E5 = IMF CND03 18
6	TRG E6 = IMF MSS01C 8E6 1200 ACTIVE AT SETUP • IMF RPS01B 3 3
7	ACTIVE AT SETUP • ICOR ZRPK505A FAIL_ASIS • ICOR ZRPK505B FAIL_ASIS • ICOR ZRPK519A FAIL_ASIS • ICOR ZRPK519B FAIL_ASIS

SHIFT TURNOVER SCENARIO # 3

Power is 49% at BOL, 6 hours following a startup with a power ramp of 3 MW/min.

Train 'A' of condensate and condensate booster pumps is in service. HDPs are not operating.

HDP A is out of service for oil replacement due to contaminants and is expected to be returned to service within the next hour.

Boron concentration is 1510 ppm. The Reactivity Plan has been completed through Step 13. Bank D rods are at 149 steps.

Shift orders are to continue raising power at the current rate and restore HDP A to service when it becomes available. GP-005, Step 140, has been completed.

Op-Test Number: ________ Scenario Number: 3 Event Number: 1

Event Description: ***Up Power Ramp / Start of Second Condensate Train***

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct the actions of GP-005
	SRO	Reviews Precautions and Limitations with crew
	SRO	Notifies the CPD operator that a second Condensate and Feedwater train is being placed in service
		CUE: CPD operator reports that adequate CPDs are in service.
	BOP	Coordinate with the RO to continue raising power

Op-Test Number: ________ Scenario Number: 3 Event Number: 1

Event Description: ***Up Power Ramp / Start of Second Condensate Train***

Time	Position	Applicant's Actions or Behaviors
	RO	Controls reactivity during up power evolution by adjusting rods and/or boron concentration by diluting per OP-107, Chemical and Volume Control System, Section 5.7 - Set FIS-114 for desired quantity of RMW for dilution - Set FK-114 for desired RMW flow rate - Verify RMW CONTROL in STOP - Place RMW MODE SELECTOR to DIL - Place RMW CONTROL in START and release to NEUTRAL - Verify Tavg and / or control rod response - Verify dilution automatically terminates when desired quantity diluted - Restore RMW Control to AUTO
	BOP	Prior to exceeding 55% power, places second Condensate Pump in service per OP-134, Condensate System - Directs AO to open Condensate Pump seal water supply and perform pre-start checks of pump - Verifies discharge valve open - Starts pump
	BOP	Prior to exceeding 55% power, places second Condensate Pump in service per OP-134, Condensate System - Verify CBP recirc, 1CE-261, in MODU and closed - Place CBP 'B' speed controller in MAN and zero demand signal - Place CBP recirc, 1CE-261, in OPEN just prior to pump start - Start CBP 'B' - Verify filter differential pressure within limits of 20 psid - Slowly increase CBP 'B' speed controller to match CBP 'A' demand - Place CBP 'B' speed controller in AUTO when demand matched - Place CBP recirc, 1CE-261, in MODU

Op-Test Number: ________ Scenario Number: 3 Event Number: 2

Event Description: ***Controlling channel of SG A feed flow FT-477 fails low***

Time	Position	Applicant's Actions or Behaviors
		NOTE TO SIMULATOR OPERATOR: EVENT 2 (FEED FLOW FAILURE) SHOULD BE ACTIVATED AFTER POWER IS RAISED APPROXIMATELY 3% AS DIRECTED BY THE EXAMINER.
	CREW	Diagnose low failure of controlling SG 'A' feed flow channel - SG A STM > FW FLOW MISMATCH (ALB-014-4-1A and 1B) alarming - FI-477 indicating 0 - SG 'A' feed reg valve opening - SG 'A' level increasing - SG 'A' actual feed flow > steam flow
	SRO	Directs the BOP to take manual control of FK-478 and reduce feed flow
	BOP	Take manual control of FK-478 and reduce feed flow
	BOP	Restore SG 'A' level with feed flow and steam flow matched

Op-Test Number: ________ Scenario Number: 3 Event Number: 2

Event Description: ***Controlling channel of SG A feed flow FT-477 fails low***

Time	Position	Applicant's Actions or Behaviors
	SRO	Refer to OWP-RP for SG 'A' feed flow failure (SF/FF Loop 1)
	BOP	Selects Channel 476 for control in accordance with OWP-RP ***NOTE: Also likely to select Channel 475 for SG steam flow although not required.***
	SRO	Refers to TS 3.3.1 (Item 14) - 6 hour requirement to trip bistables
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 3 Event Number: 3

Event Description: ***Trip of CSIP A / Restoration of Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnose a trip of CSIP A - CSIP breaker indication - CHARGING PUMP DISCH HEADER HIGH-LOW FLOW (ALB-006-1-1) alarming - CHRG PUMPS A TROUBLE (ALB-006-1-2) alarming - CHRG PUMPS A TRIP OR CLOSE CKT TROUBLE (ALB-006-1-3) alarming - RCP SEAL WATER INJECTION LOW FLOW (ALB-008-2-1) alarming - Low charging flow indication on FI-122 - Low seal injection flow
		NOTE: Examiner record time of pump trip. ________
	SRO	Enter and direct the actions of AOP-018, Reactor Coolant Pump Abnormal Conditions
	RO	Monitor RCP parameters and verify no AOP-018 trip criteria met
	RO	Isolate letdown
	SRO	Start CSIP 1B-SB per AOP-018, Attachment 4 - Place FK-122.1 in MAN and close valve - Close HC-186.1 - Start CSIP 1B-SB

Op-Test Number: ________ Scenario Number: 3 Event Number: 3

Event Description: ***Trip of CSIP A / Restoration of Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	Restore seal injection (8 to 13 gpm) in accordance with AOP-018
	RO	Restore Letdown and charging per OP-107, Chemical and Volume Control System - Verify TK-144 set at 110oF to 120oF in AUTO - Verify PK-145.1 at 50% output in MAN - Verify 1CS-1 and 1CS-2 OPEN - Verify 1CS-11 OPEN - Establish required minimum charging flow for orifice to be opened, using FK 122.1 - OPEN the orifice isolation valve (1CS-7 / 8 / 9) - Adjust PK-145.1 to maintain 340 psig to 360 psig - Place PK-145.1 in AUTO when letdown pressure stable - Adjust charging using FK-122.1 and open additional orifices as desired
	RO	Restore PRZ level to program
	SRO	Refer to TS 3.1.2.4 and 3.5.2 (both 72 hour)
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 3 Event Number: 4

Event Description: ***VCT level channel LT-112 failed high***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnose high failure of LT-112 - Unexpected automatic makeup as level decreases to 20% - 1CS-120, LCV-115A diverting to RHT - VCT level decreasing - COMPUTER ALARM CHEM & VOL SYSTEMS (ALB-007-5-1) alarming
	SRO	Enter and direct the actions of AOP-003, Malfunction of Reactor Makeup Control
	RO	Align letdown to the VCT by taking LCV-115A to the VCT position
	SRO	Direct maintenance to simulate low-low level for LT-112
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 3 Event Number: 5

Event Description: ***Partial loss of condenser vacuum***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnoses lowering main condenser vacuum - Decreasing Condenser vacuum indication on MCB - CNDSR PRE TRIP LOW VACUUM alarm (ALB-020-2-4A) alarming - COMPUTER ALARM MS/TURBINE SYSTEMS (ALB-020-5-5) alarming
	SRO	Enters and directs the actions of AOP-012, Partial Loss of Condenser Vacuum
	BOP	Monitors for turbine trip requirements and determines turbine trip not required (auto trip at 5" Hg with turbine load < 60%)
	BOP	Reduce Turbine load as necessary to maintain condenser vacuum per GP-006
	RO	Control reactivity during power reduction by adjusting rods and/or boron concentration as necessary

Op-Test Number: ________ Scenario Number: 3 Event Number: 5

Event Description: ***Partial loss of condenser vacuum***

Time	Position	Applicant's Actions or Behaviors
	BOP	Start the standby Condenser Vacuum pump
	SRO	Direct an AO to locally check for cause of loss of vacuum by performing AOP 012, Attachment 1
	BOP	Verify condenser vacuum breakers are shut
		NOTE TO SIMULATOR OPERATOR: AFTER POWER HAS BEEN REDUCED SEVERAL PERCENT IN RESPONSE TO LOWERING VACUUM, REMOVE MALFUNCTION.
		NOTE: Several minutes after removing malfunction, report as AO that air inleakage was apparent cause and 1AE-29, 1AE-46, 1AE-48, and 1AE-49 have been closed. Noise level in area has decreased substantially.
	BOP	Verify all available Circulating Water pumps running

Op-Test Number:	______	Scenario Number:	3	Event Number:	5
Event Description:	***Partial loss of condenser vacuum***				

Time	Position	Applicant's Actions or Behaviors
	BOP	Determine that condenser vacuum is being restored to normal
	SRO	Direct RO and BOP to restore turbine load per GP-005, if desired
	SRO	Initiate a WR/JO

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnoses Main Steam break inside containment - Reactor power increasing - Steam flow increasing - Feed flow increasing - SG levels decreasing after initial swell - Steam pressure decreasing - RCS temperature decreasing - Containment pressure increasing - Containment radiation levels unchanged
	SRO	Orders a reactor trip and safety injection AND enters PATH-1
		NOTE: Due to the failure of the automatic and manual reactor trip, a safety injection is likely to occur before the reactor can be tripped locally.
	RO	Determines reactor failed to automatically trip - Reactor trip breakers closed - Rod bottom lights off - Neutron flux NOT decreasing
	RO	Attempts manual trip of reactor

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	RO	Determines manual trip NOT successful - Reactor trip breakers closed - Rod bottom lights off - Neutron flux NOT decreasing
	RO	Informs SRO of failure of reactor to trip automatically or manually
	SRO	Transitions to and directs the actions of FRP-S.1

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies rods inserting automatically OR manually inserts control rods ***NOTE: IMMEDIATE ACTION of FRP-S.1.***
	SRO	Directs operator to contact OR report to Control Room
		CRITICAL STEP TO DIRECT A LOCAL REACTOR TRIP TO ADD NEGATIVE REACTIVITY TO CORE. ***NOTE: After approximately 15 second delay, contact Control Room as the operator directed to contact / report.***
	SRO	Directs operator to locally trip the reactor by (order of preference): - Locally opening the reactor trip breakers - Locally trip both rod drive MG set generator output breakers. - Locally trip both rod drive MG set motor breakers
		NOTE: Approximately 30 seconds after being directed to locally trip the reactor, open the reactor trip breakers.

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies turbine tripped - All turbine throttle valves shut - All turbine governor valves shut ***NOTE: IMMEDIATE ACTION of FRP-S.1.***
	BOP	Verifies all AFW pumps running ***NOTE: IMMEDIATE ACTION of FRP-S.1.***
	RO	If SI has NOT initiated, initiate Emergency Boration - Start a boric acid pump - Open 1CS-278, Emergency Boric Acid Addition valve - Verify ≥ 30 gpm emergency boration flow - Verify ≥ 30 gpm CSIP flow to RCS - Verify RCS pressure < 2335 psig
		CRITICAL STEP TO INITIATE EMERGENCY BORATION TO ENSURE NEGATIVE REACTIVITY BEING ADDED TO CORE IF SAFETY INJECTION HAS NOT ACTUATED.
		NOTE: SI is expected to have occurred, so the above step should NOT be critical.
	RO	Verify reactor tripped

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies turbine tripped
	CREW	Begin monitoring of foldout for FRP-S.1
	BOP	Verifies proper operation of safeguards equipment per PATH-1, Steps 7-20
	RO	Controls AFW flow to intact SGs to maintain between 40% and 50%
		NOTE: May recognize that steam break is on SG 'C' by this time, particularly if MS Isolation has occurred, and choose to isolate AFW to SG 'C'.
	SRO RO	Verify All Dilution Paths Isolated - Reactor Makeup Water pumps OFF - FCV-114B, Reactor Makeup Water valve SHUT - 1CS-98, BTRS Bypass valve OPEN - Direct AO to locally verify 1CS-510, Boric Acid Batch Tank Outlet valve SHUT

Op-Test Number: ________ Scenario Number: 3 Event Number: 6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	RO	Checks for positive reactivity addition due to cooldown - Reactor tripped - Intermediate range startup rate positive
	BOP	Determines a SG is depressurizing in an uncontrolled manner
	BOP	Verifies MSIVs and bypass valves closed
	BOP	Determines SG 'C' faulted due to SG pressure decreasing in an uncontrolled manner or completely depressurized
	BOP	Determines SG 'A' and SG 'B' NOT faulted

Op-Test Number:		Scenario Number:	3	Event Number:	6

Event Description: ***Main steamline break inside of Containment with failure of Reactor to Trip from Control Room***

Time	Position	Applicant's Actions or Behaviors
	RO	Isolates SG 'C' - Verifies PORV closed - Verifies FW Isolation closed - Verifies AFW isolated to SG - Closes steam supply to TDAFW Pump - Directs AO to locally open breaker for 1MS-72 - Verifies before seat drain isolation closed - Verifies SG blowdown isolation closed - Verifies steam analyzer isolation closed - Verifies chemical addition isolations closed
		CRITICAL STEP TO ISOLATE SG 'C' PRIOR TO EXITING FRP-S.1 TO MINIMIZE PRESSURE RISE INSIDE CONTAINMENT.
	RO	Verifies core exit thermocouples < 1200 ^{o}F
	RO	Verify reactor subcritical - Power ranges < 5% - Intermediate startup rate negative
	SRO	Implements FRPs, as required

Op-Test Number:	________	Scenario Number: 3	Event Number: 7	

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	SRO	Transitions to and directs the actions of FRP-J.1 based on MAGENTA path on Containment CSFST
		NOTE: The SRO may have previously informed of failure of Containment Spray during verification of safeguards actuations AND these actions may have been taken while performing Steps 7-20 of PATH-1.
	BOP	Verifies Phase A isolation valves closed ***NOTE: Phase A may indicate NOT complete if CS Pumps were manually started earlier.***
	BOP	Verifies Containment Vent isolation valves closed
	RO	Verifies Containment Spray required due to pressure > 10 psig
	RO	Determines Containment Spray pumps NOT running AND starts both pumps

Op-Test Number:	______	Scenario Number: 3	Event Number: 7	

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies RWST > low-low level switchover requirement
	RO	Determines Containment Spray valves NOT properly aligned and opens the following valves: - 1CT-26 - 1CT-71 - 1CT-50 - 1CT-88 - 1CT-11 - 1CT-12 ***NOTE: 1CT-26 and 1CT-71 are already open.***
		CRITICAL STEP TO ESTABLISH AT LEAST ONE TRAIN OF CS PRIOR TO EXITING FRP-J.1 TO REDUCE CONTAINMENT PRESSURE.
	BOP	Verifies Phase B isolation

Op-Test Number: ________ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Stop all RCPs due to loss of cooling flow
	RO	Verifies proper operation of containment fan coolers
	BOP	Verifies MSIVs and bypasses closed
	BOP	Determines SG 'C' is only faulted SG and verifies isolated
	RO	Verifies both ESW booster pumps running with orifice bypass isolations closed

Op-Test Number: ________ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	BOP	Aligns hydrogen monitoring system and determines containment hydrogen concentration
	SRO	Transitions to and directs the actions of EOP PATH-1
	RO	Verifies reactor tripped
	BOP	Verifies turbine tripped
	BOP	Verifies power to AC safeguards buses

Op-Test Number: ________ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies SI actuated
	CREW	Begins monitoring of Foldout A
	CREW	Verifies proper operation of emergency safeguards equipment - CSIP 1B-SB and RHR pumps running - 2 CCW pumps running - All ESW and ESW booster pumps running - Containment pressure above 10 psig, with actions taken - Phase A isolation valves shut - SGBD and sample isolation valves shut - FW isolation has occurred and MFW pumps tripped

Op-Test Number: ________ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies both MDAFW pumps running
	BOP	Verifies main steam line isolation
	BOP	Verifies both EDGs running
	BOP	Verifies proper operation of containment fan coolers (slow speed)

Op-Test Number: ________	Scenario Number: 3 Event Number: 7
Event Description:	***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies containment ventilation isolation
	BOP	Verifies control room ventilation aligned for emergency recirculation
	RO	Verifies proper SI flow - Greater than 200 gpm - RCS > 190 psig
	BOP	Verifies adequate AFW flow (222.5 KPPH) and alignment with flow isolated to SG 'C'
	BOP	Controls AFW flow to SGs 'A' and 'B' to maintain level between 40% and 50% (due to adverse containment)

Op-Test Number: ________ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verifies proper SI alignment
	RO	Resets SI
	CREW	Manually realigns equipment as time permits if loss of offsite power occurs
	RO	Resets Phase A and Phase B signals
	BOP	Resets FWI signal
	BOP	Energizes AC Buses 1A1 and 1B1

Op-Test Number: ______	Scenario Number: 3 Event Number: 7
Event Description:	***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Establishes IA and nitrogen to containment
	BOP	Aligns containment hydrogen monitoring as time permits
	BOP	Aligns control room ventilation as time permits
	BOP	Resets MSRs
	RO	Attempts to stablize RCS temperature using WR Tcold due to no RCPs ***NOTE: Due to faulted SG, RCS temperature is expected to be low.***

Op-Test Number: ________	Scenario Number: 3	Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	RO	Verifies proper operation of PRZ PORVs ***NOTE: Spray valves not required due to no RCPs running.***
	RO	Maintains RCP seal injection within normal range (8-13 gpm)
	SRO	Determines SG 'C' faulted and transitions to and directs the actions of EPP-014, Faulted Steam Generator Isolation
		NOTE: SG should already have been isolated per directions of FRP-S.1.
	SRO	Determines SI has not been terminated and transitions to PATH-1, Entry Poin C

Op-Test Number: ________	Scenario Number: 3	Event Number: 7	
Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***			

Time	Position	Applicant's Actions or Behaviors
	CREW	Begins monitoring of Foldout A and Foldout B
	RO	Aligns CC to sampling by opening - 1CC304 - 1CC305 - 1CC114 - 1CC115
	RO	Maintain seal injection between 8-13 gpm
	BOP	Control AFW flow to maintain level in SG 'B' and 'C' between 40% and 50%
	SRO	Verifies proper operation of PRZ PORVs

Op-Test Number: ________	Scenario Number: 3	Event Number: 7
Event Description:	***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***	

Time	Position	Applicant's Actions or Behaviors
	CREW	Determines SI Termination Criteria are met - Subcooling (> 42°F) - Heat Sink (SG level > 40%) - RCS Pressure (stable / increasing) - RCS Inventory (> 45%)
		NOTE: SI Termination Criteria will be met only after the faulted SG has completed blowing dry.
		CRITICAL TO TERMINATE SAFETY INJECTION TO PREVENT RCS OVERFILL AND PRESSURIZATION RESULTING IN CHALLENGING PRZ PORVs AND/OR SAFETIES.
	SRO	Transitions to and directs the actions of EPP-008, SI Termination
	CREW	Begins monitoring of Foldout for EPP-008
	RO	Stops all but 1 CSIP ***NOTE: CSIP 1A-SA is already tripped, so no CSIPs will be tripped.***

Op-Test Number:		Scenario Number: 3	Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	SRO	Determines RCS pressure stable or increasing
	RO	Opens normal miniflow isolation valves - 1CS182 - 1CS196 - 1CS210 - 1CS214
	RO	Isolates high head SI flow - 1SI-3 - 1SI-4
	RO	Establishes charging lineup - Closes FK-122.1 - Opens 1CS235 - Opens 1CS238
	RO	Controls charging to maintain pressurizer level using FK-122.1
	RO	Stops RHR Pumps

Op-Test Number: ______ Scenario Number: 3 Event Number: 7

Event Description: ***Failure Of Containment Spray (Auto and Manual Actuation), requiring manual component alignment***

Time	Position	Applicant's Actions or Behaviors
	CREW	Determines SI Reinitiation Criteria not required - RCS Subcooling is > 42°F - PRZ Level is > 45%
		TERMINATE THE SCENARIO AFTER VERIFYING SI REINITIATION CRITERIA NOT MET.

Op-Test Number: ________ Scenario Number: 3 Event Number: 8

Event Description: ***Classify the Event***

Time	Position	Applicant's Actions or Behaviors
	SRO	Classifies the event as a Site Area Emergency (EAL 8-1-3) / Alert (EAL 2-1-2)
		NOTES: ***1) SAE based on failure of reactor to automatically trip or trip from either switch in control room (only a Site Area Emergency until reactor locally tripped).*** ***2) Alert based on Containment High Pressure.*** ***3) Classification of the event following the scenario is considered 20% of the Performance Rating for JPM SRO-A.4.***

FINAL SUBMITTAL

HARRIS EXAM 2000-301

DECEMBER 11 - 15, 2000

NUREG-1021 - ES-501 - F.1.g

FINAL AS-GIVEN JPMs FOR EACH

WALK-THROUGH TEST

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.1-1

Determination of Inoperable Instrument During Daily Surveillance

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Determination of Inoperable Instrument During Daily Surveillance

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.1.18 Importance: SRO NA RO 2.9

K/A Statement: Ability to make accurate, clear and concise logs, records, status boards, and reports.

Task Standard: Determines pressurizer pressure fails to meet acceptance criteria for Daily Surveillance Requirements.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform ____ Simulate X

NOTE: May be performed in Simulator or CR environment. In either case, cues should be provided instead of using live simulator conditions.

References: OST-1021, Daily Surveillance Requirements Daily Interval Mode 1, 2

Validation Time: 5 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____________________

____

Examiner: ____________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

OST-1021, Attachment 4, Sheet 3

ANSWER KEYS ARE PROVIDED FOR MCB AND ERFIS INDICATIONS USED.

PROVIDE APPROPRIATE ATTACHMENT TO CANDIDATE WHEN INDICATIONS LOCATED.

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset to IC-19 (100%)
2) Insert ICOR PT:456 1965
3) Place simulator in RUN
4) Acknowledge all alarms

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are performing the 0300 set of readings for OST-1021, Daily Surveillance Requirements Daily Interval Mode 1, 2.

INITIATING CUES:

Perform the 0300 Daily Surveillance Requirement for Pressurizer Pressure.

NOTE: FOR PURPOSES OF THIS JPM ONLY, INDEPENDENT VERIFICATION IS NOT REQUIRED.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OST-1021, Attachment 4, Sheet 3 NOTES: ***NOTE: Provide candidate with blank copy of sheet.*** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Locates ERFIS points STANDARD: Locates ERFIS points for Pressurizer Pressure, PRC0457, PRC0456, and PRC0455 NOTES: ***NOTE: Either the MCB meters or ERFIS computer points are to be used, but NOT both. If ERFIS is used mark JPM Step 3 as "NA".*** ***CUE: Once candidate locates ERFIS points, provide Attachment A, "ERFIS Pressurizer Pressure Indications"*** COMMENTS:	____ SAT ____ UNSAT ____ NA

STEP 3:	Locates MCB instrumentation	
STANDARD:	Locates MCB meters for Pressurizer Pressure, PI-457, PI-456, and PI-455	
NOTES:	***NOTE: Either the MCB meters or ERFIS computer points are to be used, but NOT both. If MCB is used mark JPM Step 2 as "NA".*** ***CUE: Once candidate locates meters, provide Attachment B, "MCB Pressurizer Pressure Indications"***	
COMMENTS:		____ SAT ____ UNSAT ____ NA

STEP 4:	Records indications from ERFIS or MCB	**CRITICAL STEP**
STANDARD:	Records ERFIS points as: - PRC0457 2221.0 psig - PRC0456 1964.9 psig - PRC0455 2209.0 psig **- OR -** Records MCB indications as: - PI-457 2230 psig - PI-456 1960 psig - PI-455 2210 psig	
NOTES:	***CRITICAL TO ALLOW CALCULATING DATA CORRECTLY.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Sums available indications	**CRITICAL STEP**
STANDARD:	Calculates **AND** records sum of available instruments: ERFIS points 4430 psig **- OR -** MCB meters 4440 psig	
NOTES:	***CRITICAL TO CALCULATE DATA CORRECTLY.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Determines pressurizer pressure	**CRITICAL STEP**
STANDARD:	Calculates **AND** records average of available instruments: ERFIS points 2215 psig **- OR -** MCB meters 2220 psig	
NOTES:	***CRITICAL TO CALCULATE DATA CORRECTLY.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Determines if acceptance criteria met	**CRITICAL STEP**
STANDARD:	Determines acceptance criteria **NOT** met: If ERFIS points used, lowest channel indicates less than 2211 psig (2209 psig) **- OR -** If MCB meters used, lowest channel indicates less than 2220 psig (2210 psig)	
NOTES:	***CRITICAL TO IDENTIFY INDICATIONS NOT MEETING ACCEPTANCE CRITERIA.*** ***NOTE: Average of instruments meets acceptance criteria, but lowest channel does NOT meet criteria.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Notifies Unit-SCO of discrepancy	
STANDARD:	Notifes Unit-SCO	
NOTES:	***CUE: Unit-SCO acknowledges report.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

<u>Daily Surveillance Requirements Log</u>

TECH SPEC	4.2.5; 4.3.1.1.9, 10; 4.3.2.1.1d, 3a3, 3c3, 5c, 6d						
PARAMETER	PRESSURIZER PRESSURE						
INSTRUMENT (MCB OR ERFIS)	PRC0457 PI-457	PRC0456 PI-456	PRC0455 PI-455	CALCULATION COMPLETED	INDEPENDENT VERIFICATION COMPLETED	ACCEPTANCE CRITERIA MET	N/A
ACCEPTANCE CRITERIA	SEE BELOW			N/A	N/A	N/A	CHANNEL CHECK
MODE	1						1, 2, 3
300	**2230**	**1960**	**2210**	**INITIALS**		**(NOTED**	**UNSAT)**
900							
1500							
2100							

INSTRUCTIONS

<u>NOTE</u>: # Calculations must be done with either the MCB Indicators OR ERFIS indications, NOT a combination.

If all operable channels are greater than or equal to the acceptance criteria, calculations are not required.

<u>CALCULATIONS FOR PRESSURIZER PRESSURE</u>

0300: <u>**2230**</u> (PRC0457 PI-457) + <u>**NA**</u> (PRC0456 PI-456) + <u>**2210**</u> (PRC0455 PI-455) = <u>**4440**</u> ÷ (# Operable Channels used Normally 3) = <u>**2220**</u> PRESSURIZER PRESSURE

0900: ________ (PRC0457 PI-457) + ________ (PRC0456 PI-456) + ________ (PRC0455 PI-455) = ________ ÷ (# Operable Channels used Normally 3) = ________ PRESSURIZER PRESSURE

1500: ________ (PRC0457 PI-457) + ________ (PRC0456 PI-456) + ________ (PRC0455 PI-455) = ________ ÷ (# Operable Channels used Normally 3) = ________ PRESSURIZER PRESSURE

2100: ________ (PRC0457 PI-457) + ________ (PRC0456 PI-456) + ________ (PRC0455 PI-455) = ________ ÷ (# Operable Channels used Normally 3) = ________ PRESSURIZER PRESSURE

<u>ACCEPTANCE CRITERIA FOR PRESSURIZER PRESSURE</u> (must meet one of the following):

1. Average of operable MCB indicator channels greater than or equal to 2205 psig.
2. Average of operable ERFIS points greater than or equal to 2202 psig.
3. If three MCB indicators are not available, then the lowest channel should be greater than or equal to 2220 psig.
4. If three ERFIS points are not available, then the lowest channel should be greater than or equal to 2211 psig.

Daily Surveillance Requirements Log

TECH SPEC	4.2.5; 4.3.1.1.9, 10; 4.3.2.1.1d, 3a3, 3c3, 5c, 6d						
PARAMETER	PRESSURIZER PRESSURE						
INSTRUMENT (MCB OR ERFIS)	PRC0457 PI-457	PRC0456 PI-456	PRC0455 PI-455	CALCULATION COMPLETED	INDEPENDENT VERIFICATION COMPLETED	ACCEPTANCE CRITERIA MET	N/A
ACCEPTANCE CRITERIA	SEE BELOW			N/A	N/A	N/A	CHANNEL CHECK
MODE	1						1, 2, 3
300	**2221.0**	**1964.9**	**2209.0**	**INITIALS**		**(NOTED**	**UNSAT)**
900							
1500							
2100							

INSTRUCTIONS

NOTE: # Calculations must be done with either the MCB Indicators OR ERFIS indications, NOT a combination.

\# If all operable channels are greater than or equal to the acceptance criteria, calculations are not required.

CALCULATIONS FOR PRESSURIZER PRESSURE

	PRC0457 PI-457		PRC0456 PI-456		PRC0455 PI-455			÷ (# Operable Channels used Normally 3)	PRESSURIZER PRESSURE
0300:	**2221.0**	+	**NA**	+	**2209.0**	=	**4430**	÷ (# Operable Channels used Normally 3)	= **2215**
0900:	________	+	________	+	________	=	________	÷ (# Operable Channels used Normally 3)	= ________
1500:	________	+	________	+	________	=	________	÷ (# Operable Channels used Normally 3)	= ________
2100:	________	+	________	+	________	=	________	÷ (# Operable Channels used Normally 3)	= ________

ACCEPTANCE CRITERIA FOR PRESSURIZER PRESSURE (must meet one of the following):

1. Average of operable MCB indicator channels greater than or equal to 2205 psig.
2. Average of operable ERFIS points greater than or equal to 2202 psig.
3. If three MCB indicators are not available, then the lowest channel should be greater than or equal to 2220 psig.
4. If three ERFIS points are not available, then the lowest channel should be greater than or equal to 2211 psig.

CANDIDATE ATTACHMENT B
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

MCB PRESSURIZER PRESSURE INDICATIONS

- PI-0457 2230
- PI-0456 1960
- PI-0455 2210

CANDIDATE ATTACHMENT A
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

ERFIS PRESSURIZER PRESSURE INDICATIONS

	CURRENT VALUE	QUAL CODE
• PRC0457	2221.0 (GREEN)	GOOD (GREEN)
• PRC0456	1964.9 (RED)	REDU (RED)
• PRC0455	2209.0 (GREEN)	GOOD (GREEN)

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are performing the 0300 set of readings for OST-1021, Daily Surveillance Requirements Daily Interval Mode 1, 2.

INITIATING CUES:

Perform the 0300 Daily Surveillance Requirement for Pressurizer Pressure.

NOTE: FOR PURPOSES OF THIS JPM ONLY, INDEPENDENT VERIFICATION IS NOT REQUIRED.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.1-1

Determine Main Turbine Loading Information Using Operations Curve Book

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Determine Main Turbine Loading Information Using Operations Curve Book

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.1.25 Importance: SRO 3.1 RO NA

K/A Statement: Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

Task Standard: GP-005, Step 19, completed satisfactorily.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: GP-005, Power Operation (Mode 2 to Mode 1)
Curve G-1

Validation Time: 10 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____________________

____

Examiner: ____________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

GP-005, Section 5.0, completed through Step 18.
Curve G-1.

Values to be entered in GP-005 are:
Step 14) 52
Step 15) 130
Step 16) 150

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

A plant startup is being performed per GP-005.

Step 19 is to be completed.

INITIATING CUES:

You are to complete Step 19 of GP-005. Maximum Loading Rate is ONLY to be determined up to 20% power due to fuel loading rate limitations being limiting above 20%.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates GP-005 and Curve G-1 NOTES: **NOTE: Supply completed copy of GP-005.** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Determines Initial Applied Load (Step 19, 1st Bullet) STANDARD: Refers to Curve G-1 and determines Initial Applied Load to be 45 MWe. NOTES: ***CRITICAL TO ENSURE INITIAL LOADING CORRECT.*** ***NOTE: Determined by locating given temperature on bottom axis of curve and locating Initial Applied Load on top axis of curve. Conversion is 9 Mwe = 1%.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 3:	Determines Duration of Hold at 5% power (Step 19, 2nd Bullet)	**CRITICAL STEP**
STANDARD:	Refers to Curve G-1 and determines Duration of Hold at 5% power to be 50 minutes $\pm$ 10 minutes	
NOTES:	***CRITICAL TO ENSURE PROPER HEATING OF TURBINE.*** ***NOTE: Determined by taking difference between 5% curve and rolling curve at 150° F line.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Determines Maximum Average Acceleration Rate (Step 19, 3rd Bullet)	**CRITICAL STEP**
STANDARD:	Refers to Curve G-1 and determines Maximum Acceleration Rate to be 40 $\pm$ 10 rpm/minute	
NOTES:	***CRITICAL TO ENSURE PROPER HEATING OF TURBINE.*** ***NOTE: Determined by dividing 1800 rpm by time equivalent to intersection of Rolling curve and 150° F line (approximately 3/4 hour).***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Determines Maximum Loading Rate (Step 19, 4th Bullet)	**CRITICAL STEP**
STANDARD:	Refers to Curve G-1 and determines Maximum Loading Rate to be 2.7 $\pm$ 1.0 MWe/minute	
NOTES:	***CRITICAL TO ENSURE PROPER EXPANSION OF TURBINE.*** ***NOTE: Determined by taking difference between time at 20% and intersection of 150° F line (approximately 2.4 hours or 144 minutes) and time at 5% and intersection of 150° F line (approximately 1.6 hours or 96 minutes). Difference is approximately 48 minutes. 15% load change divided by 48 minutes is approximately 0.3% per minute loading rate. Conversion is 9 Mwe = 1%.***	____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Determines Desired Average Acceleration Rate (Step 19, 5th Bullet)	**CRITICAL STEP**
STANDARD:	Determines Desired Average Acceleration Rate to be $\leq$ value determined in Step 4 above	
NOTES:	***CUE: If candidate asks for S-SO input on this, direct candidate to determine this value.*** ***CRITICAL TO ENSURE PREVIOUS LIMITS DETERMINED NOT EXCEEDED.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Determines Desired Loading Rate (Step 19, 6th Bullet)	**CRITICAL STEP**
STANDARD:	Determines Desired Loading Rate to be ≤ value determined in Step 5 above	
NOTES:	***CUE: If candidate asks for S-SO input on this, direct candidate to determine this value.*** ***CRITICAL TO ENSURE PREVIOUS LIMITS DETERMINED NOT EXCEEDED.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A plant startup is being performed per GP-005.

Step 19 is to be completed.

INITIATING CUES:

You are to complete Step 19 of GP-005. Maximum Loading Rate is ONLY to be determined up to 20% power due to fuel loading rate limitations being limiting above 20%.

C
CONTINUOUS
USE

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 3

PROCEDURE TYPE: General Procedure

NUMBER: GP-005

TITLE: Power Operation (MODE 2 to MODE 1)

NOTE: This procedure has been screened per PLP-100 criteria and determined to be a CASE II procedure. This procedure requires Superintendent evaluation with concurrence of the Superintendent - Shift Operations as to level of management required to be involved in preparations and conduct of this test.

1.0 PURPOSE

1. R This procedure provides instruction for increasing plant power from the Point of Adding Heat to 100% power. Included in this power escalation is the transition from MODE 2 to MODE 1.

2. This procedure may be used for load increases by performing those Steps deemed applicable by the Superintendent - Shift Operations.

3. This procedure partially satisfies the requirements of Tech Spec Surveillances 4.3.1.1.17.a and b.

4. This procedure satisfies the quarterly surveillance requirements of PLP-114 for Turbine Overspeed Protection.

2.0 REFERENCES

2.1 Plant Operating Manual Procedures

1. OPS-NGGC-1301
2. PLP-106
3. PLP-114
4. PLP-626
5. AP-021
6. OMM-014
7. OP-100
8. OP-107
9. OP-126
10. OP-127
11. OP-131.01
12. OP-131.02
13. OP-131.03
14. OP-131.04
15. OP-131.05
16. OP-133
17. OP-134
18. OP-134.01
19. OP-135
20. OP-136
21. OP-138.01
22. OP-139
23. OP-141
24. OP-151.01
25. OP-153.01
26. OP-153.02
27. OP-154
28. OP-156.01
29. OP-156.02
30. GP-004
31. GP-006
32. EOP-PATH-1
33. OST-1004
34. OST-1039
35. OPT-1014
36. ORT-1409
37. CRC-001
38. CRC-160
39. RST-204
40. RST-211
41. EST-701
42. EPT-009
43. EGR-NGGC-0005

2.2 Technical Specifications

1. 3.1.1.1
2. 3.2.1
3. 3.2.4
4. 3.4.8
5. 4.3.1.1.17.a
6. 4.3.1.1.17.b
7. ODCM, Appendix D

2.3 Final Safety Analysis Report

1. 1.2.2
2. 8.2.1

2.4 ANSI 18.7 Sections

1. 5.3.4.1

2.5 Corrective Action Program (CAP) Action Items

1. 88H0035
2. 90H0117
3. 90H0854
4. 92H0112
5. 93H1095
6. 95H0058
7. 96H0224

2.6 Other

1. VM-LDX-V01, Turbine Gen & Aux, Operation & Control
2. SHNPP Operations Curve Book
3. SHNPP Letter Number MS-920460
4. Westinghouse Technical Bulletin ESBU-TB-92-14-R1
5. SOER 90-03 Recommendation 1a
6. SOER 90-02 Recommendation 2c
7. ESR 95-00130
8. ESR 97-00428
9. ESR 97-00475
10. ESR 98-00008
11. WCAP-14950, Mitigation and Evaluation of Pressurizer Insurge/ Outsurge Transients

3.0 PREREQUISITES

NOTE:
- Verification of Prerequisites may proceed in any order and are certified by initialing each Prerequisite.
- All persons initialing Prerequisites should enter their names and initials on Attachment 3, Certifications and Reviews.
- Any prerequisites that cannot be met:
  - shall be marked N/A (Not Applicable),
  - shall be initialed by the Superintendent - Shift Operations,
  - shall have a supporting entry made in the comments Section of this procedure why the prerequisite is not met

1. Verify the reactor is critical at the Point of Adding Heat, between 1 and 3% reactor power, per GP-004. ____

2. Verify Reactor Coolant System average temperature is being maintained between 555 and 559°F. ____

3. Verify Reactor Coolant System pressure is being maintained between 2220 and 2250 PSIG. ____

4. Verify all Reactor Coolant Pumps are operating per OP-100. ____

5. Verify Charging and Letdown are in service, and Pressurizer level is being maintained per the Pressurizer Level Program. ____

6. Verify Reactor Makeup is in operation per OP-107. ____

7. Verify Steam Generator levels are being maintained between 61 and 71%. ____

8. Record the Control Bank D target rod height at 25% power. The target is 130 steps unless Reactor Engineering has provided a different value.

   130 Steps ____

9. Verify the following have been completed and/or reviewed to verify regulatory and administrative requirements for MODE 1 have been met:

   a. Active Clearances ____

   b. LCO Management Program ____

   c. Equipment Inoperable Record ____

   d. Temporary Modification Log ____

3.0 PREREQUISITES (continued)

NOTE: STSS should be reviewed within 12 hours of entering MODE 1.

e. Verify, using the Surveillance Test Scheduling System (STSS) Daily Batch Report, that there are no overdue or test delayed status tests preventing entry into MODE 1.

f. If the Surveillance Test Scheduling System (STSS) Daily Batch Report is not printed on the day of use, then use the STSS query function of AMMS (computer) to query for overdue surveillances from the date of the Daily Batch Report used in Step 3.0.0.09.e to the current date. Verify there are no overdue or test delayed status tests preventing entry into MODE 1.

10. Verify the Unit SCO has completed Attachment 1, MODE 1 Minimum Equipment List.

11. If Tech Spec 3.0.4 will be used to allow entry into MODE 1, the Manager - Operations or his designee has granted approval. N/A this Prerequisite if 3.0.4 will not be used. N/A

12. Verify the following systems have been aligned and placed in service as necessary per the listed operating procedures:

a. Steam Generator Blowdown System, OP-127

b. Turbine Lube Oil System, OP-131.02

c. Gland Seal System, OP-131.03

d. Main Condenser Air Removal System, OP-133

e. Condensate System, OP-134

f. Feedwater System, OP-134.01

g. Condensate Polishing Demineralizing System, OP-135

h. Auxiliary Feedwater System, OP-137

i. Circulating Water System, OP-138.01

j. Service Water System, OP-139

k. Cooling Tower and Reservoir Complex, OP-141

l. Compressed Air System, OP-151.01

m. Generator Gas System, OP-153.02

n. Hydrogen Seal Oil System, OP-154

o. DC Electrical Distribution, OP-156.01

p. AC Electrical Distribution, OP-156.02

3.0 PREREQUISITES (continued)

13. Verify the following systems have been aligned and are ready for startup per the listed operating procedure:

    a. Main and Extraction Steam and Steam Dump Systems, OP-126.

    b. Feedwater Heaters, Vents and Drains System, OP-136.

    c. Generator, Exciter, and Isolated Phase Bus Systems, OP-153.01.

14. Verify the Main Turbine has been on the Turning Gear for a minimum of 1 hour per OP-131.01.

15. Verify the DEH System is in operation per OP-131.05, and the DEH Computer has been energized for at least 2 hours.

16. Verify all Main Turbine Steam Drain Valves indicate open on Status Light Box 2.

    a. 1GS-102 MN STM INLET

    b. 1GS-101 MN STM INLET

    c. 1GS-100 MN STM INLET

    d. 1GS-99 MN STM INLET

    e. FIRST STAGE 1GS-103

    f. EXH 1ES-42

    g. EXH 1ES-43

    h. EXH 1ES-41

    i. EXH 1ES-44

17. Verify adequate Hydrogen Storage Tank level to repressurize the Main Generator as follows:

    - Minimum of 20 inches if the Generator is completely depressurized.

    - Minimum of 35 inches if the Generator is completely depressurized and requires Purging.

3.0 PREREQUISITES (continued)

18. Verify the following Steam Line Drain Isolations and Level Control Valves are open:

    a. 1MS-250, MAIN STEAM A DRAIN AFTER MSIV ___

    b. 1MS-233, MAIN STEAM A DRAIN BEFORE MSIV ___

    c. 1MS-231, MAIN STEAM A DRAIN ISOL BEFORE MSIV ___

    d. 1MS-285, MAIN STEAM B DRAIN AFTER MSIV ___

    e. 1MS-268, MAIN STEAM B DRAIN BEFORE MSIV ___

    f. 1MS-266, MAIN STEAM B DRAIN ISOL BEFORE MSIV ___

    g. 1MS-320, MAIN STEAM C DRAIN AFTER MSIV ___

    h. 1MS-303, MAIN STEAM C DRAIN BEFORE MSIV ___

    i. 1MS-301, MAIN STEAM C DRAIN ISOL BEFORE MSIV ___

    j. 1MS-375/1MS-426, TURBINE THROTTLE VLVS BEFORE SEAT DRAINS ___

    k. 1MS-392/1MS-407, MAIN STEAM DRAINS ON STEAM DUMP LINES ___

19. Verify the recorders needed for plant start-up and power operations are energized and operating properly. ___

20. Verify the Generator Annunciators alarms are acknowledged and reset the Generator Lockouts G1A and G1B. ___

21. Verify the following extraction steam valves are open, at SLB-3:

    a. 5A EXTR ES-3 ___

    b. 4A EXTR ES-19 ___

    c. 3A EXTR ES-80 ___

    d. 2A EXTR ES-109 ___

    e. 2A EXTR ES-108 ___

    f. 5B EXTR ES-4 ___

    g. 4B EXTR ES-20 ___

    h. 3B EXTR ES-82 ___

    i. 2B EXTR ES-112 ___

    j. 2B EXTR ES-111 ___

3.0 PREREQUISITES (continued)

22. Verify Condensate and Feedwater chemistry is within normal limits **AND** verify that Chemistry is closely monitoring Steam Generator chemistry. ______

23. Review the LCO Management Database for a record of Power Range Overpower Trip High Range Setpoint adjustment, performed with the reactor at less than or equal to 70% of Rated Power. If an EIR exists, verify a WR/JO has been written for Maintenance support to recalibrate the Overpower Trip Setpoints during power ascension using MST-I0070. If no EIR exists, N/A this prerequisite.

    WR/JO ________ N/A

NOTE: This procedure is treated as a PLP-100 CASE I procedure on the initial startup following refueling or core alteration.

CAUTION

This procedure involves an infrequent evolution with the potential to reduce margins of safety or introduce unwanted transients or accidents or introduce personnel safety or radiological hazards if performed incorrectly.

---

24. Verify a PLP-100 shift brief has been performed by the applicable level of management. ______

25. Verify all Prerequisites are met, then obtain Superintendent - Shift Operations permission to perform this GP.

    Bill [signature]
    Signature ______ Date ______

4.0 PRECAUTIONS AND LIMITATIONS

1. R Until a calorimetric is performed at 30% power, true reactor power shall be assumed equal to the highest of the following indicators: average Power Range NI value, average percent ΔT, or Main Turbine load. (Reference 2.6.0.05)

2. R If diverse indications of reactor power disagree by greater than 5% while operating at less than 28% of rated power, the Superintendent - Shift Operations shall determine the most conservative indicator to be used as the basis for further power changes. If diverse indications of reactor power disagree by greater than 5% at power levels greater than or equal to 28%, a calorimetric should be performed. (Reference 2.6.0.05)

3. During startup and loading of the Main Turbine, the SG water level is very unstable and has a tendency to shrink and swell. Maintain SG levels between 61 and 71% narrow range level indication for optimum control.

4. Avoid fully OPEN or fully SHUT feed regulator valve positions and wide swings in the OPEN or SHUT direction; this can cause water level to shrink or swell excessively.

5. Main Turbine operation at less than 5% of rated turbine load (45 MWe gross) should be avoided. If necessary, auxiliary load may be carried indefinitely on the Main Generator following rejection of the load provided:

   a. LP Turbine exhaust temperatures do not exceed 175°F with exhaust hood sprays in service or 250°F with exhaust hood sprays out of service.

   b. All supervisory instrument readings are within their normal operating ranges per OP-131.01, Section 6.0. Particular attention should be given to differential expansion readings. Rapid or continued changes in these readings may require timely action to avoid exceeding allowable limits. Action may include removing or adding load to establish safe operating conditions.

6. As Reactor power changes, verify correct permissive circuit operation by monitoring:

   - TRIP STATUS LIGHT BOX 3
   - TRIP STATUS LIGHT BOX 4
   - BYPASS PERMISSIVE LIGHTS Panel

7. Main Generator load changes are limited to a maximum of 5% per minute (45 MWe per minute). Routine load changes should be coordinated with the load dispatcher to meet system load demands.

8. R During the <u>initial</u> return to power following a refueling shutdown or following a cold shutdown where fuel assemblies have been handled, the power ramp rate is limited to 3% per hour between 20 and 100% power. Once a power level has been sustained for 72 cumulative hours in 7 consecutive days, the restriction no longer applies up to that power level. (Reference 2.6.0.06)

4.0 PRECAUTIONS AND LIMITATIONS (continued)

9. R If the reactor is operated at less than 100% power for greater than 30 days following the initial fuel conditioning requirements of Item 4.0.0.08 above, subsequent power increases above the highest power level sustained for at least 72 cumulative hours during the 30 day period, must be done per the initial power ramp restrictions. Time at zero power is not considered in the 30 day time limit. (Reference 2.6.0.06)

10. Chemistry must be notified to initiate surveillances as specified in applicable Sections of RST-204 and RST-211 following a load change greater than 15% of rated thermal power in any 1 hour period.

11. Steam Generator 5% Power Hold Point Chemistry limits must be satisfied prior to sustained operation above 5% Reactor Power.

12. If Chemistry limits will require holding at less than 30% power for longer than 24 hours, requiring OST-1004 to be performed, either increase power to between 28 and 30% to obtain an accurate calorimetric or reduce power to less than 15% where the surveillance is not required.

13. R Asymmetric feedwater alignments may cause uneven RCS loop temperatures which can result in radial flux tilts. Care must be taken to closely monitor and control QPTR under these conditions. (Reference 2.5.0.04)

14. When performing power changes with a positive Moderator Temperature Coefficient, all reactivity additions must be slow and controlled due to the compounding effects of the positive Moderator Temperature Coefficient.

15. Throughout power ascension, operators should monitor Main Generator MVARs and remain within the limits set by OP-153.01

16. Before latching the turbine, the Main Feed system should be placed in service controlling SG level and the AFW system placed in Automatic Standby Alignment.

17. R Deficiencies identified during performance of this procedure should be evaluated against the criteria for an operator work around per OMM-022. (Reference 2.5.0.06)

18. PCR 6502 added the following Auto Open features to the Motor Driven AFW Pumps FCVs: (Reference ESR 95-01041 and ESR 97-00475)

    a. Loss of an Emergency Bus
    b. Lo Lo S/G Level
    c. Safety Injection
    d. AMSAC
    e. Trip of the last running Main Feed Pump

    This Auto Open signal is applied for 20 seconds and will cause the controller to go to a full OPEN position. During this 20 seconds, the controller cannot be repositioned since the open signal and shut signal cancel each other out. If feeding the SGs with the MDAFW Pumps FCVs, the controllers can be repositioned to a throttled position as necessary after this 20 seconds has elapsed.

4.0 PRECAUTIONS AND LIMITATIONS (continued)

19. To prevent exceeding the Westinghouse limitations of 50°F step changes at the low pressure turbine inlet, the MSR TCVs should be placed in service between 190 MWe and 240 MWe. This applies only to a cold start of the MSRs. (Reference CR 95-01136)

20. As power increases, feedwater parameters and SG chemistry will change. The Condensate and Feed System flowrate will increase and SG chemistry impurities will increase. The flowrate increase and impurities increase will cause a change in CPD parameters. Among these varying parameters could be higher differential pressures across the polisher system which could cause the CPD Bypass Valve(1CE-718) to open. The opening of this valve would decrease the effectiveness of the condensate chemistry cleanup. CPD parameters should be monitored closely and the addition of extra polisher beds in the condensate flow path should be anticipated during a power increase.

21. The Intermediate Range (IR) High Flux Trip set point is typically established at 130 steps on Bank D. IR rod shadowing occurs within the range of 80 to 130 steps. Maintaining rods higher results in a higher indicated power on the IR relative to actual power. Rod insertion may be necessary to reduce IR current below the trip reset.

22. During Turbine Roll and Synchronization, RCS Boron dilutions may be required to keep Reactor Power high enough to prevent Tavg problems. The following Reactor Power bands should be observed:

- Turbine Roll 4 to 8% Rx Power
- Generator Synchronization 14 to 16% Rx Power

23. The Main Turbine turning gear is placed in manual operation just prior to turbine roll to eliminate any possibility of the turning gear not disengaging.

24. For a Cold Turbine Start concurrent with ambient temperatures below 32 degrees Fahrenheit, allow at least a one hour hold at 520 RPM to allow LP turbine cylinder temperatures to equalize. This is especially important when the condenser steam dumps have been used extensively. Should turbine vibrations in excess of 10 mils occur at subsequent higher speeds, return the unit to 520 RPM and hold for an additional one hour period.

25. Changes in Pressurizer level cause changes in the boron concentration of the Pressurizer due to the effect of flashing the liquid to steam, or condensing steam to liquid, as level is varied.

    A continuous outsurge from the Pressurizer should be maintained whenever Pressurizer level is changing due to changes in power level, and when the reactor is subcritical. Sufficient backup heater groups should be energized to induce at least one of the Pressurizer spray valves to open and provide flow for control of pressure. Increases in Pressurizer level must be limited to the rate of the continuous outsurge flow through the surge line. This can be controlled by maintaining the Pressurizer surge line temperature greater than the RCS hot leg temperature.

5.0 PROCEDURE

NOTE:
- If safe and efficient operation of the plant will not be compromised, procedure Steps may be performed simultaneously or out of sequence at the discretion of the Superintendent - Shift Operations.
- All Steps should be initialed when performed or, if the Step is met by existing plant conditions, it may be marked N/A and initialed by the Superintendent - Shift Operations.
- All personnel who initial Steps in this procedure should enter their names and initials on Attachment 3, Certifications and Reviews.

1. Check that Control Bank D rod height is 95 to 115 steps for turbine startup. If rod height is correct, N/A all of Step 5.0.0.02. Otherwise N/A this Step. B

2. If Control Bank D rod height is **NOT** 95 to 115 steps, take one of the following actions and N/A the Substep not performed:

   a. Borate or dilute as necessary to position the rods in the target band. B

   OR

   b. Develop an alternate rod strategy with the Unit SCO and Reactor Engineering concurrence. N/A

3. Before initial operation above 5% power after refueling, verify Shutdown Margin is greater than 1770 pcm using EST-701. B

4. Verify the following exist in preparation for warming up the steamlines:

   a. Main condenser vacuum has been established. B

   b. At least one Main Turbine Overspeed Protection System is operable. B

   c. R Steam Dump Valves are shut with the Steam Dump Controller in Manual. (Reference 2.5.0.04) B

5. Warm-up/pressurize the Main Steam piping and open the MSIVs per OP-126, while maintaining T_{avg} between 555 and 559°F. B

6. R When the MSIVs are open, verify the Steam Dump Pressure Controller is set at 84% (1092 PSIG), and the STEAM DUMP MODE SELECTOR Switch is in the STM PRESS position. (Reference 2.5.0.04) B

G

Verified

5.0 PROCEDURE (continued)

NOTE: The initial Steam Dump Controller setpoint is based on operating experience. Some adjustment may be required to maintain T_{avg} between 555 and 559°F.

7. Verify the STM HDR DMP PRESS CONT PK-464.1 in AUTO, and verify steam dumps are operating to maintain T_{avg} between 555 and 559°F. ____

8. Verify the following MN STEAM PORV Controllers are adjusted to 1135 PSIG (nominal 87%) and in AUTO to accommodate startup:

   PK-308A1 SA ____

   PK-308B1 SB ____

   PK-308C1 SA ____

9. Line up Auxiliary Steam to be supplied from Main Steam. ____

10. Verify DEH fluid temperature is at least 70°F. ____

11. While the Main Turbine is on the Turning Gear, check the operation of the Bearing Oil Pumps and Pressure Switches as follows:

    a. Place the 250 VDC battery chargers in parallel operation per OP-156.01. ____

    b. Verify the DC EMERGENCY BEARING OIL PUMP starts by placing the BRG OIL & SEAL OIL BU FROM MAIN RSVR Switch in STOP PULL TO LOCK, and hold. ____

NOTE: The Bearing Oil Pump will not start if the Emergency Bearing Oil Pump is operating properly.

    c. Place the BRG OIL & SEAL OIL BU FROM MAIN RSVR switch to AUTO. ____

NOTE:
- The SEAL OIL BU PUMP FROM MAIN RSVR has an auto start at 13.0 PSIG sensed at PS-01TA-4132. (contact #2)
- The NORMAL BEARING OIL PUMP has an auto start at 11.5 PSIG sensed at PS-01TA-4132. (contact #1)
- Based on the auto start features listed above either or both pumps may start when the DC EMERGENCY BEARING OIL PUMP is stopped.

    d. Check the SEAL OIL BU PUMP FROM MAIN RSVR and/or NORMAL BEARING OIL PUMP start by placing the DC EMERGENCY BEARING OIL PUMP switch to STOP PULL TO LOCK, and hold. ____

5.0 PROCEDURE (continued)

NOTE: The Emergency Oil Pump will not automatically stop on rising pressure. If the pump is still running when the switch is returned to AUTO, the switch will have to be momentarily turned to STOP to secure the pump.

e. After the Normal Bearing Oil Pump starts, release the DC EMERGENCY BEARING OIL PUMP Switch to AUTO. ____

f. Remove the 250 VDC battery chargers from parallel operation per OP-156.01. ____

12. Verify the following Main Turbine Lube Oil Pumps are in automatic by verifying the following switches are in AUTO:

a. DC EMERGENCY BEARING OIL PUMP AUTO ____

b. BRG OIL & SEAL OIL BU FROM MAIN RSVR AUTO ____

13. At least 1 hour before starting Feedwater Forward Flushing per Step 5.0.0.0122.c, start data collection per ORT-1409. ____

NOTE: 55 PSIG is the maximum pressure allowed for a cold generator. If the generator has not fully cooled, the pressure can be maintained at the present pressure.

14. Verify the Generator hydrogen pressure is 45 psig or above. If pressure is below 45 psig, adjust hydrogen generator pressure to 45 to 55 psig per OP-153.02.

H_2 Pressure 52 PSIG ____

15. Record the lowest LP Turbine inlet metal temperature from ERFIS Computer Points TTA4172 and TTA4171. This temperature is used in Step 5.0.0.017.

Metal Temperature 130 °F ____

16. Record the HP Turbine first stage metal temperature using the Turbine Steam and Metal Temperature recorder MR-1000 or ERFIS Computer Point TTA1061.

Metal temperature 150 °F ____

5.0 PROCEDURE (continued)

NOTE: The following Step assumes that the MSR Controller is functioning properly. If the MSR Computer is not working, then OP-131.04 Section 8.3 provides direction for a manual start of the MSRs.

17. Align the Moisture Separators Reheaters for startup per OP-131.04, using one of the following Sections. N/A the Substep not performed.

    a. Section 5.1 for LP Turbine inlet metal temperature less than 300°F; ___B___

    OR

    b. Section 5.2 for LP Turbine inlet metal temperature greater than or equal to 300°F. ___N/A___

18. R Using the fuel warranty restrictions listed in Precautions and Limitations 4.0.0.08 and 4.0.0.09, determine the maximum power for which no power ramp rate restriction applies. Power ramp rate is restricted to 3% per hour above this power level. (Reference 2.6.0.06)

    Maximum power level ___20___ % ___B___

NOTE: In the following Step, rated Main Turbine load of 900 MWe should be used when converting percent load on Curve G-1 to MWe.

19. Determine the following Main Turbine loading information using Curve G-1 in the Operations Curve Book.

    - Initial Applied Load __________ MWe
    - Duration of Hold at 5% Load __________ MIN
    - Maximum Average Acceleration Rate __________ RPM/MIN
    - Maximum Loading Rate __________ MW/MIN
    - Desired Average Acceleration Rate from Unit SCO __________ RPM/MIN
    - Desired Loading Rate from Unit SCO __________ MW/MIN

Calculation By ________

Calculation Verified ________

20. Verify SG level is being controlled between 61% and 71% using the Main Feed System. ________

21. Verify the AFW system is in Automatic Standby Alignment per OP-137. ________

5.0 PROCEDURE (continued)

NOTE: Control Bank D should be between the Upper and Lower limits before turbine startup is commenced. This rod height band will assist the operator with ensuring the IR trip and rod stop bistable set points are not reached before they can be blocked. (Reactor power above P-10)

22. Verify Control Bank D rod height is within the limits as specified by the Unit SCO, not to exceed the limits determined in Step 5.0.0.01 or 5.0.0.02. ________

NOTE:
- The valve position limiter must be greater than 100% to enable selection to the OPER AUTO mode of operation.
- When the OPER AUTO pushbutton is depressed it will be illuminated, and the TURBINE MANUAL Mode Selector and Manual Control Station Lamps will extinguish.
- If an excessive speed or load error occurs DEH control will automatically transfer to manual.

CAUTION

In the event of a malfunction of the DEH Computer Manual Tracking Auto feature as indicated by the MANUAL NOT TRACK'G AUTO status light, do **NOT** select TURBINE MANUAL or TEST on the MAINT TEST Switch. Maintenance personnel must be informed immediately.

---

23. Select the OPER AUTO mode of operation. ________

24. Position the Valve Position Limiter to 0%. ________

NOTE: The REF pushbutton will be illuminated.

25. Depress the REF pushbutton and check that "0000" is displayed in the REFERENCE and DEMAND displays. ________

NOTE: Latching the Main Turbine could cause the Main Turbine to roll off of the Turning Gear.

26. Start the standby DEH Pump. ________

27. Station an operator to walk down the Main Turbine during latching and subsequent turbine roll to check for unusual noises and vibration. ________

5.0 PROCEDURE (continued)

NOTE:
- If credit will be taken for Turbine Valve Operability (Task O P QN 002) personnel will be needed at the Main Turbine to locally verify all Main Turbine Valve motion in Steps 5.0.0.029, 5.0.0.031, 5.0.0.033, 5.0.0.037 through 5.0.0.039, 5.0.0.041, 5.0.0.043, 5.0.0.062, 5.0.0.063, 5.0.0.068.b, 5.0.0.080. [1 (one) observer per valve].
- Close monitoring of recorders during rolling and heat up of the Main Turbine will help identify any adverse trends.

28. Latch the Main Turbine by performing the following:

    a. At the Main Turbine Front Standard, place the Turbine OVERSPEED AND TRIP RESET LEVER to RESET for 2 to 5 seconds, then return the lever to NORMAL (Resets Mechanical Overspeed). ________

    b. Verify Autostop Oil Pressure, PI-4140, is 100 to 110 psig to verify the turbine is latched from the front standard. ________

    c. At the MCB, depress the LATCH pushbutton and hold until the TURBINE TRIPPED Monitor Lamp extinguishes (typically 2 seconds)(Resets Electrical Overspeed). ________

29. Verify all Intercept and Reheat Stop Valves are open by indication on the Valve Test Panel, and by direct local observation. ________

30. Verify all Throttle and Governor Valves are shut as indicated by the TV ADDITIVE POSITION and GV ADDITIVE POSITION indicators at 0%, and Valve Test Panel lights indicate shut. ________

CAUTION

If the Throttle Valves open or Main Turbine speed increases while raising the limiter, the Main Turbine must be tripped immediately to prevent damage.

NOTE: Governor valves should be locally observed in the following step.

31. Raise the Valve Position Limiter to 115% and verify the Governor Valves are 100% open by DEMAND window indication and by GV ADDITIVE POSITION indication. ________

NOTE:
- Governor, Intercept and Reheat Stop Valve motion must be locally observed in the following Step.
- The following Step will cause ALB-18/7-5, REMOTE TURBINE TRIP CONTACT TEST OR FAILURE, to alarm.

32. Trip the Main Turbine by placing the TURBINE TRIP Switch to TRIP. ________

5.0 PROCEDURE (continued)

33. Verify the following valves shut by remote indication, and verify the Intercept and Reheat Stop Valves shut freely by direct local observation:

- Governor Valves 1 through 4
- Intercept Valves 1 through 4
- Reheat Stop Valves 1 through 4 ________

34. Lower the Valve Position Limiter to 0%. ________

NOTE: The REF pushbutton will be illuminated.

35. Depress the REF pushbutton and check that "0000" is displayed in the REFERENCE and DEMAND displays. ________

NOTE:
- Latching the Main Turbine could cause the Main Turbine to roll off the Turning Gear.
- Intercept and Reheat Stop Valve motion must be locally observed in the following Step.

36. At the MCB, depress the LATCH pushbutton and hold it until the TURBINE TRIPPED Monitor Lamp extinguishes (typically 2 seconds). ________

37. Verify all Intercept and Reheat Stop Valves are open based on Valve Test Panel indication, and that they opened freely by direct local observation. ________

CAUTION

If the Throttle Valves open or Main Turbine speed increases while raising the limiter, the Main Turbine must be tripped immediately to prevent damage.

---

38. Raise the Valve Position Limiter to 115% and verify the Governor Valves are 100% open by DEMAND window indication, GV ADDITIVE POSITION indication, and by local observation. ________

NOTE: Governor Valve motion must be locally observed in Step 5.0.0.039.

39. Turn the OPC Key Switch to OPC TEST and verify the Governor and Intercept Valves shut rapidly. Governor Valve motion must be verified by direct local observation. ________

40. Lower the Valve Position Limiter to 0%. ________

NOTE: Intercept Valve motion must be locally observed in Step 5.0.0.041.

41. Turn the OPC Key Switch to IN SERVICE and observe the Intercept Valves reopen. ________

5.0 PROCEDURE (continued)

NOTE: Governor Valve motion must be observed locally during Step 5.0.0.042 to complete Step 5.0.0.043.

CAUTION

If the Throttle Valves open or Main Turbine speed increases while raising the limiter, the Main Turbine must be tripped immediately to prevent damage.

---

42. Raise the Valve Position Limiter to 115%. ________

43. Verify the Governor Valves are 100% OPEN by the DEMAND window indication, GV ADDITIVE POSITION indication, and that they opened freely by direct local observation. ________

44. Depress the REF pushbutton. The number "0000" will appear in the REFERENCE and DEMAND displays. ________

45. Enter 520 RPM into the DEMAND display and verify the HOLD pushbutton is illuminated. ________

46. Enter the desired acceleration rate determined in Step 5.0.0.019. ________

47. Depress the REF pushbutton. ________

48. Select SINGLE VALVE mode for Governor Valve control. ________

49. Place the Main Turbine turning gear in manual operation per OP-131.01. ________

50. Energize all available Pressurizer Backup Heaters. ________

NOTE: It is permissible to increase RCS temperature to 561°F before rolling the Main Turbine.

CAUTION

To avoid injury, personnel should keep clear of the Turning Gear Operating Lever, which is moved to the disengaged position by air pressure.

---

51. Verify T_{avg} is between 555 and 561°F, then depress the GO pushbutton. ________

52. Verify that the Turning Gear disengages **AND** remove the TURNING GEAR from manual operation per OP-131.01. ________

5.0 PROCEDURE (continued)

NOTE: The exciter heats up rapidly due to windage as the speed increases.

53. Direct an operator to verify proper operation of the following coolers as temperatures are increasing in the plant:

    a. Generator Hydrogen Coolers ________

    b. Hydrogen Seal Oil Coolers ________

    c. Main Turbine Lube Oil Coolers ________

    d. Exciter Air Coolers ________

54. Verify Steam Generator 5% Power Hold Point Chemistry limits are satisfied. ________

55. When reactor power is greater than 5%, log MODE 1 entry in Control Operator Log. ________

NOTE:
- Eccentricity on Recorder MR-1079 should show a steady value of less than 3 mils double amplitude before Main Turbine speed is increased above 520 RPM.
- When the desired value of .0520 has been reached, the GO pushbutton light will extinguish.

56. When 520 RPM has been reached, check that all conditions are normal by observing the Main Turbine Supervisory Instruments and comparing to normal values in OP-131.01 Section 6.0. ________

57. If this was a Cold Start as indicated in Step 5.0.0.017, and ambient temperatures are below 32°F **OR** high vibrations required returning speed to 520 RPM, hold speed at 520 RPM for one hour. (Otherwise N/A this Step) (If subsequent holds are required due to high vibrations, enter comment in Attachment 3) ________

58. Enter 1700 RPM into the DEMAND display and check the HOLD pushbutton is illuminated. ________

5.0 PROCEDURE (continued)

NOTE: The REFERENCE display will start the count up from 520 RPM to 1700 RPM at the selected acceleration rate.

CAUTION

For Main Turbine acceleration through resonant ranges, the acceleration rate should be raised to 200 RPM/MIN just prior to each resonant range to minimize the time spent in these areas and then reduced if desired just after each resonant range to limit the effects on Tavg. If more than a 10 minute HOLD is required during acceleration of the Main Turbine, the speed must be reduced below the resonant range. (Resonant ranges are in the Turbine Speed Hold Recommendations chart in the Operations Curve Book.)

---

59. Depress the GO pushbutton. ______

60. When Main Turbine speed is above 600 RPM, perform the following:

    a. Verify the Bearing Oil Lift Pump stops. ______

    b. Verify 1CE-279 & 1CE-284, TURBINE EXHAUST HOOD SPRAY Valves, are open. ______

NOTE:
- The LP Turbine heatup rate limit is 100°F per hour and the ΔT limit between LP Turbine inlets is less than 50°F.
- The following Step positions the MSR Bypass Control Valves, 1MS-155, and 1MS-156, to the 400°F position.

61. When Main Turbine speed is above 1000 RPM and if the LP Turbine inlet temperature was 300°F or greater, continue to place the MSRs in service for a Main Turbine hot start by depressing the HOT START pushbutton on the MSR Controller. (Otherwise N/A this Step)

    Time Started ____________________ ______

NOTE: TV motion must be locally observed in steps 5.0.0.062 and 5.0.0.063.

62. At 1700 RPM, transfer control from the Throttle Valves to the Governor Valves by depressing the TRANSFER TV-GV pushbutton. ______

63. Check that the transfer from the Throttle Valves to the Governor Valves is complete by checking the following indications:

    - Valve position indicators
    - TRANSFER TV light extinguished
    - GV light illuminated
    - Local observation (Throttle Valves full open) ______

64. Enter 1800 RPM in the DEMAND display and verify the HOLD pushbutton is illuminated. ______

5.0 PROCEDURE (continued)

NOTE: The REFERENCE display will start to count up at the previously selected acceleration rate to 1800 RPM, then the GO pushbutton will extinguish.

65. Depress the GO pushbutton. ________

66. Verify that the Main Turbine is at 1800 RPM. ________

67. R Verify the following bistable status lights are off (cleared) on TRIP STATUS LIGHT BOX 2: (Reference 2.2.0.05 and 2.2.0.06)

a. TURB STOP VLV 1 SHUT ________

b. TURB STOP VLV 2 SHUT ________

c. TURB STOP VLV 3 SHUT ________

d. TURB STOP VLV 4 SHUT ________

e. TURB AUTO STOP TRIP 63-3 ________

f. TURB AUTO STOP TRIP 63-4 ________

g. TURB AUTO STOP TRIP 63-5 ________

NOTE:

- Throttle Valve motion must be locally observed in the following Step.
- The following Step will cause ALB-18/7-5, REMOTE TURBINE TRIP CONTACT TEST OR FAILURE, to alarm.

CAUTION

Tripping the Main Turbine with Reactor or Main Turbine power greater than or equal to 10% will cause a Reactor trip.

---

68. With reactor power less than 10% perform the following:

a. Verify the LOW POWER TRIPS BLOCKED P-7 Status Light on the BYPASS PERMISSIVE LIGHTS panel illuminated. ________

b. While locally verifying Throttle Valve motion, trip the Main Turbine by placing the TURBINE TRIP Switch to TRIP. ________

c. Verify all the following valves indicate shut on the Valve Test Panel and locally verify Throttle Valve motion and position.

- Throttle Valves 1 through 4
- Governor Valves 1 through 4
- Intercept Valves 1 through 4
- Reheat Valve 1 through 4 ________

69. Verify the plant is in a stable condition. ________

5.0 PROCEDURE (continued)

70. R Verify the following bistable status lights are illuminated on TRIP STATUS LIGHT BOX 2: (Reference 2.2.0.05 and 2.2.0.06)

a. TURB STOP VLV 1 SHUT ______

b. TURB STOP VLV 2 SHUT ______

c. TURB STOP VLV 3 SHUT ______

d. TURB STOP VLV 4 SHUT ______

e. TURB AUTO STOP TRIP 63-3 ______

f. TURB AUTO STOP TRIP 63-4 ______

g. TURB AUTO STOP TRIP 63-5 ______

71. If required, perform OPT-1075, Turbine Mechanical Overspeed Trip Test (otherwise, N/A this Step). ______

72. If any Turbine Valve failed to operate, refer to PLP-114 for required actions (otherwise N/A this Step). ______

NOTE: The TURBINE TRIPPED and OPER AUTO lights will be illuminated.

73. Check the number "0000" is displayed in the REFERENCE and DEMAND displays. ______

74. Verify speed is less than or equal to 1700 RPM, then latch the Main Turbine at the MCB by depressing the LATCH pushbutton and hold it until the TURBINE TRIPPED Monitor Lamp extinguishes (typically 2 seconds). ______

75. Verify all the following valves indicate open on the Valve Test Panel:

- Governor Valves 1 through 4
- Intercept Valves 1 through 4
- Reheat Valve 1 through 4 ______

NOTE: If the unit has transferred to MANUAL, the displays will follow the roll down of Main Turbine speed and it will be necessary to transfer to the OPER AUTO mode. This will cause the Main Turbine to hold speed at the value in the REFERENCE window.

76. If in Turbine Manual, place DEH panel in Operator Auto. (Otherwise N/A this Step) ______

77. Depress the REF pushbutton and observe that the REFERENCE and DEMAND displays count up to the actual Main Turbine speed and HOLD when the displays match the actual speed. ______

78. Enter 1700 RPM into the DEMAND display and verify the Hold pushbutton illuminated. ______

5.0 PROCEDURE (continued)

NOTE: The REFERENCE display will start to count to 1700 RPM at the previously selected acceleration rate.

79. Depress the GO pushbutton. ______

NOTE: Throttle Valve motion must be locally observed in Step 5.0.0.080.

80. At 1700 RPM, transfer control from the Throttle Valves to the Governor Valves by depressing the TRANSFER TV-GV pushbutton. ______

81. Document Task O P QN 002 completion as required for Turbine valve operability. ______

82. Check that the transfer from the Throttle Valves to the Governor Valves is complete by checking the following indications:

    - Valve position indicators
    - TRANSFER TV light extinguished
    - GV light illuminated
    - Local observation (Throttle Valves smoothly transition to full open) ______

83. Enter 1800 RPM into the DEMAND display and verify the HOLD pushbutton is illuminated. ______

NOTE: The REFERENCE display will count up to 1800 RPM at the previously selected acceleration rate, and then the GO pushbutton will extinguish.

84. Depress the GO pushbutton. ______

85. At 1800 RPM, lower the Valve Position Limiter, as indicated in the REFERENCE display, until it indicates the percent (%) value read in the DEMAND display plus an additional 10%. ______

86. At 1800 RPM, stop the BRG OIL & SEAL OIL BU FROM MAIN RSVR Pumps, then place the control switch in AUTO. ______

87. Verify the Main Turbine speed stops increasing at 1800 rpm and the GO pushbutton extinguishes. ______

88. Place one DEH Pump in AUTO (Standby) operation. ______

89. Startup the Feedwater Heaters per OP-136. ______

90. Start any idle Circulating Water Pumps per OP-138.01. ______

5.0 PROCEDURE (continued)

91. Place the following Main Generator monitoring systems in service per OP-153.01, and verify the strip chart recorders are working properly:

    a. Generator Condition Monitor ________

    b. Generator Condition Monitor Auto Alarm ________

    c. Radio Frequency Monitor ________

    d. Dewpoint Monitor ________

92. Verify the disconnects for BKR 52-7 and BKR 52-9 are closed per OP-156.02.

    a. 52-7 PLANT SIDE DISCONNECTS ________

    b. 52-7 BUS SIDE DISCONNECTS ________

    c. 52-9 PLANT SIDE DISCONNECTS ________

    d. 52-9 BUS SIDE DISCONNECTS ________

93. Prepare to place the Main Feedwater Regulating valves in service as follows:

    a. Verify the following Main Feedwater Regulating valves are shut and the flow controllers in manual with zero (0) controller output:

        (1) 1FW-133, MAIN FW A REGULATOR (FK-478) ________

        (2) 1FW-249, MAIN FW B REGULATOR (FK-488) ________

        (3) 1FW-191, MAIN FW C REGULATOR (FK-498) ________

    b. Verify open the following Main Feed Regulating Isolation valves.

        (1) 1FW-130, MAIN FW A BLOCK VLV ________

        (2) 1FW-246, MAIN FW B BLOCK VLV ________

        (3) 1FW-188, MAIN FW C BLOCK VLV ________

        (4) 1FW-136, MAIN FEED REG VALVE A OUTLET ISOL ________

        (5) 1FW-194, MAIN FEED REG VALVE B OUTLET ISOL ________

        (6) 1FW-252, MAIN FEED REG VALVE C OUTLET ISOL ________

5.0 PROCEDURE (continued)

NOTE: Main Feedwater Regulating Valves use during initial synchronization and power increase will prevent the Feedwater Regulating Valve Bypass Valve controllers from exceeding 80% output to prevent operating in a limited control range for the Feedwater Regulating Valve Bypass valves. The optimum demand for the Feedwater Regulating Valve Bypass Valve controllers is 35% to 55%.

94. As necessary to control Steam Generator water level, place the Main Feedwater Regulating valves in service as follows:

a. Verify the Feedwater Regulating Valve Bypass Valve Controllers are in AUTO. ________

b. Open each Main Feed Regulating Valve to balance feed flow and steam flow while increasing steam dump or Main Turbine load. The Feedwater Regulating Valve Bypass Valve Controllers should remain in AUTO. ________

CAUTION

As Reactor power increases, correct permissive circuit operation must be verified to prevent an inadvertent Reactor trip when going above 10% power.

---

95. When greater than 10% Reactor power (P-10), verify the following Bistable and Permissive Light conditions:

a.	PR P-7/P-10 NC 41M	ON	________
b.	PR P-7/P-10 NC 42M	ON	________
c.	PR P-7/P-10 NC 43M	ON	________
d.	PR P-7/P-10 NC 44M	ON	________
e.	PR PWR > P-10 IR-PR LOW RANGE BLK PERMISSIVE	ON	________
f.	LOW POWER TRIPS BLOCKED P-7	OFF	________

96. R After the Bistable and Permissive light conditions of Step 5.0.0.095 are satisfied **AND** before 20% Reactor power perform the following:

a. Block the Intermediate Range Rod Stops and Reactor Trips. ________

b. Block the Power Range Low Power Reactor Trip. ________

5.0 PROCEDURE (continued)

c. Verify the following status light conditions: (Reference 2.3.0.01)

(1) POWER RANGE TRAIN A LOW RANGE TRIP BLOCKED — ON ______

(2) POWER RANGE TRAIN B LOW RANGE TRIP BLOCKED — ON ______

(3) IR TRA TRIP BLOCKED AUTO ROD STOP BLOCKED — ON ______

(4) IR TRB TRIP BLOCKED MANUAL ROD STOP BLOCKED — ON ______

NOTE:

- To minimize potential transients during Beginning of Life (BOL) and Middle of Life (MOL), it is recommended that RCS Tave and reactor power be established as high in the band as possible. This will result in Tave being closer to Tref after synchronization.
- Target Steam Dump demand is 12 to 18%. The steam dump automatic setpoint may be adjusted from 84% to as low as 81% to increase steam flow while maintaining highest RCS Tave less than 564°F. Adjustments to the steam dump controller setpoint while in automatic must be performed slowly to avoid significant system transients.
- The following Step may cause ALB-010/6-4B, RCS TREF/TAVG HIGH-LOW, to alarm.

97. Increase reactor power to 14% to 16% with a target RCS temperature of 562°F to 564°F. (Using highest Tave indication from Attachment 2) ______

NOTE: The following Step will record data to verify Intermediate Range setpoints. This data is collected during power ascension to 30% and is used to recalibrate the trip setpoint prior to the next startup.

98. Verify an ERFIS GTLOG for group EPT-009 has been started (a 60 second scan rate and a 30 minute print rate is recommended). ______

99. Record the Pre-synchronization data on Attachment 2. ______

5.0 PROCEDURE (continued)

NOTE: When the first Main Generator Output Breaker is closed, the REFERENCE and DISPLAY Windows will display a value in megawatts which will automatically position the Governor Valves to a position equivalent to approximately 5% load.

CAUTION

When the first output breaker is closed, it will be necessary to verify the Main Generator picks up some load to prevent the Main Generator from motoring. Historically, the generator is picking up approximately 60 MWe when the output breakers are closed.

---

100. Place the Main Generator Voltage Regulator in service and synchronize the Main Generator to the Grid per OP-153.01. ________

101. Record the times that Breakers 52-7 and 52-9 are closed.

a. GENERATOR TO SOUTH BUS BKR 52-7

Time ____________ CLOSED ________

b. GENERATOR TO NORTH BUS BKR 52-9

Time ____________ CLOSED ________

102. De-energize Exciter Space Heaters per OP-153.01. ________

103. Raise the Valve Position Limiter to 115%. ________

104. Restore the Steam Dump Pressure automatic setpoint as follows:

a. If steam dump demand is at 0%, (otherwise N/A this Step)

(1) Verify the steam dumps indicate closed. ________

(2) Restore the Steam Dump Pressure automatic setpoint to 84% (1092 psig). ________

(3) N/A all of Step 5.0.0.0104.b. ________

b. If steam dump demand is greater than 0%,

(1) Continue raising Turbine load per Steps 5.0.0.0105 through 5.0.0.0111. ________

(2) WHEN steam demand equals 0%, verify the steam dumps indicate closed. ________

(3) WHEN steam demand equals 0%, restore the Steam Dump Pressure automatic setpoint to 84% (1092 psig). ________

105. Enter the Desired Loading Rate determined in Step 5.0.0.019 in the DEMAND display. ________

5.0 PROCEDURE (continued)

NOTE: Without Feedback Loops in service, the REFERENCE display may not indicate actual MWe. An accurate indication of Main Generator output can be obtained from ERFIS point JEE1568B (Gross MWe).

106. If a HOLD period at 5% Main Turbine load was identified in Step 5.0.0.019, verify that the DEH Controller automatically raised load to 45 MWe. (Otherwise N/A this Step and Step 5.0.0.0107) ________

107. HOLD at 5% Main Turbine load for the length of time identified in Step 5.0.0.019. ________

108. Record the Post-synchronization data on Attachment 2. ________

109. Depress the REF pushbutton. ________

110. Enter 165 DEH units in the DEMAND display. ________

111. Depress the GO pushbutton. ________

112. When at least 120 MWe has been obtained, as indicated by computer point JEE1568B or recorder ER-568, **AND** the MW TRANSD MONITOR light has extinguished, perform the following:

    a. Place the Turbine in HOLD. ________

NOTE: When the Impulse Pressure Feedback Loop is placed into service, the demand window will reduce to a lower MW output.

    b. Place the Impulse Pressure Feedback Loop in service. ________

    c. Place the Megawatt Feedback Loop in service. ________

    d. Depress the REF pushbutton. ________

    e. Enter 145 MWe in the DEMAND display. ________

    f. Depress the GO pushbutton. ________

113. R Transfer the 6.9 KV buses from the Start-up Transformers to the Unit Auxiliary Transformers per OP-156.02, at the MCB. (Reference 2.3.0.02) ________

114. R At approximately 10% Turbine load, compare diverse indications of power (NIs, Core ΔT, Turbine First Stage Pressure, Main Generator Output, ERFIS Continuous Calorimetric) and evaluate power indications per Steps 4.0.0.01 and 4.0.0.02. (Reference 2.6.0.05) ________

115. At approximately 10% Turbine load **AND** if the LP Turbine inlet metal temperature determined in Step 5.0.0.015 was less than 300°F, continue to place the MSRs in service for a Turbine cold start, per OP-131.04, by opening 1MS-161 and 1MS-163, MSR Purge Valves. (Otherwise N/A this Step) ________

5.0 PROCEDURE (continued)

116. Direct Chemistry to initiate surveillances as specified in applicable Sections of RST-204 and RST-211 following a load change greater than 15% of rated thermal power in any 1 hour period. ________

117. Verify the Feedwater Heater Startup Vents have been shut per OP-136. ________

118. At 145 MWe (approximately 15% turbine load), perform the following:

   a. If desired, place Rod Control in Automatic per OP-104. ________

   b. Transfer Steam Dumps to T-AVG control per OP-126. ________

   c. Verify 1CE-279 & 1CE-284, TURBINE EXHAUST HOOD SPRAY valves, shut **AND** place the control switch in OFF. ________

NOTE: ER-568 Pen 1 must indicate greater than 100 MW before the Main Steam Drain Before MSIV Valves can be shut.

   d. Shut the Main Steam Drain Before MSIV Valves:

      (1) 1MS-233, MAIN STEAM A DRAIN BEFORE MSIV (LCV-309 A) ________

      ________ Verified

      (2) 1MS-268, MAIN STEAM B DRAIN BEFORE MSIV (LCV-309 B) ________

      ________ Verified

      (3) 1MS-303, MAIN STEAM C DRAIN BEFORE MSIV (LCV-309 C) ________

      ________ Verified

   e. Place the Steam Generator PORVs in AUTO with a setpoint of 1106 PSIG as follows:

      (1) Place the following MN STEAM PORV Controllers to MAN **AND** verify the PORVs are shut:

         - PK-308A1 SA ________
         - PK-308B1 SB ________
         - PK-308C1 SA ________

5.0 PROCEDURE (continued)

(2) Adjust the automatic setpoint for the following MN STEAM PORV Controllers to 1106 PSIG (85%):

- PK-308A1 SA ________

  ________ Verified

- PK-308B1 SB ________

  ________ Verified

- PK-308C1 SA ________

  ________ Verified

(3) Depress the AUTO pushbutton for the following MN STEAM PORV controllers:

- PK-308A1 SA ________

  ________ Verified

- PK-308B1-SB ________

  ________ Verified

- PK-308C1-SA ________

  ________ Verified

f. R Compare diverse indications of power (NIs, Core ΔT, Turbine First Stage Pressure, Main Generator Output, ERFIS Continuous Calorimetric) and evaluate power indications per 4.0.0.01 and 4.0.0.02. (Reference 2.6.0.05) ________

119. Enter 195 MWe (approximately 20% Main Turbine load) in the DEMAND display. ________

120. Depress the GO pushbutton and continue the load increase to approximately 20% Main Turbine load. ________

5.0 PROCEDURE (continued)

CAUTION

Before each cold start of the Main Turbine, steam to the MSR Tube Bundle must be isolated until the temperature of the steam from the HP Turbine exhaust is 200°F or greater. Cold starts of the MSR (that is, opening the TCVs) should be performed when turbine load is between 190 MWe and 240 MWe. Temperature is determined using the LP Turbine Crossover Piping temperature as indicated on MR-1000 on AEP-2.

---

121. At approximately 20% Turbine load (190 to 240 MWe) **AND** if the LP Turbine inlet metal temperature determined in Step 5.0.0.015 was less than 300°F, continue to place the MSRs in service for a Turbine cold start, per OP-131.04. (Otherwise N/A this Step)

    Time Started ____________________ ________

122. Stabilize Main Turbine load at approximately 20% and perform the following:

    a. Verify all Main Turbine drains indicate shut on Status Light Box-2. ________

NOTE: If the Feedwater Isolation Valves were shut in response to a FW Isolation signal, the Feedwater Isolation valves 1FW-159, 1FW-217, and 1FW-277 can be reset by positioning the control switches to SHUT/RESET.

    b. Verify the clearance has been removed from the MFIVs to allow automatic opening of the MFIVs in the following Steps. ________

NOTE:
- When controlling Steam Generator level, if the running Main Feed Pump flow increases to greater than 4300 KPPH, its recirculating valve will go shut.
- If flow through the running Main Feed Pump drops below 1500 KPPH, the pump will trip on low flow. Flow is indicated on computer point FCE2210A (MFP A) or FCE2210B (MFP B).
- Placing the Main Feedwater Nozzles in service may adversely affect SG chemistry. Chemistry should be notified prior to placing feedwater through the Main Feedwater nozzles.
- Following prolonged (greater than 4 hours) operation on the Main Feedwater Isolation Bypass line, there is a possibility of MFIV thermal binding which will prevent the valve from opening. If this occurs, OP-134.01 has instruction for relieving this condition.

    c. Shift Main Feedwater from the AFW Nozzle to the Main Feedwater Nozzles per OP-134.01, Section 5.3. ________

5.0 PROCEDURE (continued)

d. Complete ORT-1409. ________

e. Compare diverse indications of power (NIs, Core ΔT,
R Turbine First Stage Pressure, Main Generator Output, ERFIS Continuous Calorimetric) and evaluate power indications per Items 4.0.0.01 and 4.0.0.02. (Reference 2.6.0.05) ________

123. Enter 285 MWe (approximately 30% Main Turbine load) in the DEMAND display. ________

124. Depress the GO pushbutton and continue the load increase to approximately 30% Main Turbine load. ________

125. If 20% Main Turbine load has not been reached within 2 hours after depressing the HOT START pushbutton in Step 5.0.0.061, open the MSR Purge Vents, 1HD-38 and 1HD-338. (Otherwise N/A this Step) ________

126. Between 20 to 25% Main Turbine load continue placing the MSRs in service per OP-131.04. ________

127. Verify the status of the Main FW Isolation valves.

a. Main Feedwater Isolation valves have opened in response to the Preheater Permissive.

(1) 1FW-159, MAIN FW A ISOLATION. ________

(2) 1FW-277, MAIN FW B ISOLATION. ________

(3) 1FW-217, MAIN FW C ISOLATION. ________

b. Main FW Isolation Bypass Isolation valves are shut.

(1) 1FW-307, MAIN FW A ISOLATION BYPASS ISOLATION. ________

(2) 1FW-319, MAIN FW B ISOLATION BYPASS ISOLATION. ________

(3) 1FW-313, MAIN FW C ISOLATION BYPASS ISOLATION. ________

NOTE: The following Step should be performed as Main Turbine load approaches 25% and is increasing.

128. Transfer SG level control to the Main Feedwater Regulating valves per OP-134.01, Section 5.4. ________

129. Verify the OPC MONITOR light is off to check all the Main Turbine Overspeed Protection Devices are operational. ________

130. Between 25 and 28% Reactor power, verify the following bistables are lit: (Reference 2.5.0.03)

a. NC 41P PR LO PWR HI FLUX ________

b. NC 42P PR LO PWR HI FLUX ________

c. NC 43P PR LO PWR HI FLUX ________

5.0 PROCEDURE (continued)

d. NC 44P PR LO PWR HI FLUX ______

e. NC 35F IR HI FLUX ______

f. NC 36F IR HI FLUX ______

131. R With Reactor power between 28 and 30%, using diverse indications of power (NIs, Core ΔT, Turbine First Stage Pressure, Main Generator Output, ERFIS Continuous Calorimetric) place the Turbine in HOLD and perform a secondary calorimetric using OST-1004. (Reference 2.5.0.02 and 2.6.0.05) ______

132. Before exceeding 30% Reactor power, verify Steam Generator chemistry meets the 30% hold point limits in CRC-160. ______

133. Enter 800 MWe (approximately 90% Reactor power) in the DEMAND display. ______

134. Depress the GO pushbutton and continue the load increase to 90% Reactor power. ______

NOTE: The respective Main Feed Pump recirculating valve 1FW-8 or 1FW-39 should shut when Main Feed Pump suction flow reaches 4300 KPPH (ERFIS point FCE2210A or FCE2210B).

135. At 35% Main Turbine load perform the following:

a. At the AMSAC Control Panel, depress the SYSTEM RESET button. ______

b. Check SG LEVEL ATWS PANEL TROUBLE annunciator clear on ALB-17/1-1. ______

c. Place the SG LVL ATWS PANEL BYPASS switch to NORMAL. ______

d. Verify SG LEVEL ATWS PANEL BYPASS annunciator clear on ALB-17/2-1. ______

NOTE: Transfer from single valve control to sequential valve control takes several minutes. During the transfer, the SINGLE VALVE lamp will be out and the SEQ VALVE lamp will be flashing.

136. If Sequential Valve Control is desired, perform the following (otherwise, N/A this Step):

a. With Main Turbine load greater than 35%, depress the HOLD pushbutton. ______

b. Momentarily depress the Megawatt Feedback Loop pushbutton to remove the feedback loop. (Reference 2.6.0.04) ______

c. Depress the SINGLE VALVE/SEQ VALVE pushbutton. ______

d. When the transfer is complete, depress the Megawatt Feedback Loop pushbutton to restore the feedback loop. (Reference 2.6.0.04) ______

5.0 PROCEDURE (continued)

137. Verify the Desired Loading Rate (from Step 5.0.0.019) and megawatt target (800 MWe) are entered in the Demand display. _______

138. Continue the load increase by depressing the GO pushbutton. _______

139. With Main Turbine load greater than 40% verify SG LEVEL ATWS PANEL ARMED C-20(Bypass Permissive Lights panel Window 1-9)is illuminated. _______

NOTE: If OST-1039 is completed satisfactorily a Task Sheet will be completed and the NO CREDIT TAKEN blank checked.

140. Before exceeding 50% Reactor power, perform the following:

   a. Calculate Quadrant Power Tilt Ratio using OST-1039 as a guideline. _______

   b. Verify Axial Flux Difference is within the target band per Tech Spec 3.2.1. _______

141. Notify the CPD Operator that a second Condensate and Feedwater Train will be placed in service. This may require additional CPDs be placed in service per OP-135. _______

142. Between 40 and 55%, perform the following:

   a. Place the second Condensate Pump in service per OP-134. _______

NOTE:
- The Condensate Booster Pump Controllers and flow should be monitored to ensure proper operation when starting the second pump.
- The second Condensate Booster Pump should not be started until total feed flow is greater than 4.5 mpph to prevent damage to CBP recirc valves.

   b. Place the second Condensate Booster Pump in service per OP-134. _______

NOTE:
- With only one Main Feedwater Pump running, Turbine First Stage Pressure should be monitored and the Second Main Feedwater Pump started prior to exceeding 300 psig Turbine First Stage Pressure. A Turbine Runback will occur at approximately 310 psig.
- The second Main Feedwater Pump should be started after exceeding 6.0 and before 6.7 MPPH total feed flow. If 6.0 MPPH is not obtainable prior to exceeding 300 psig Turbine First Stage Pressure, then the second Main Feedwater Pump should be started and Turbine loading continued until total feed flow is greater than 6.0 MPPH.

   c. Place the second Main Feedwater Train Pump in service per OP-134.01. _______

5.0 PROCEDURE (continued)

143. Between 49 and 50% Reactor Power, verify the following bistable and permissive status light conditions:

a. PR P-8 NC 41N ON ________

b. PR P-8 NC 42N ON ________

c. PR P-8 NC 43N ON ________

d. PR P-8 NC 44N ON ________

e. SINGLE LOOP LO FLOW TRIP BLOCKED P-8 OFF ________

144. After the heater drains chemistry specifications of CRC-160 are met, start both Heater Drain Pumps as follows:

a. Stop the load increase by depressing the HOLD pushbutton. ________

b. Remove the Megawatt Feedback Loop from service by depressing MW OUT. ________

c. Remove the Impulse Feedback Loop from service by depressing IMP OUT. ________

d. Start both Heater Drain Pumps per OP-136. ________

e. After starting Heater Drain Pumps, depress the Megawatt Feedback Loop pushbutton to restore the feedback loop. ________

f. After starting Heater Drain Pumps, depress the Impulse Feedback Loop pushbutton to restore the feedback loop. ________

g. Proceed with the load increase by depressing the GO pushbutton. ________

145. At 50 to 55% Reactor power, stop the load increase by depressing the HOLD pushbutton and perform the following:

a. When greater than 50% Reactor power, verify the Axial Flux Difference is within COLR limits and verify the AFD Monitor alarm is operable per OP-163. ________

b. Perform OST-1039, Quadrant Power Tilt Ratio Calculation. ________

c. R Compare diverse indications of power (NIs, Core ΔT, Turbine First Stage Pressure, Main Generator Output, ERFIS Continuous Calorimetric) and evaluate power indications per 4.0.0.01 and 4.0.0.02. (Reference 2.6.0.05) ________

146. Proceed with the load increase by depressing the GO pushbutton. ________

5.0 PROCEDURE (continued)

147. At 55 to 60% Reactor power, verify the following:

a. ALB-13/5-3, POWER RANGE UPPER DETECTOR HIGH FLUX DEV OR AUTO DEFEAT, not illuminated. If illuminated, refer to the APP for appropriate action. ________

b. ALB-13/5-4, POWER RANGE LOWER DETECTOR HIGH FLUX DEV OR AUTO DEFEAT, not illuminated. If illuminated, refer to the APP for appropriate action. ________

148. Verify Main Feed Pump Recirculation Valves 1FW-8 and 1FW-39 are shut when total Main Feed Pump flow is greater than 8600 KPPH. ________

NOTE: At the Superintendent - Shift Operations discretion, OPT-1014, Turbine Valve Test (Task O P QN 002) may be performed on the way to 90% power. This test is a regularly scheduled 12 week test. It should only be performed early if within 3 weeks of its scheduled date.

149. At 75% Reactor power perform the following:

a. Review the LCO Management database for a record of Power Range Overpower Trip High Range Setpoint adjustment, performed with the reactor at less than or equal to 70% of Rated Power. If an EIR exists, perform Substeps 5.0.0.0149.b through 5.0.0.0149.f. If an EIR does not exist, N/A Substeps 5.0.0.0149.b through 5.0.0.0149.f. ________

b. Place the Turbine in HOLD and stabilize plant conditions. ________

c. Perform a secondary calorimetric using OST-1004,
R Power Range Heat Balance. (Reference 2.6.0.05) ________

d. Direct Maintenance to re-adjust the Power Range Overpower Trip High Range Setpoints to their original full-power (109%) values using MST-I0070. ________

e. Cancel the EIR for Power Range Trip Setpoint adjustment.
EIR # ____________ ________

f. After the Trip Setpoints have been adjusted, resume the load increase by depressing the GO pushbutton. ________

g. Perform one of the following:
(N/A the method not used)

(1) Align the Condensate side of the SGBD Regenerative Heat Exchanger 1X Outlet to the LP Heater #4 Inlet per OP-127. ________

OR

(2) Adjust TCV-8453 to 490 to 510 inwc, at FE-01CE-2311 (ERFIS Point FCE2311), per OP-127. ________

h. Place HP Turbine Gland Seal Vent Line in service as necessary above 75% power per OP-131.03. ________

5.0 PROCEDURE (continued)

150. At 90% Reactor power, perform the following:

a. Stop the load increase by depressing the HOLD pushbutton. ________

b. If directed by the Unit SCO remove the Megawatt Feedback Loop from service by depressing MW OUT (otherwise N/A this Step). ________

c. If directed by the Unit SCO remove the Impulse Feedback Loop from service by depressing IMP OUT (otherwise N/A this Step). ________

NOTE: If power was reduced to less than 90% for Periodic Turbine Valve Testing, or if OST-1004 was performed in Step 5.0.0.0149, then OST-1004 need not be performed upon subsequent return to 90% power, and the following Substep may be marked N/A.

d. R Stabilize the plant and perform OST-1004, Power Range Heat Balance. (Reference 2.6.0.05) ________

e. Verify the Desired Loading Rate (determined in Step 5.0.0.019) and megawatt load target are entered in the Demand display. ________

f. Continue the load increase by depressing the GO pushbutton. ________

151. When Reactor power is greater than 95%, direct Radwaste Control Room to supply Auxiliary Steam from Extraction Steam per OP-130.01. ________

152. When reactor is greater than 95% power, adjust hydrogen pressure in the generator to 72 to 75 psig per OP-153.02.

Final H_2 Pressure ____________ PSIG ________

153. If SGBD Regenerative Heat Exchanger Outlet is aligned to the Condensate Polisher effluent, adjust TCV-8453 between 625 and 675 inwc at FE-01CE-2311 (ERFIS Point FCE2311), per OP-127. ________

154. Stabilize load at less than or equal to 100% Reactor power. ________

155. When RCS and Pressurizer boron concentrations are within 10 ppm, return Pressurizer Backup Heaters to normal operatiion per OP-100. ________

156. Operate the plant per applicable Operating Procedures while load is constant. Use the applicable Steps of GP-006 (GP-005) for load reductions (load increases). ________

157. Document completion of task O S SU 002 as required. ________

6.0 DIAGRAMS/ATTACHMENTS

Attachment 1 - MODE 1 Minimum Equipment List

Attachment 2 - Synchronization Data Log

Attachment 3 - Certifications and Reviews

MODE 1 Minimum Equipment List

Equipment	Tech Spec	Requirement	Number Operable	Within Limits
Containment Spray Sys	3.6.2.1	2 systems	2	N/A
Spray Add. Tank	3.6.2.2	3268 to 3964 gal. (92 to 96%) 28 to 30% NaOH	N/A	
Spray Add. Educators	3.6.2.2	2	2	N/A
ECCS Accumulators	3.5.1	3 Accumulators 66 to 96% 2400 to 2600 ppm 585 to 665 psig	3	N/A
ECCS Subsystems	3.5.2 3.5.3	2	2	N/A
ESW Loops	3.7.4	2	2	N/A
RWST	3.1.2.6	≥ 92% 2400 to 2600 ppm Min. 40°F Max. 125°F	N/A	
CCW Systems	3.7.3	2	2	N/A
Fuel Pool Water Level	3.9.11	≥ 23 ft. above top of irradiated fuel rods	N/A	
Boron Injection Flow Paths	3.1.2.1 3.1.2.2	2	2	N/A
Charging/SI Pumps	3.1.2.3 3.1.2.4	2	2	N/A
Boric Acid Tank and Associated Temperatures	3.1.2.6	≥ 74% 7000 to 7750 ppm ≥ 65°F	N/A	
Pressurizer PORV's and Block Valves	3.4.4	3	3	N/A

MODE 1 Minimum Equipment List

* Throttling of the TDAFW Pump Flow Control Valves or shutting a Header Isolation Valve will cause the TDAFW Pump to be inoperable. Shutting any MDAFW Pump Header Isolation Valve will cause both MDAFW Pumps to be inoperable.

** Positioned within ± 12 steps (indicated position) of their group step counter demand position.

Capable of determining rod's position within ± 12 steps.

Equipment	Tech Spec	Requirement	Number Operable	Within Limits
Pressurizer Code Safety Valves	3.4.2.2	3	3	N/A
Pressurizer Heater Groups	3.4.3	2	2	N/A
Pressurizer	3.4.3	≤92%	N/A	✓
Reactor Coolant Loops In Operation and Operable	3.4.1.1	3	3	N/A
Shutdown and Control Rod	3.1.3.1	52**	52	N/A
Demand Position Indication	3.1.3.2	13#	13	N/A
Digital Rod Position Indication	3.1.3.2	52#	52	N/A
Steam Generators	3.4.5	3	3	N/A
Main Steam Line Code Safety Valves	3.7.1.1	All	All	N/A
Auxiliary Feedwater Pumps	3.7.1.2	3*	3	N/A
Condensate Storage Tank	3.7.1.3	≥62%	N/A	✓
MSIVs	3.7.1.5	3	3	N/A
SATs	3.8.1.1	2	2	N/A
Safety Related Electrical Buses	3.8.3.1	All Energized	All Energized	N/A

MODE 1 Minimum Equipment List

* Specified in PLP-106

Equipment	Tech Spec	Requirement	Number Operable	Within Limits
DC Elect. Sources	3.8.2.1	2 Trains	2 trains	N/A
Emerg. DG'S	3.8.1.1	2	2	N/A
Cont. Fan Coolers	3.6.2.3	4	4	N/A
Cont. Vacuum Relief System	3.6.5	2	2	N/A
Containment Internal Pressure	3.6.1.4	-1.0 in. wg to 1.6 psig	N/A	✓
Containment Air Locks	3.6.1.3	2	2	N/A
Cont. Purge Makeup	3.6.1.7	2 isol. valves	2	N/A
Cont. Purge Exhaust	3.6.1.7	2 isol. valves	2	N/A
Cont. Pre-entry Purge Makeup Exhaust	3.6.1.7	4 isol. valves Sealed Closed	4	N/A
Control Room Emerg. Filtration Systems	3.7.6	2 systems	2	N/A
Cont. Isol. Valves	3.6.3	ALL*	All	N/A
Cont. H2 Monitors	3.6.4.1	2	2	N/A
Cont. H2 Recombiners	3.6.4.2	2	2	N/A
ESCW Loops	3.7.13	2	2	N/A
RAB Emerg. Exhaust Systems	3.7.7	2 systems	2	N/A
FHB Emerg. Exh.	3.9.12	2 Trains	2	N/A
RCS Leakage Detection Systems	3.4.6.1	3 systems	3	N/A

MODE 1 Minimum Equipment List

* Protective devices listed in PLP-106

Equipment	Tech Spec	Requirement	Number Operable	Within limits
RCS Leakage Limit				
Pressure Boundary	3.4.6.2	None	N/A	β
Unidentified		1GPM	N/A	β
Prim. to Sec.		1 gpm total and 150 gpd ea. S/G	N/A	β
Identified		10 gpm	N/A	β
Controlled		31 gpm	N/A	β
Press. Isol. Valve		see Table 3.4-1	N/A	β
RCS Chemistry				
Dissolved oxygen	3.4.7	0.1 ppm	N/A	β
Chloride		0.15 ppm	N/A	β
Fluoride		0.15 ppm	N/A	β
RCS Specific Activity	3.4.8	≤1.0μCi/gm DE I-131 ≤100/Ēμ Ci/gm	N/A	β
Second Coolant Specific Act.	3.7.1.4	≤.1μCi/gm DE I-131	N/A	β
Aux. Reservoir	3.7.5	≤94°F ≥250'	N/A	β
Main Reservoir	3.7.5	≤94°F ≥215'	N/A	β
Containment Avg Air Temp	3.6.1.5	120°F Max	N/A	β
Hyd. & Mech. Snubbers	3.7.8	All	all	N/A
Cont. Penet. Conductor OC Prot. Devices	3.8.4.1	All*	all	N/A

Synchronization Data Log

PARAMETER	DATA POINT	PRE-SYNCHRONIZATION	POST-SYNCHRONIZATION
Data Collection Time	ERFIS Time		
Average Power Range Power	ANM9120A		
Median Delta-T Control	TRC0409E		
RCS Tavg	TRC0408Z		
	TRC0412D		
	TRC0422D		
	TRC0432D		
Blowdown Flow	FBD1000		
Average S/G Flow	FMS9474 A		
	FMS9484 B		
	FMS9494 C		
Steam Dump Controller Auto Setpoint	PK-464.1		
Steam Dump Demand	TI-408		
Other Desired Points			
______	______	______	______
______	______	______	______
______	______	______	______
______	______	______	______

Certifications and Reviews

Page ____ of ____

Step	Comment

Certifications and Reviews

Performed By:

Initials	Name (Print)	Initials	Name (Print)
B	Bill Gross		
G	David Greenwood		

Certifications and Reviews

Event Related Tech Spec Surveillance Requirements:

Tech Spec	Step	Acceptance Criteria	Status
4.3.1.1.17.a	5.0.0.070	Bistable lights on TSLB 2 verified ON in Steps 5.0.0.070.e, 5.0.0.070.f and 5.0.0.070.g	SAT / UNSAT
4.3.1.1.17.b	5.0.0.070	Bistable lights on TSLB 2 verified ON in Steps 5.0.0.070.a, 5.0.0.070.b, 5.0.0.070.c and 5.0.0.070.d	SAT / UNSAT

Pages Used: ______________________________

____

____

Completed by: ______________________________ ____________ Time ____________ Date

Approved by: ______________________________ Superintendent - Shift Operations ____________ Date

After receiving the final review signature, this GP becomes a QA RECORD and should be submitted to Document Services.

Revision Summary

General

Revision 27 clarifies that the before seat drains cannot be closed until the megawatt recorder is above 100 megawatts. It changes the EIR book to the LCO management database, since the EIR book no longer exists.

Description of Changes

Page	Section	Change Description
All		Updated revision level.
5	3.0.11	Added Prerequisite that Manager - Operations has approved the use of Tech Spec 3.0.4 as required by OMM-001.
8	3.0	Modified Step 22 to change EIR book to LCO Management database.
19	5.0	Clarified Note before Step 42 that local observation would be required.
30		Added Note before Step 118.d that the MW recorder had to be greater than 100 MW.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-A.1-2

Perform a Manual Shutdown Margin Calculation

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform a Manual Shutdown Margin Calculation

Alternate Path: NONE

Facility JPM #: CR-016 (Significantly Modified)

K/A Rating: 001A4.11 Importance: SRO 4.1 RO 3.5

K/A Statement: Ability to manually operate and / or monitor in the control room: Determination of SDM

Task Standard: OST-1036, Attachment 3, Manual SDM Calculation (Modes 1 and 2) completed satisfactorily.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: OST-1036, Shutdown Margin Calculation Modes 1-5
Curve Book

Validation Time: 15 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____________________

____

Examiner: ____________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

OST-1036, Section 7.3 and Attachment 3.
Curve Book.

NOTE: Completed copy of Attachment 3 included at end of JPM to be used as key.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant has been operating at 75% power for 6 weeks.
Core burnup is 350 EFPD.
RCS boron concentration is 300 ppm.
NO rods are believed to be immovable / untrippable.
POWERTRAX is NOT available.

INITIATING CUES:

You are to complete OST-1036, Shutdown Margin Calculation Modes 1-5, Section 7.3, "Manual SDM Calculation (Modes 1 and 2)" for current plant conditions.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OST-1036, Section 7.3, Attachment 3, and Curve Book NOTES: ***NOTE: Completed copy of Attachment 3 included at end of JPM to be used as key.*** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Enters Reactor Power Level (Att 3, Step 1) STANDARD: Refers to given conditions and enters 75% NOTES: ***NOTE: Given as part of initial conditions.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Determine Rod Insertion Limit for power level (Att 3, Step 2)	**CRITICAL STEP**
STANDARD:	Refers to Curve F-10-1 and determines TS limit for RIL to be 140 $\pm$ 2 steps	
NOTES:	***CRITICAL TO ALLOW DETERMINING INTEGRAL ROD WORTH.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Enters core Burn Up (Att 3, Step 3)	
STANDARD:	Refers to given conditions and enters 350 EFPD.	
NOTES:	***NOTE: Given as part of initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Enters RCS Boron Concentration (Att 3, Step 4)	
STANDARD:	Refers to initial conditions and enters 300 ppm	
NOTES:	***NOTE: Given as part of initial conditions.*** ***NOTE: Att 3, Step 5 not performed since value is included as part of attachment.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Determines Power Defect for current power level (Att 3, Step 6)	**CRITICAL STEP**
STANDARD:	Refers to Curve C-10-3 and determines power defect to be 1980 ± 50 pcm	
NOTES:	***NOTE: Curve C-10-3 used due to core burn up.*** ***CRITICAL TO ENSURE PROPER POWER DEFECT INCLUDED IN CALCULATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Determines Rod Worth for RIL position determined in Step 3 above (Att 3, Step 7)	**CRITICAL STEP**
STANDARD:	Refers to Curve A-10-11 and determines rod worth to be 635 ± 25 pcm	
NOTES:	***NOTE: Curve A-10-11 used due to core burn up, equilibrium xenon conditions, and power > 10%.*** ***CRITICAL TO ENSURE PROPER ROD WORTH INCLUDED IN CALCULATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Enters worth of any additional immovable or untrippable rods (Att 3, Step 8)	
STANDARD:	Refers to given conditions and enters 0	
NOTES:	***NOTE: Given as part of initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Determines Total Shutdown Margin (Att 3, Step 9)	**CRITICAL STEP**
STANDARD:	Determines Total Shutdown Margin to be 4379 $\pm$ 75 pcm	
NOTES:	***NOTE: Tolerance determined using previously allowed tolerances in reading graphs.*** **CRITICAL TO CORRECTLY DETERMINE TOTAL SHUTDOWN MARGIN.**	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Signs off Section 7.3 steps (Sect 7.3, Steps 1-4)	
STANDARD:	Signs off steps as complete	
NOTES:	***CUE: Independent Verification is NOT required.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

ANSWER KEY FOR JPM COM-A.1-2

Attachment 3
Sheet 1 of 1

(SHADED AREA BELOW INDICATES DATA ALREADY PROVIDED)

Manual SDM Calculation (Modes 1 and 2)

1. Reactor power level. **75** %

2. Rod insertion limit for the above power level

   140 ± 2 steps on bank **D**

3. Burn up (POWERTRAX/MCR Status Board). **350** EFPD

4. Present RCS Boron Concentration **300** ppm

NOTE: Use absolute values of numbers obtained from curves.

5. Total worth of all control and shutdown banks, minus the worth of the most reactive rod for Fuel Cycle 10.

   6994 pcm (a)

6. Cycle 10 Power defect for the power level recorded in Step 1. (Refer to Curves C-X-1 to C-X-3).

   Curve used **C-10-3** **1980 ± 50** pcm (b)

NOTE: HFP curves are used for power levels of 10% or greater.

7. Inserted control rod worth at the rod insertion limit recorded in Step 2. (Refer to Curves A-X-6 to A-X-11)

   Curve used **A-10-11** **635 ± 25** pcm (c)

8. Worth of any additional immovable or untrippable rods (for each stuck rod, use the most reactive single rod worth (3028 pcm) or obtain individual withdrawn rod worth from the reactor engineer).

   0 pcm (d)

9. Determine the Total Shutdown Margin using the following formula:

   Total SDM C_B (e) = **6994** (a) - **1980 ± 50** (b) - **635 ± 25** (c) - **0** (d)

   4379 ± 75 pcm (e)

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant has been operating at 75% power for 6 weeks.
Core burnup is 350 EFPD.
RCS boron concentration is 300 ppm.
NO rods are believed to be immovable / untrippable.
POWERTRAX is NOT available.

INITIATING CUES:

You are to complete OST-1036, Shutdown Margin Calculation Modes 1-5, Section 7.3, "Manual SDM Calculation (Modes 1 and 2)" for current plant conditions.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.2

Determine Clearance Requirements

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Determine Clearance Requirements

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.2.13 Importance: SRO NA RO 3.6

K/A Statement: Knowledge of tagging and clearance tagging procedures.

Task Standard: Complete electrical and mechanical isolation is provided.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: SFD 2165 S-0544, -0545, -0547
OP-137, Auxiliary Feedwater System

Validation Time: 15 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____________________

____

Examiner: ____________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

OP-137.
SFD 2165 S-0544, -0545, -0547.

NOTE: Answer Key is attached to JPM which identifies those items which must be completed.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is in Mode 3.

The pump shaft for AFW Pump 1A-SA must be replaced. A clearance is required to be developed.

The S-SO has authorized single valve isolation on the pump discharge.

INITIATING CUES:

You have been directed to determine the clearance requirements using the SFDs and System Operating Procedures. Provide complete electrical and mechanical protection.

NOTES:
• IT IS NOT INTENDED THAT YOU ACTUALLY GENERATE A CLEARANCE.
• ONLY A LIST OF THE REQUIRED COMPONENTS AND POSITIONS IS REQUIRED.

START TIME: ________

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OP-137, SFD 2165 S-0544, -0545 and -0547	
NOTES:	***NOTE: Answer Key is attached to JPM which identifies those items which must be completed.*** ***JPM steps may be performed in any order since the clearance is not actually being generated.***	____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Determines electrical clearance requirements for AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines electrical supply breaker for AFW Pump 1A-SA to be: • Breaker 1A-SA-4 (RACKED OUT) • DC Control Pwr Knife Switch 1A-SA-4 (OPEN) • MCB hand switch (STOP/AUTO) • ACP hand switch (AS IS)	
NOTES:	***CRITICAL TO PREVENT OPERATION OF PUMP.*** ***NOTE: Tags on MCB and ACP hand switches are information tags and are NOT critical.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Determines the ESW suction supply to AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines the ESW suction supply to be 1SW-123, SW to AFWP 1A SUPPLY VLV: • Breaker 1A35-SA-11A (OFF) • Manual valve operator 1SW-123 (SHUT) • MCB hand switch (SHUT/NORMAL) • ACP hand switch (AS IS)	
NOTES:	***CRITICAL TO PREVENT OPENING SUCTION SOURCE.*** ***NOTE: Tags on MCB and ACP hand switches are information tags and are NOT critical.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Determines the CST suction supply to AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines the CST suction supply to be 1CE-35, CST ISOLATION to 1A-SA AFW PUMP: • Manual valve operator (SHUT)	
NOTES:	***CRITICAL TO PREVENT OPENING SUCTION SOURCE.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Determines the discharge for AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines the discharge to be 1AF-207, AFWP 1A DISCHARGE ISOLATION VALVE: • Manual valve operator (SHUT)	
NOTES:	***CRITICAL TO ISOLATE DISCHARGE OF PUMP.*** ***NOTE: If manual valve operator is in a contaminated and/or high radiation area, clearance tag is only required on reach rod.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Determines the recirc isolation for AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines the recirc isolation to be 1AF-3, AFWP 1A RECIRC TO CST ISOL: • Manual valve operator (LOCK REMOVED and VALVE SHUT)	
NOTES:	***CRITICAL TO ISOLATE DISCHARGE OF PUMP.*** ***NOTE: If manual valve operator is in a***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Determines vent path for AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines vent path to be 1CE-40, PX INNER ISOLATION VLV on 1A-SA AFW PUMP SUCTION <u>AND</u> 1CE-41, PX OUTER ISOLATION VLV on 1A-SA AFW PUMP SUCTION: • **OPTIONAL** tag on manual valve operator for 1CE 40 (OPEN) • **OPTIONAL** tag on manual valve operator for 1CE 41 (OPEN WITH CAP REMOVED) **OR** Determines vent path to be 1AF-12, PX INNER ISOLATION VLV on 1A-SA AFW PUMP DISCHARGE <u>AND</u> 1AF-13, PX OUTER ISOLATION VLV on 1A-SA AFW PUMP DISCHARGE: • **OPTIONAL** tag on manual valve operator for 1AF 12 (OPEN) • **OPTIONAL** tag on manual valve operator for 1AF 13 (OPEN WITH CAP REMOVED)	
NOTES:	***CRITICAL TO PROVIDE VENT PATH TO DEPRESSURIZE PIPING.*** ***NOTE: Critical to identify vent path valves, but acceptable to state tags NOT required. Vent path is required on EITHER suction OR discharge, but NOT both.***	____ SAT
COMMENTS:		____ UNSAT

STEP 8:	Determines drain path for AFW Pump 1A-SA	**CRITICAL STEP**
STANDARD:	Determines drain path to be 1CE-43, INNER DRAIN VLV on 1A-SA AFW PUMP SUCTION AND 1CE-44, OUTER DRAIN VLV on 1A-SA AFW PUMP SUCTION: • **OPTIONAL** tag on manual valve operator for 1CE 43 (OPEN) • **OPTIONAL** tag on manual valve operator for 1CE 44 (OPEN WITH CAP REMOVED) **OR** Determines drain path to be 1AF-1, INNER DRAIN VLV on 1A-SA AFW PUMP DISCHARGE AND 1AF-2, OUTER DRAIN VLV on 1A-SA AFW PUMP DISCHARGE: • **OPTIONAL** tag on manual valve operator for 1AF 1 (OPEN) • **OPTIONAL** tag on manual valve operator for 1AF 2 (OPEN WITH CAP REMOVED)	
NOTES:	***CRITICAL TO PROVIDE DRAIN PATH TO DRAIN PIPING.*** ***NOTE: Critical to identify vent path valves, but acceptable to state tags NOT required. Drain path is required on EITHER suction OR discharge, but NOT both.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

ANSWER KEY FOR JPM RO-A.2

AFW PUMP 1A-SA	
Breaker 1A-SA-4	RACKED OUT
DC Control Pwr Knife Switch 1A-SA-4	OPEN
MCB Switch (NOT REQUIRED)	STOP/AUTO
ACP Switch (NOT REQUIRED)	AS IS
1SW-123, SW to AFWP 1A SUPPLY VLV	
Breaker 1A35-SA-11A	OFF
Manual Valve Operator	SHUT
MCB Switch (NOT REQUIRED)	SHUT/NORMAL
ACP Switch (NOT REQUIRED)	AS IS
1CE-35, CST ISOLATION to 1A-SA AFW PUMP	
Manual Valve Operator	SHUT
1AF-207, AFWP 1A DISCHARGE ISOLATION VALVE	
Manual Valve Operator	SHUT
1AF-3, AFWP 1A RECIRC TO CST ISOL	
Manual Valve Operator	LOCK REMOVED AND VALVE SHUT
1CE-40, PX INNER ISOLATION VLV on 1A-SA AFW PUMP SUCTION (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN
1CE-41, PX OUTER ISOLATION VLV on 1A-SA AFW PUMP SUCTION (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN WITH CAP REMOVED
1CE-43, INNER DRAIN VLV on 1A-SA AFW PUMP SUCTION (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN
1CE-44, OUTER DRAIN VLV on 1A-SA AFW PUMP SUCTION (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN WITH CAP REMOVED
1AF-12, PX INNER ISOLATION VLV on 1A-SA AFW PUMP DISCHARGE (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN
1AF-13, PX OUTER ISOLATION VLV on 1A-SA AFW PUMP DISCHARGE (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN WITH CAP REMOVED
1AF-1, INNER DRAIN VLV on 1A-SA AFW PUMP DISCHARGE (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN
1AF-2, OUTER DRAIN VLV on 1A-SA AFW PUMP DISCHARGE (Note 1)	
Manual Valve Operator (TAG NOT REQUIRED)	OPEN WITH CAP REMOVED

Note 1: Vent and Drain path can be selected for either suction or discharge. Valves must be selected in pairs (1CE-40 and 1CE-41 OR 1AF-12 and 1AF-13 for vent AND 1CE-43 and 1CE-44 OR 1AF-1 and 1AF-2 for drain).

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in Mode 3.

The pump shaft for AFW Pump 1A-SA must be replaced. A clearance is required to be developed.

The S-SO has authorized single valve isolation on the pump discharge.

INITIATING CUES:

You have been directed to determine the clearance requirements using the SFDs and System Operating Procedures. Provide complete electrical and mechanical protection.

NOTES:
- ***IT IS NOT INTENDED THAT YOU ACTUALLY GENERATE A CLEARANCE.***
- ***ONLY A LIST OF THE REQUIRED COMPONENTS AND POSITIONS IS REQUIRED.***

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.2

Review of Completed Operations Surveillance Test

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Review of Completed Operations Surveillance Test

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.2.12 Importance: SRO 3.4 RO NA

K/A Statement: Knowledge of surveillance procedures.

Task Standard: Identifies the following errors in the performance of OST-1411:
1) Attachment 2, Sheet 3, incorrect calculation in Step 7.1.0.083
2) Attachment 5, Sheet 1, not identified SAT/UNSAT in Step 7.1.0.01

Preferred Evaluation Location: Simulator X In Plant ______

Preferred Evaluation Method: Perform X Simulate ______

References: OST-1411, Auxiliary Feedwater Pump 1X-SAB and 1AF-68, 1AF-106, 1AF-87 Forwatd Flow Operability Test Quarterly Interval Modes 1-3

Validation Time: 20 minutes Time Critical: NO

Candidate: ______________________

Time Start: ______ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ______________________

____

Examiner: ______________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

Completed OST-1411.

NOTE: The applicable pages of OST-1411 identifying the items which are missing / incorrect are included as an ANSWER KEY.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

OST-1411 has just been completed in its entirety.

INITIATING CUES:

You are to review the attached OST-1411 for completeness.

You are to identify any/all discrepancies.

START TIME: ________

STEP 1: Reviews OST-1411 STANDARD: Reviews given copy of OST-1411 NOTES: ***NOTE: Supply completed copy of OST-1411 marked FOR NRC EXAM USE ONLY.*** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Review body of OST-1411 STANDARD: Reviews body of OST-1411, noting no discrepancies NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Reviews Attachment 1 of OST-1411	
STANDARD:	Reviews Attachment 1 of OST-1411 and notes no discrepancies	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
STEP 4:	Reviews Attachment 2 of OST-1411	**CRITICAL STEP**
STANDARD:	Reviews Attachment 2 of OST-1411 and notes discrepancy on Sheet 3. Calculation for Step 7.1.083 performed incorrectly.	
NOTES:	***NOTE: Calculation performed by dividing 3712 by 3700 instead of dividing 3700 by 3712.*** ***CRITICAL TO IDENTIFY IMPROPERLY PERFORMED CALCULATION TO ENSURE TEST COMPLETED SATISFACTORILY.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 5: Reviews Attachment 3 of OST-1411 STANDARD: Reviews Attachment 3 of OST-1411 and notes no discrepancies NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 6: Reviews Attachment 4 of OST-1411 STANDARD: Reviews Attachment 4 of OST-1411 and notes no discrepancies NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 7:	Reviews Attachment 5 of OST-1411	**CRITICAL STEP**
STANDARD:	Reviews Attachment 5 of OST-1411 and notes discrepancy. Step 7.1.0.01 (1AF-204) not identified as SAT or UNSAT.	
NOTES:	***NOTE: Either SAT or UNSAT must be circled.*** ***CRITICAL TO IDENTIFY MISSED DOCUMENTATION TO ENSURE TEST COMPLETED SATISFACTORILY.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Reviews Attachment 6 of OST-1411	
STANDARD:	Reviews Attachment 6 of OST-1411 and notes discrepancy.	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 9: Reviews Attachment 7 of OST-1411 STANDARD: Reviews Attachment 7 of OST-1411 and notes no discrepancies NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 10: Reviews Attachment 8 of OST-1411 STANDARD: Reviews Attachment 8 of OST-1411 and notes no discrepancies NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 11:	Reviews Attachment 9 of OST-1411	
STANDARD:	Reviews Attachment 9 of OST-1411 and notes that discrepancies / exceptions not noted. DOES NOT SIGN completion and notifies S-SO.	
NOTES:	***NOTE: Exceptions should have been identified by OST performer.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

ANSWER KEY JPM SRO-A.2

Performance Data Auxiliary Feedwater Pump 1X-SAB

* Surveillance Requirement 4.7.1.2.1.a.2.a

NOTE 5: $62.31 \times \underset{Dp_{ind}}{\underline{1284}} \times \underset{U_{ind}}{\underline{0.016072}} = \underset{DP_{corr}}{\underline{1285.9}}$

Dp_{corr} = Corrected Differential Pressure

Dp_{ind} = Indicated Discharge Pressure minus Indicated Suction Pressure

U_{ind} = Specific Volume (ft^3/lbm) for saturated liquid water (υ_f) for suction temperature recorded in Step 7.1.0.061. This number can be determined from Sheet 4 of this Attachment or Standard Steam Tables.

NOTE 6: Satisfactory Tech Spec Acceptance Criteria for pump differential pressure is determined by using the following equation and verifying the calculated differential pressure is greater than 1167 psid.

$(3700 \text{ rpm} \div \underset{\text{Step } 7.1.0.055}{\underline{3712}})^2 \times \underset{\text{Step } 7.1.0.081}{\underline{1285.9 \text{ psid}}} = \underset{\text{Step } 7.1.0.083}{\underline{1294.3 \text{ psid}}}$

Step	Step Description	Performance Data	Acceptance Criteria
7.1.0.081	Differential Pressure-Pump Calculated per NOTE 5 (Corrected(DP_{corr}))	1285.9 psid	N/A
7.1.0.083	Calculated Differential Pressure Corrected to 3700 rpm per NOTE 6	1294.3 psid	≥ 1167 psid
7.1.0.067	C(B) SG Pressure MCB PI-496.1 SB (PI-486 SB)	940 psig	N/A
7.1.0.068	Steam Supply Pressure (ERFIS point PMS0430 or MCB PI-430.1 SB)	242 psig	> 210 psig *

INCORRECT CALCULATION
SHOULD BE 1277.6

ANSWER KEY JPM SRO-A.2

Valve Test Data for Main Steam Valves, Check Valves, and Skid Valves

PRETEST ALIGNMENT			FULL STROKE TEST			POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (sec)					
									CODE CRITERIA				LIMITING VALUE	
									OPEN		SHUT			
Valve Number	Pretest Position	Init	Verification of Travel by Ind Lights (Init)	STROKE TIME (sec) OPEN	STROKE TIME (sec) SHUT	Post Test Position	Pos Init	Verf Init	LOW	HIGH	LOW	HIGH	OPEN	SHUT
1MS-70	SHUT	B	B	42.61	43.84	SHUT	B	DW	38.69	52.33	37.44	50.64	60.70	60.70
1MS-72	SHUT	B	B	44.31	39.74	SHUT	B	DW	36.89	49.91	35.31	47.75	60.70	60.70
1MS-T (Trip & Throttle Valve)	OPEN	B	B	14.16	13.62	OPEN	B	DW	N/A	N/A	N/A	N/A	14.60	13.90

VALVE NUMBER	ACCEPTANCE CRITERIA	STEP	SAT/UNSAT (Circle one)
1AF-204	TAF2007B temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1AF-205	TAF2007D temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1AF-206	TAF2007F temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1MS-71 (1MS-73)	Proper startup of the TDAFW pump verifies partial stroke open.	7.1.0.043	SAT / UNSAT
1MS-G (Governing Valve)	Proper startup of the TDAFW pump verifies proper governor valve operation.	7.1.0.043	SAT / UNSAT
1CE-56	Pump Flow ≥ 89 gpm satisfies partial stroke open.	7.1.0.052	SAT / UNSAT
1AF-110	Pump Flow > 81 gpm satisfies full stroke open.	7.1.0.053	SAT / UNSAT
1MS-73 (1MS-71)	Proper operation of the TDAFW pump verifies partial stroke open.	7.1.0.069	SAT / UNSAT

Comments:

MISSED DOCUMENTATION
MUST BE MARKED
SAT or UNSAT

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

OST-1411 has just been completed in its entirety.

INITIATING CUES:

You are to review the attached OST-1411 for completeness.

You are to identify any/all discrepancies.

C
CONTINUOUS
USE

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: Operations Surveillance Test

NUMBER: OST-1411

TITLE: Auxiliary Feedwater Pump 1X-SAB
and 1AF-68, 1AF-106, 1AF-87 Forward Flow
Operability Test
Quarterly Interval
Modes 1 - 3

<u>NOTE</u>: This procedure has been screened per PLP-100 criteria and determined to be a CASE III procedure. No additional management involvement is required.

Table of Contents

Section		Page
1.0	PURPOSE	3
2.0	REFERENCES	3
	2.1 Plant Operating Manual Procedures	3
	2.2 Technical Specifications	3
	2.3 Final Safety Analysis Report	4
	2.4 Drawings	4
	2.5 Technical Manuals	4
	2.6 Corrective Action Program (CAP) Items	4
	2.7 Other	4
3.0	PREREQUISITES	5
4.0	PRECAUTIONS AND LIMITATIONS	6
5.0	TOOLS AND EQUIPMENT	6
6.0	ACCEPTANCE CRITERIA	7
7.0	PROCEDURE	8
	7.1 Auxiliary Feedwater Pump 1X-SAB	8
	7.2 AFW Check Valve Forward Flow Check	20
	7.3 Test Completion	21
8.0	DIAGRAMS/ATTACHMENTS	21
	Attachment 1 - Calibration Data Sheet	22
	Attachment 2 - Performance Data Auxiliary Feedwater Pump 1X-SAB	23
	Attachment 3 - Performance Data AFW Check Valve Forward Flow Check	27
	Attachment 4 - Vibration Data	28
	Attachment 5 - Valve Test Data for Main Steam Valves, Check Valves, and Skid Valves	29
	Attachment 6 - Valve Test Data for 1AF-137, 1AF-143, and 1AF-149	30
	Attachment 7 - Valve Test Data for 1AF-129, 1AF-130, and 1AF-131	31
	Attachment 8 - Valve Retest Data Sheet	32
	Attachment 9 - Certifications and Reviews	34

1.0 PURPOSE

1. This test demonstrates the operability of Auxiliary Feedwater Pump 1X-SAB and associated valves at least once every 92 days by satisfying the following Technical Specification Surveillance Requirements:
   - 4.7.1.2.1.a.2.a
   - 4.3.2.1, Table 4.3-2 Item 6a
   - 4.0.5

2. This test also satisfies Surveillance Requirement 4.6.3.1 for Containment Isolation Valve operability following maintenance.

3. This test also performs the following as required for IST testing:
   - partial stroke open testing of:
     - 1CE-56, CST Suction Check Valve to 1X-SAB AFW Pump
     - 1MS-71, MS Line B to Stm Driven Aux FW Turb Ck Vlv
     - 1MS-73, MS Line C to Stm Driven Aux FW Turb Ck Vlv
   - full stroke open testing of:
     - 1AF-110, Aux Feed Pmp 1X Recirc to CST Check Valve
     - 1AF-68, A SG Preheater Bypass Header Chk Valve
     - 1AF-106, B SG Preheater Bypass Header Chk Valve
     - 1AF-87, C SG Preheater Bypass Header Chk Valve
   - stroke close testing of:
     - 1AF-204
     - 1AF-205
     - 1AF-206
   - Proper operation of the TDAFW Governor valve and T&T valve.

4. This test locally trips the Trip and Throttle Valve to assure
R freedom of movement for the trip mechanism. (Reference 2.7.0.03)

2.0 REFERENCES

2.1 Plant Operating Manual Procedures

1. OP-126
2. OP-137
3. SD-137
4. ISI-111
5. ISI-800
6. ISI-801

2.2 Technical Specifications

1. 3.7.1.2
2. 4.6.3.1
3. 4.7.1.2.1.a.2.a
4. 4.3.2.1 Table 4.3-2 Item 6a
5. 4.0.5

2.3 Final Safety Analysis Report

1. 7.3.2
2. 10.4.9
3. 10.4.9a
4. TMI Appendix

2.4 Drawings

1. 5-S-0542, Main Steam System
2. 5-S-0544, Feedwater System
3. 5-S-0545, Condensate & Air Evacuation Systems

2.5 Technical Manuals

1. VM-BJH-VO2, Pumps, Tur Drvn Aux Feedwater
2. VM-MDY, Turbine, AFW Pump
3. VM-MDZ, Valves

2.6 Corrective Action Program (CAP) Items

1. 86H0138

2.7 Other

1. Curve H-X-19, TDAFWP Recirculation Flow vs Pump Speed
2. ESR 95-01007
3. SOER 89-1, Testing of Steam Turbine/Pump Overspeed Trip Devices
4. HNP-IST-002, HNP IST Program - 2nd Interval

3.0 PREREQUISITES

1. Review the Main Control Room Status File and verify that the system is aligned in a manner that will support the performance of this test. B ____

2. Coordinate the performance of this OST with other plant evolutions such that the minimum equipment operating requirements of Tech Specs are met. B ____

3. Obtain any tools and equipment required per Section 5.0. B ____

4. Verify instrumentation needed for the performance of this test is free of deficiencies that may affect instrument indication. B ____

5. If ERFIS point PAF2170 is **NOT** available to determine discharge pressure, initiate a WR/JO to have a Digital Multimeter, with at least ± 0.010 VDC accuracy, connected to TP5 of Card 0235 in PIC-10 to measure 1 to 5 VDC output. (Otherwise N/A this Step) N/A ____

6. Complete the Calibration Data Sheet and verify instrumentation is within calibration. B ____

7. Verify Maintenance support is available to support the performance of this test with the installation of a 0 to 60 psig liquid filled test gauge (or gauge with a snubber), with an accuracy of ± 2% of span, at 1CE-64-V2, PI-2271 Instrument Valve and for jumper installation. B ____

8. Tavg is greater than or equal to 425°F. B ____

9. Verify personnel taking vibration measurements are qualified per Reference 2.1.0.04. B ____

10. Notify Health Physics of approximate start time, so they can evaluate if any actions are required to prevent the steam coming from the floor drains from contaminating a clean area. B ____

11. The Unit SCO has been informed that the performance of this OST during MODE 1, 2, or 3 initiates an LCO per Technical Specification 3.7.1.2. B ____

12. Verify all prerequisites are met, then obtain Unit SCO permission to perform this OST.

Bill Fross ____________________ Today ________
Signature Date

4.0 PRECAUTIONS AND LIMITATIONS

1. Only one Auxiliary Feedwater Pump shall be tested at a time.

2. The TDAFW pump should **NOT** be operated below the following minimum
R flow requirements. (Reference 2.6.0.01)

    a. Pump operation of less than or equal to 60 minutes:

        - within the acceptable range of Curve H-X-19 (this is normally provided by the minimum flow line.)

    b. Pump operation greater than 60 minutes but less than or equal to three (3) hours:

        - 275 gpm (138 KPPH)

    c. Pump operation greater than 3 hours:

        - 375 gpm (188 KPPH)

3. If an AFW initiation signal is received during the performance of this test, terminate this test and perform Attachment 8 while maintaining 1MS-70 SA, MAIN STEAM B TO AUX FW TURBINE, and 1MS-72 SB, MAIN STEAM C TO AUX FW TURBINE, open.

4. Before admitting steam to the Auxiliary Feedwater Pump 1X-SAB personnel should be cautioned to stand clear of the pumps atmospheric exhaust.

5. If any valve stroke time falls outside its Code Criteria, the valve will be retested per the retest instructions as soon as possible or declared inoperable.

5.0 TOOLS AND EQUIPMENT

1. Calibrated Vibrometer per ISI-111 with an accuracy of ± 5%

2. Calibrated Stopwatch

3. Two way radios or sound powered phones

4. Handheld Tachometer, if ERFIS is **NOT** available for speed monitoring with an accuracy of ± 2%

5. Handheld Pyrometer, if ERFIS is **NOT** available for temperature monitoring

6. Digital Multimeter that will measure voltage with plus or minus 0.010 VDC accuracy, if ERFIS is **NOT** available for discharge pressure monitoring

7. 0 to 60 psig liquid filled test gauge (or gauge with snubber), with an accuracy of ± 2% of span, Ashcroft or equivalent

8. Jumper

6.0 ACCEPTANCE CRITERIA

1. This test will be completed satisfactorily if the following conditions are verified:

   a. The following valves pass flow in the forward direction as demonstrated on Attachments 3 and 5.

      - 1AF-68, A SG Preheater Bypass Header Chk Valve
      - 1AF-106, B SG Preheater Bypass Header Chk Valve
      - 1AF-87, C SG Preheater Bypass Header Chk Valve
      - 1AF-110, Aux Feed Pmp 1X Recirc to CST Check Valve
      - 1MS-71, MS Line B to Stm Driven Aux FW Turb Ck Vlv
      - 1MS-73, MS Line C to Stm Driven Aux FW Turb Ck Vlv

   b. The following check valves stroke closed as demonstrated on Attachment 5.

      - 1AF-204
      - 1AF-205
      - 1AF-206

   c. The TDAFW governor responds normally during pump start as demonstrated on Attachment 5.

   d. Valves are full stroked with the stroke times less than the Acceptance Criteria listed on Attachments 5, 6 and 7.

2. Auxiliary Feedwater Pump 1X-SAB:

   a. Maintains required pressure and flow with steam being supplied through 1MS-70 and then 1MS-72.

   b. Performance Data is within the Acceptance Criteria listed on Attachment 2.

   c. Vibration Data is within the Acceptance Criteria value listed on Attachment 4.

7.0 PROCEDURE

NOTE: The following Steps should be initialed after this test is completed.

1. If, during the performance of this test, a valve stroke time exceeds its Code Criteria, retest the valve per Attachment 8. (Otherwise N/A this Step) N/A

2. If during the performance of this test, a valve exhibits abnormal or erratic action, document the condition in the comments section of Attachment 9. (Otherwise N/A this Step)

7.1 Auxiliary Feedwater Pump 1X-SAB

NOTE: The following Step will verify proper stroke closed of the indicated check valves.

1. Verify the following computer points are less than 135°F. Document proper stroke closed testing for indicated check valves on Attachment 5.

   - TAF2007B, Turbine Driven AFW to SG A (1AF-204)
   - TAF2007D, Turbine Driven AFW to SG B (1AF-205)
   - TAF2007F, Turbine Driven AFW to SG C (1AF-206)

2. Verify the test gauge is installed at 1CE-64-V2, PI-2271 Instrument Valve.

3. Valve in the suction pressure test gauge installed at 1CE-64-V2, PI-2271 Instrument Valve, on 1X-SAB AFW Pump Suction.

4. From the test gauge at 1CE-64-V2, PI-2271 Instrument Valve, record idle suction pressure on Attachment 2.

5. Perform prestart checks on Auxiliary Feedwater Pump 1X-SAB per OP-137.

6. Establish communications between the Main Control Room and Auxiliary Feedwater Pump 1X-SAB.

NOTE: The shutting of any one valve in Step 7.1.0.09 will initiate an LCO for Auxiliary Feedwater Pump 1X-SAB per Technical Specification 3.7.1.2.

7. Inform the Control Operator and Unit SCO that the Auxiliary Feedwater Pump 1X-SAB will be made inoperable.

8. Record the time and date that Auxiliary Feedwater Pump 1X-SAB was made inoperable on Attachment 9.

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

NOTE: Performance of Step 7.1.0.09 will isolate Auxiliary Feedwater Pump 1X-SAB from the Steam Generators.

9. Refer to Attachment 6 and time test the valves to the Shut position per the following instructions:

   a. Obtain a calibrated stopwatch. JB

NOTE: Steps 7.1.0.09.b through 7.1.0.09.g are to be signed off when testing of all the valves listed in Attachment 6 are completed.

   b. Verify the valve to be tested is aligned to the Pretest Position and initial on Attachment 6. JB

   c. Simultaneously start the stopwatch and place the control switch for the valve in test to the position opposite the Pretest Position. JB

   d. When the valve has completed travel as indicated by a singular position indicating light for the demanded position (no dual indication) stop the stopwatch. JB

   e. Record the valve stroke time on Attachment 6. JB

   f. Repeat Step 7.1.0.09.b thru 7.1.0.09.e for all remaining valves to be tested on Attachment 6. JB

   g. Ensure all stroke times are within the stated Acceptance Criteria and inform the Unit SCO of any out of tolerance reading. JB

10. At the MCB, verify PDK-2180.1, AUX TURBINE SPD, controller is in AUTO and the setpoint is set at 28%. JB

11. Verify the valves on Attachment 5 valve test data table are in their Pretest Position and initial in the space provided. JB

12. At the MCB, simultaneously start the stopwatch and place the control switch for AUX FW TURBINE TRIP & THROTTLE VLV to SHUT. JB

13. When Aux FW Turbine Trip & Throttle Valve has completed its travel to the shut position as indicated by a singular indicating light (no dual indication) stop the stopwatch. JB

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

14. Record the Aux FW Turbine Trip & Throttle Valve stroke time on Attachment 5. _B_

15. At the MCB, simultaneously start the stopwatch and place the control switch for AUX FW TURBINE TRIP & THROTTLE VLV to OPEN. _B_

16. When Aux FW Turbine Trip & Throttle Valve has completed its travel to the open position as indicated by a singular indicating light (no dual indication) stop the stopwatch. _B_

17. Record the stroke time for Aux FW Turbine Trip & Throttle Valve in the space provided on Attachment 5. _B_

18. Initial on Attachment 5 for Aux FW Turbine Trip & Throttle Valve full stroke test. _B_

NOTE: Step 7.1.0.019 is **NOT** applicable on even numbered months.

19. On odd numbered months perform the following. Otherwise N/A Substeps:

    a. R Locally trip Auxiliary Feedwater Pump 1X-SAB by depressing the Manual Trip Lever located on the top of the outside bearing pedestal and verify, by Observation, free movement of the Trip Linkage and Tappet Assembly. (Reference 2.7.0.03) N/A

    b. Verify that the Trip & Throttle Valve is shut. ____

    c. Verify ALB-17/7-4, AUX FEEDWATER PUMP TURBINE TRIP, is lit. ____

    d. Locally reset the Mechanical Trip Linkage by pulling the Connecting Rod toward the Trip and Throttle Valve until the rod locks in place. ____

    e. Verify the flat side of the Tappet Nut is against the Tappet Lever (FLAT side toward the Trip and Throttle Valve) and the latch lever is being held by the trip hook. ____

    f. At the MCB, place the control switch for AUX FW TURBINE TRIP & THROTTLE VLV to OPEN. ____

    g. Verify ALB-17/7-4, AUX FEEDWATER PUMP TURBINE TRIP, is **NOT** lit. ____

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

NOTE: Step 7.1.0.020 is **NOT** applicable on odd numbered months.

20. On even numbered months perform the following. Otherwise N/A Substeps:

    a. Locally trip the Auxiliary Feedwater Pump 1X-SAB by depressing the TURBINE TRIP pushbutton on the Auxiliary Feedwater Control Panel 1X-SAB. ___

    b. Verify that the Trip & Throttle Valve is shut. ___

    c. Verify ALB-17/7-4, AUX FEEDWATER PUMP TURBINE TRIP, is lit. ___

    d. Verify that the Trip & Throttle Valve is latched. ___

    e. At the MCB, place the control switch for AUX FW TURBINE TRIP & THROTTLE VLV to OPEN. ___

    f. Verify ALB-17/7-4, AUX FEEDWATER PUMP TURBINE TRIP, is **NOT** lit. ___

NOTE:
- The following Step will cause ALB-17/7-1 and ALB-17/7-2 to alarm, due to simulating 1MS-70 or 1MS-72 being open.
- Concurrent verification is preferred when installing and removing jumpers.

21. At ARP-19B(SB)(R2), direct Maintenance to install a jumper between terminals 20 and 24. ___

22. Obtain a calibrated stopwatch. ___

23. At the MCB, verify the following valves are open and initial for Pretest Position on Attachment 7:

    - FCV-2071A (1AF-129), SG A ___
    - FCV-2071B (1AF-130), SG B ___
    - FCV-2071C (1AF-131), SG C ___

7.1 <u>Auxiliary Feedwater Pump 1X-SAB</u> (continued)

<u>NOTE</u>:

- Steps 7.1.0.024 through 7.1.0.026 will time the TDAFW FCVs shut. It is recommended that only one valve at a time be timed. However, it is permissible to time all three FCVs simultaneously.

- The demand output signal indicator accuracy is 2% for the following controllers:

  - FK-2071A1 SB, AUX FW A REGULATOR 1AF-129
  - FK-2071B1 SB, AUX FW B REGULATOR 1AF-130
  - FK-2071C1 SB, AUX FW C REGULATOR 1AF-131

24. At the MCB, simultaneously start the stopwatch and set the demand output signals for the following controllers at 0%:

    - FK-2071A1 SB, AUX FW A REGULATOR 1AF-129
    - FK-2071B1 SB, AUX FW B REGULATOR 1AF-130
    - FK-2071C1 SB, AUX FW C REGULATOR 1AF-131

25. Stop the stopwatch when the following AUX FW TURBINE FLOW CONTROL VLVS indicate shut:

    - FCV-2071A (1AF-129), SG A
    - FCV-2071B (1AF-130), SG B
    - FCV-2071C (1AF-131), SG C

26. Record the FCV stroke times on Attachment 7.

<u>NOTE</u>:

- Steps 7.1.0.027 through 7.1.0.029 will time the TDAFW FCVs open. It is recommended that only one valve at a time be timed. However, it is permissible to time all three FCVs simultaneously.

- The demand output signal indicator accuracy is 2% for the following controllers:

  - FK-2071A1 SB, AUX FW A REGULATOR 1AF-129
  - FK-2071B1 SB, AUX FW B REGULATOR 1AF-130
  - FK-2071C1 SB, AUX FW C REGULATOR 1AF-131

27. At the MCB, simultaneously start the stopwatch and set the demand output signal for the following controllers at 100%:

    - FK-2071A1 SB, AUX FW A REGULATOR 1AF-129
    - FK-2071B1 SB, AUX FW B REGULATOR 1AF-130
    - FK-2071C1 SB, AUX FW C REGULATOR 1AF-131

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

28. Stop the stopwatch when the following AUX FW TURBINE FLOW CONTROL VLVS indicate open:

- FCV-2071A (1AF-129), SG A ____
- FCV-2071B (1AF-130), SG B ____
- FCV-2071C (1AF-131), SG C ____

29. Record the FCV stroke times on Attachment 7. ____

30. Initial for FULL STROKE TEST on Attachment 7:

- FCV-2071A (1AF-129), SG A ____
- FCV-2071B (1AF-130), SG B ____
- FCV-2071C (1AF-131), SG C ____

31. At the MCB, set the demand output signal for the following controllers to 0%:

- FK-2071A1 SB, AUX FW A REGULATOR 1AF-129 ____
- FK-2071B1 SB, AUX FW B REGULATOR 1AF-130 ____
- FK-2071C1 SB, AUX FW C REGULATOR 1AF-131 ____

32. At the MCB, verify that the following AUX FW TURBINE FLOW CONTROL VLVS shut:

- FCV-2071A (1AF-129), SG A ____
- FCV-2071B (1AF-130), SG B ____
- FCV-2071C (1AF-131), SG C ____

NOTE:
- The following Step will cause the AUX FW TURBINE FLOW CONTROL VLVS to fail open.
- Concurrent verification is preferred when installing and removing jumpers.

33. At ARP-19B(SB)(R2), direct Maintenance to remove the jumper between terminals 20 and 24.

Jumper removed ____

____ Verified

34. At the MCB, verify that the following AUX FW TURBINE FLOW CONTROL VLVS open and initial for FAIL SAFE TEST and Post Test Position Pos Init on Attachment 7:

- FCV-2071A (1AF-129), SG A ____
- FCV-2071B (1AF-130), SG B ____
- FCV-2071C (1AF-131), SG C ____

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

35. Independently verify the following AUX FW TURBINE FLOW CONTROL VLVS open and initial for Post Test Position Verf Init on Attachment 7:

- FCV-2071A (1AF-129), SG A
- FCV-2071B (1AF-130), SG B
- FCV-2071C (1AF-131), SG C

36. At the MCB, set the demand output signal for the following controllers at 100%: (Reference 2.2.0.04)

- FK-2071A1 SB, AUX FW A REGULATOR 1AF-129 ______ ______ Verified
- FK-2071B1 SB, AUX FW B REGULATOR 1AF-130 ______ ______ Verified
- FK-2071C1 SB, AUX FW C REGULATOR 1AF-131 ______ ______ Verified

37. Determine which steam admission valve to use for starting the Turbine Driven Auxiliary Feedwater Pump as follows:

a. If this is the first or third quarter of the year, use 1MS-70, MAIN STEAM B TO AUX FW TURBINE. (N/A this Step if not used.) N/A

OR

b. If this is the second or fourth quarter of the year, use 1MS-72, MAIN STEAM C TO AUX FW TURBINE. (N/A this Step if not used.)

NOTE: Component nomenclature in parentheses is used to start Auxiliary Feedwater Pump 1X-SAB during the second and fourth quarters of the year.

CAUTION

- Personnel should be cautioned to stand clear of the Auxiliary Feedwater Pump 1X-SAB atmospheric exhaust before admitting steam.
- The following Step starts Auxiliary Feedwater Pump 1X-SAB.

---

38. At the MCB, simultaneously start the stopwatch and position the control switch for 1MS-70 (1MS-72), MAIN STEAM B (C) TO AUX FW TURBINE, to OPEN. (Reference 2.2.0.04)

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

39. When 1MS-70 (1MS-72) has completed its travel to the open position as indicated by a singular indicating light (no dual indication) stop the stopwatch.

40. Record stroke time for 1MS-70 (1MS-72) on Attachment 5.

41. Record start time for Auxiliary Feedwater Pump 1X-SAB:

    Time started: 0145

42. Based on pump speed, verify adequate recirculation flow on local indicator FI-2172S. (Reference 4.0.0.02)

43. Verify proper startup of the TDAFW pump, and document partial stroke open of 1MS-71 (1MS-73) and proper governor valve operation on Attachment 5.

44. Record B (C) Steam Generator pressure from MCB Indicator PI-486 SB (PI-496.1 SB) on Attachment 2.

45. Record steam supply pressure from ERFIS point PMS0430 or MCB Indicator PI-430.1 SB, THROT STM PRESS, on Attachment 2.

46. At the MCB, simultaneously start the stopwatch and position the control switch for 1MS-72 (1MS-70), MAIN STEAM C (B) TO AUX FW TURBINE, to OPEN.

47. When 1MS-72 (1MS-70) has completed its travel to the open position as indicated by a singular indicating light (no dual indication) stop the stopwatch.

48. Record the stroke time for 1MS-72 (1MS-70) on Attachment 5.

NOTE:
- Steps 7.1.0.049 through 7.1.0.051 ensure repeatable data by establishing a target speed of 3700 to 3725 rpm and a target flow of 89 to 91 gpm before obtaining pump differential pressure.
- Steps 7.1.0.049 and 7.1.0.050 may need to be repeated until a pump speed of 3700 to 3725 rpm and recirculation flow of 89 to 91 gpm are obtained.
- A calibrated tachometer may be used for turbine speed instead of ERFIS point SAF1978.

49. At the MCB, place PDK-2180.1 in manual and adjust the demand output signal to obtain 3700 to 3725 rpm as indicated by ERFIS Computer Point SAF1978 or handheld tachometer.

50. Obtain a recirculation flow of 89 to 91 gpm as indicated on local indicator FI-2172S, by locally unlocking and throttling 1AF-109, AFWP 1X Recirc to CST Isolation.

51. Maintain Auxiliary Feedwater Pump 1X-SAB speed 3700 to 3725 rpm and recirculation flow 89 to 91 gpm.

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

52. Document partial stroke open of 1CE-56, CST Suction Check Valve to 1X-SAB AFW Pump, as shown by flow greater than 89 gpm, on Attachment 5. B

53. Document full stroke open of 1AF-110, Aux Feed Pmp 1X Recirc to CST Check Valve, as shown by flow greater than 81 gpm, on Attachment 5. B

54. Record Auxiliary Feedwater Pump 1X-SAB recirculation flow, as indicated on FI-2172S, on Attachment 2. B

55. Record Auxiliary Feedwater Pump 1X-SAB speed, as indicated on SAF1978 or handheld tachometer, on Attachment 2. B

56. Allow the pump to run at stable conditions for at least 2 minutes. B

57. Record lube oil pressure, from local indicator PI-2181, on Attachment 2. B

NOTE:
- The IST Program requires all readings to be taken in units of velocity (inches/second).
- To ensure consistent readings are being recorded the vibration data recorded on Attachment 4 should be the values which the qualified operator stored for each point in the Vibrometer.

58. Measure vibration and complete Attachment 4 using the values that were stored in the vibrometer. B

59. Determine Auxiliary Feedwater Pump 1X-SAB discharge pressure:

    a. If ERFIS point PAF2170 is available, record pump discharge pressure on Attachment 2 and N/A Step 7.1.0.059.b. B

    OR

    b. If ERFIS point PAF2170 **NOT** available perform the following and N/A Step 7.1.0.059.a:

        (1) AT PIC-10, direct Maintenance to connect a DVM, to TP-5 and SIG COM at Card 0235. N/A

        (2) At the DVM, installed at Card 0235 in PIC-10, record DC voltage on Attachment 2.

        (3) Calculate and record the discharge pressure on Attachment 2.

        (4) Independently verify calculation performed in Step 7.1.0.059.b.(3).

        (5) At PIC-10 card 0235, direct Maintenance to remove the DVM, from TP-5 and SIG COM.

Verified

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

60. From installed gauge at 1CE-64-V2, PI-2271 Instrument Valve, record operating suction pressure on Attachment 2.

61. From ERFIS Computer Point TCE9010 or handheld pyrometer, record suction temperature, on Attachment 2.

62. Lock open 1AF-109, AFWP 1X Recirc To CST Isolation.

Verified

NOTE: Component nomenclature in parentheses is used when testing Auxiliary Feedwater Pump 1X-SAB during the second and fourth quarters of the year.

63. At the MCB, simultaneously start the stopwatch and position the control switch for 1MS-70 (1MS-72), MAIN STEAM B (C) TO AUX FW TURBINE, to SHUT.

64. When 1MS-70 (1MS-72) has completed its travel to the shut position as indicated by a singular indicating light(no dual indication) stop the stopwatch.

65. Record stroke time for 1MS-70 (1MS-72) on Attachment 5.

66. Initial for 1MS-70 (1MS-72) Full Stroke Test on Attachment 5.

67. Record C (B) Steam Generator pressure from MCB indicator PI-496.1 SB (PI-486 SB) on Attachment 2.

68. Record steam supply pressure from ERFIS point PMS0430 or MCB indicator PI-430.1 SB, THROT STM PRESS, on Attachment 2.

69. Verify proper TDAFW Pump operation and initial for partial stroke open testing for 1MS-73 (1MS-71) on Attachment 5.

70. At the MCB, simultaneously start the stopwatch and position the control switch for 1MS-72 (1MS-70), MAIN STEAM C (B) TO AUX FW TURBINE to SHUT.

71. When 1MS-72 (1MS-70) has completed its travel to the shut position as indicated by a singular indicating light (no dual indication) stop the stopwatch.

72. Record the stroke time for 1MS-72 (1MS-70) on Attachment 5.

73. Initial for 1MS-72 (1MS-70) Full Stroke Test on Attachment 5.

74. Record the time that Auxiliary Feedwater Pump 1X-SAB was stopped:

Time stopped: 0231

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

75. At the MCB, verify turbine speed is decreasing as indicated by SI-2180.1 SB, TURBINE SPEED.

76. At the MCB verify PDK-2180.1, AUX FW TURBINE SPEED, controller is set at 28% and place in AUTO.

AUTO ______ ______ Verified

Setpoint at 28% ______ ______ Verified

77. Calculate and record suction differential pressure on Attachment 2.

78. Independently verify the calculation performed in Step 7.1.0.077.

79. Calculate and record pump differential pressure on Attachment 2.

80. Independently verify the calculation performed in Step 7.1.0.079.

81. Calculate and record the corrected pump differential pressure on Attachment 2.

82. Independently verify the calculation performed in Step 7.1.0.081.

83. Calculate and record the pump differential pressure corrected to 3700 rpm on Attachment 2.

84. Independently verify the calculation performed in Step 7.1.0.083.

85. Complete Attachment 5.

NOTE: Performance of Step 7.1.0.086 will restore Auxiliary Feedwater Pump 1X-SAB to operable status.

86. Refer to Attachment 6 and time test the valves to the Open position per the following instructions:

a. Obtain a calibrated stopwatch.

NOTE: Steps 7.1.0.086.b through 7.1.0.086.e are to be signed off when testing of all the valves listed in Attachment 6 are completed.

b. Simultaneously start the stopwatch and place the control switch for the valve in test to the OPEN position.

7.1 Auxiliary Feedwater Pump 1X-SAB (continued)

c. When the valve has completed travel as indicated by a singular position indicating light for the demanded position (no dual indication) stop the stopwatch.

d. Record the valve stroke time on Attachment 6.

e. Repeat Step 7.1.0.086.b thru 7.1.0.086.d for all remaining valves to be tested on Attachment 6.

87. Initial and verify the Post Test Position for 1AF-137, 1AF-143, and 1AF-149 on Attachment 6.

88. Inform the Control Operator and Unit SCO that Auxiliary Feedwater Pump 1X-SAB is operable.

89. Record the time and date that Auxiliary Feedwater Pump 1X-SAB is operable on Attachment 9.

90. Shut 1CE-64-V2, PI-2271 Instrument Valve, and then direct Maintenance to remove the test gauge installed at that valve.

91. Verify 1CE-64-V2, PI-2271 Instrument Valve, shut and plugged.

Verified

7.2 <u>AFW Check Valve Forward Flow Check</u>

1. Record SG FW Flow from the following MCB indicators on Attachment 3:

   a. FI-0476

   b. FI-0486

   c. FI-0496

2. Independently verify the conversion of MPPH to KPPH in Step 7.2.0.01.

<u>NOTE</u>: Steps 7.2.0.03 and 7.2.0.04 are **NOT** applicable if MCB indicators FI-2003A, B, and C indication is not on scale.

3. Record FW Nozzle Flow from the following MCB indicators on Attachment 3:

   a. FI-2003A

   b. FI-2003B

   c. FI-2003C

4. Independently verify the conversion of MPPH to KPPH in Step 7.2.0.03.

<u>NOTE:</u> Step 7.2.0.05 is **NOT** applicable if Step 7.2.0.03 is completed or if MCB indicators FI-2002A, B, and C indication is not on scale.

5. Record FWIV BYP Flow from the following MCB indicators on Attachment 3:

   a. FI-2002A N/A

   b. FI-2002B

   c. FI-2002C

6. Calculate and record the difference between the SG FW Flow and FW Nozzle Flow or FWIV BYP Flow for the following on Attachment 3:

   a. SG A

   b. SG B

   c. SG C

7. Independently verify the calculations performed in Step 7.2.0.06.

7.3 Test Completion

1. Review Attachments 1 through 8 for completeness. ______

2. Complete applicable portions of Attachment 9, Certifications and Reviews, and inform the Unit SCO that this OST is completed. ______

8.0 DIAGRAMS/ATTACHMENTS

Attachment 1 - Calibration Data Sheet

Attachment 2 - Performance Data Auxiliary Feedwater Pump 1X-SAB

Attachment 3 - Performance Data AFW Check Valve Forward Flow Check

Attachment 4 - Vibration Data

Attachment 5 - Valve Test Data for Main Steam Valves, Check Valves, and Skid Valves

Attachment 6 - Valve Test Data for 1AF-137, 1AF-143, and 1AF-149

Attachment 7 - Valve Test Data for 1AF-129, 1AF-130, and 1AF-131

Attachment 8 - Valve Retest Data Sheet

Attachment 9 - Certifications and Reviews

Calibration Data Sheet

INST/MODEL DESCRIPTION	INST ID NO.	CAL DUE DATE
Calibrated Vibrometer	CT-1845	01-21-01
Calibrated Stopwatch	CT-1448	02-01-01
Digital Multimeter	N/A	N/A
Handheld Pyrometer	↓	↓
Handheld Tachometer	↓	↓
Pressure Gauge, 0 to 60 psig liquid filled or with snubber Ashcroft (or equivalent)	CT-956	01-12-01

Performance Data Auxiliary Feedwater Pump 1X-SAB

* Surveillance Requirement 4.7.1.2.1.a.2.a

NOTE 1: Normal range is 13 to 17 psig.

NOTE 2: Discharge Pressure is determined by subtracting one (1) from the voltage (VDC) recorded from the DVM in Step 7.1.0.059.b.(2) and then multiplying by 500.

500 x (N/A - 1) = N/A

Step 7.1.0.059.b.(2)(VDC) — Step 7.1.0.059.b.(3)(PSIG)

Step	Step Description	Performance Data	Acceptance Criteria
7.1.0.04	Idle Suction Pressure (Installed Gauge at 1CE-64-V2)	24 psig	≥ 15 psig
7.1.0.044	B (C) SG Pressure MCB PI-486 SB (PI-496.1 SB)	940 psig	N/A
7.1.0.045	Steam Supply Pressure (ERFIS point PMS0430 or MCB PI-430.1 SB)	246 psig	>210 psig *
7.1.0.055	Turbine Speed (ERFIS Computer Point SAF1978 or hand held tachometer)	3712 rpm	3700 to 3725 rpm
7.1.0.054	Recirc Flow 1AF-110 (Local FI-2172S)	90 gpm	89 - 91 gpm
7.1.0.057	Lube Oil Pressure PI-2181	15.5 psig	NOTE 1
7.1.0.059.a	Pump Discharge Pressure (ERFIS Point PAF2170)	1306 psig	N/A
7.1.0.059.b.(2)	DC Voltage from DVM Installed at PIC-10 Card 0235	N/A VDC	N/A
7.1.0.059.b.(3)	Pump Discharge Pressure per NOTE 2	↓ psig	N/A
7.1.0.060	Operating Suction Pressure (Installed Gauge at 1CE-64-V2)	22 psig	≥ 15 psig
7.1.0.061	Suction Temperature (ERFIS Point TCE9010 or Handheld Pyrometer)	80 °F	N/A

Performance Data Auxiliary Feedwater Pump 1X-SAB

NOTE 3: Differential Press-Suction is determined by subtracting Suction Press recorded in Step 7.1.0.060 from Suction Press recorded in Step 7.1.0.04.

24 - 22 = 2

Step 7.1.0.04 — Step 7.1.0.060 — Step 7.1.0.077

NOTE 4: Differential Pressure-Pump is determined by subtracting Suction Pressure recorded in Step 7.1.0.060 from Discharge Pressure determined in Step 7.1.0.059.a or 7.1.0.059.b.(3).

1306 - 22 = 1284

Step 7.1.0.059.a or Step 7.1.0.059.b.(3) — Step 7.1.0.060 — Step 7.1.0.079(DP_{ind})

Step	Step Description	Performance Data	Acceptance Criteria
7.1.0.077	Differential Pressure-Suction per NOTE 3	2 psid	≤ 5 psid
7.1.0.079	Differential Pressure-Pump Calculated per NOTE 4 (Non Corrected(DP_{ind}))	1284 psid	1167 - 1356.85 psid

Performance Data Auxiliary Feedwater Pump 1X-SAB

* Surveillance Requirement 4.7.1.2.1.a.2.a

NOTE 5:

$$62.31 \times \underset{Dp_{ind}}{\underline{1284}} \times \underset{U_{ind}}{\underline{0.01607z}} = \underset{DP_{corr}}{\underline{1285.9}}$$

Dp_{corr} = Corrected Differential Pressure

Dp_{ind} = Indicated Discharge Pressure minus Indicated Suction Pressure

U_{ind} = Specific Volume (ft^3/lbm) for saturated liquid water (υ_f) for suction temperature recorded in Step 7.1.0.061. This number can be determined from Sheet 4 of this Attachment or Standard Steam Tables.

NOTE 6: Satisfactory Tech Spec Acceptance Criteria for pump differential pressure is determined by using the following equation and verifying the calculated differential pressure is greater than 1167 psid.

$$(3700 \text{ rpm} \div \underset{\text{Step } 7.1.0.055}{\underline{3712}})^2 \times \underset{\text{Step } 7.1.0.081}{\underline{1285.9 \text{ psid}}} = \underset{\text{Step } 7.1.0.083}{\underline{1294.3 \text{ psid}}}$$

Step	Step Description	Performance Data	Acceptance Criteria
7.1.0.081	Differential Pressure-Pump Calculated per NOTE 5 (Corrected(DP_{corr}))	1285.9 psid	N/A
7.1.0.083	Calculated Differential Pressure Corrected to 3700 rpm per NOTE 6	1294.3 psid	≥ 1167 psid
7.1.0.067	C(B) SG Pressure MCB PI-496.1 SB (PI-486 SB)	940 psig	N/A
7.1.0.068	Steam Supply Pressure (ERFIS point PMS0430 or MCB PI-430.1 SB)	242 psig	> 210 psig *

Performance Data Auxiliary Feedwater Pump 1X-SAB

Specific Volume (ft^3/lbm) for Saturated Liquid Water (υ_f)

Temperature (°F)	Water (υ_f)
105	0.016147
104	0.016144
103	0.016140
102	0.016137
101	0.016133
100	0.016130
99	0.016127
98	0.016123
97	0.016120
96	0.016117
95	0.016114
94	0.016111
93	0.016108
92	0.016105
91	0.016102
90	0.016099
89	0.016096
88	0.016093
87	0.016090
86	0.016087
85	0.016085
84	0.016082
83	0.016079
82	0.016077
81	0.016074
80	0.016072
79	0.016070
78	0.016067
77	0.016065
76	0.016063
75	0.016060
74	0.016058
73	0.016056
72	0.016054
71	0.016052
70	0.016050
69	0.016048
68	0.016046
67	0.016044
66	0.016043
65	0.016041
64	0.016039
63	0.016038
62	0.016036
61	0.016035
60	0.016033
59	0.016032

Performance Data AFW Check Valve Forward Flow Check

NOTE 1: FW Flow through the AFW Check Valve is determined by subtracting either FWIV BYP Flow (Steps 7.2.0.05.a, 7.2.0.05.b, and 7.2.0.05.c) or FW Nozzle Flow (Steps 7.2.0.03.a, 7.2.0.03.b and 7.2.0.03.c) from FW Flow (Steps 7.2.0.01.a, 7.2.0.01.b and 7.2.0.01.c).

507 (Step 7.2.0.01.a) - 260 (Step 7.2.0.03.a or Step 7.2.0.05.a) = 247 (Step 7.2.0.06.a)

492 (Step 7.2.0.01.b) - 242 (Step 7.2.0.03.b or Step 7.2.0.05.b) = 250 (Step 7.2.0.06.b)

505 (Step 7.2.0.01.c) - 256 (Step 7.2.0.03.c or Step 7.2.0.05.c) = 249 (Step 7.2.0.06.c)

NOTE 2: To convert MPPH to KPPH use the following formula:

KPPH = MPPH x 1000

Step	Step Description	Performance Data	Acceptance Criteria
7.2.0.01.a	SG A FW Flow (MCB FI-0476) per NOTE 2	507 KPPH	N/A
7.2.0.01.b	SG B FW Flow (MCB FI-0486) per NOTE 2	492 KPPH	N/A
7.2.0.01.c	SG C FW Flow (MCB FI-0496) per NOTE 2	505 KPPH	N/A
7.2.0.03.a	SG A FW Nozzle Flow (MCB FI-2003A) per NOTE 2	260 KPPH	N/A
7.2.0.03.b	SG B FW Nozzle Flow (MCB FI-2003B) per NOTE 2	242 KPPH	N/A
7.2.0.03.c	SG C FW Nozzle Flow (MCB FI-2003C) per NOTE 2	256 KPPH	N/A
7.2.0.05.a	SG A FWIV BYP Flow (MCB FI-2002A)	N/A KPPH	N/A
7.2.0.05.b	SG B FWIV BYP Flow (MCB FI-2002B)	KPPH	N/A
7.2.0.05.c	SG C FWIV BYP Flow (MCB FI-2002C)	KPPH	N/A
7.2.0.06.a	FW Flow through 1AF-68 per NOTE 1	247 KPPH	> 215 KPPH
7.2.0.06.b	FW Flow through 1AF-106 per NOTE 1	250 KPPH	> 215 KPPH
7.2.0.06.c	FW Flow through 1AF-87 per NOTE 1	249 KPPH	> 215 KPPH

Vibration Data

Auxiliary Feedwater Pump 1X-SAB

INSTRUCTIONS:

1. If pump vibration data is greater than the Acceptable Range but within the Alert Range:

    a. Prepare an E-mail or Memo to the Surveillance Testing Scheduling Coordinator directing the test frequency of the pump to be doubled.
    b. Attach a copy of the E-mail or Memo to the test package.

2. If pump vibration data meets the Required Action Criteria:

    a. Declare the pump INOPERABLE.
    b. Initiate a Condition Report (CR).

Parameter	In/Sec	Acceptable Range	Acceptance Criteria	
			Alert Range	Required Action
Inbd Brg Horiz	0.216	≤ 0.325	>0.325 to < 0.70	≥ 0.70 in/sec
Inbd Brg Vert	0,281	≤ 0.325	>0.325 to < 0.70	≥ 0.70 in/sec
Outbd Brg Horiz	0,194	≤ 0.325	>0.325 to < 0.70	≥ 0.70 in/sec
Outbd Brg Vert	0,187	≤ 0.325	>0.325 to < 0.70	≥ 0.70 in/sec
Axial	0,264	≤ 0.325	>0.325 to < 0.70	≥ 0.70 in/sec

Valve Test Data for Main Steam Valves, Check Valves, and Skid Valves

PRETEST ALIGNMENT			FULL STROKE TEST			POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (sec)					
									CODE CRITERIA				LIMITING VALUE	
				STROKE TIME (sec)					OPEN		SHUT			
Valve Number	Pretest Position	Init	Verification of Travel by Ind Lights (Init)	OPEN	SHUT	Post Test Position	Pos Init	Verf Init	LOW	HIGH	LOW	HIGH	OPEN	SHUT
1MS-70	SHUT	β	β	42.61	43.84	SHUT	β	DW	38.69	52.33	37.44	50.64	60.70	60.70
1MS-72	SHUT	β	β	44.31	39.74	SHUT	β	DW	36.89	49.91	35.31	47.75	60.70	60.70
1MS-T (Trip & Throttle Valve)	OPEN	β	β	14.16	13.62	OPEN	β	DW	N/A	N/A	N/A	N/A	14.60	13.90

VALVE NUMBER	ACCEPTANCE CRITERIA	STEP	SAT/UNSAT (Circle one)
1AF-204	TAF2007B temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1AF-205	TAF2007D temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1AF-206	TAF2007F temperature less than 135° verifies stroke close.	7.1.0.01	SAT / UNSAT
1MS-71 (1MS-73)	Proper startup of the TDAFW pump verifies partial stroke open.	7.1.0.043	SAT / UNSAT
1MS-G (Governing Valve)	Proper startup of the TDAFW pump verifies proper governor valve operation.	7.1.0.043	SAT / UNSAT
1CE-56	Pump Flow > 89 gpm satisfies partial stroke open.	7.1.0.052	SAT / UNSAT
1AF-110	Pump Flow > 81 gpm satisfies full stroke open.	7.1.0.053	SAT / UNSAT
1MS-73 (1MS-71)	Proper operation of the TDAFW pump verifies partial stroke open.	7.1.0.069	SAT / UNSAT

Comments: ______________________________________

Valve Test Data for 1AF-137, 1AF-143, and 1AF-149

NOTE: All spaces next to valve number shall be filled in with initials, data or N/A as applicable.

PRETEST ALIGNMENT			FULL STROKE TEST			POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (SEC)					
									CODE CRITERIA				LIMITING VALUE	
				Stroke Time (Sec)					OPEN		SHUT			
Valve Number	Pretest Position	Init	Verification of Travel by Ind Lights (Init)	Open	Shut	Post Test Position	Pos Init	Verf Init	LOW	HIGH	LOW	HIGH	OPEN	SHUT
1AF-137	OPEN	B	B	14.26	15.11	OPEN	B	DW	12.25	16.57	13.11	17.73	21.61	23.13
1AF-143	OPEN	B	B	15.79	16.57	OPEN	B	DW	12.23	16.53	12.82	17.34	21.57	22.62
1AF-149	OPEN	B	B	14.60	16.62	OPEN	B	DW	12.92	17.46	13.20	17.84	22.78	23.28

Comments:

Valve Test Data for 1AF-129, 1AF-130, and 1AF-131

NOTE: All spaces next to valve number shall be filled in with initials, data or N/A as applicable.

PRETEST ALIGNMENT			FULL STROKE TEST			FAILSAFE TEST		POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (SEC)					
											CODECRITERIA					
				Stroke Time (Sec)							OPEN		SHUT		LIMITING VALUE	
Valve Number	Pretest Position	Init	Verification of Travel by Ind Lights(Init)	OPEN	SHUT	Fail Safe Position	Verified	Post Test Position	Pos Init	Verf Init	LOW	HIGH	LOW	HIGH	OPEN	SHUT
1AF-129	OPEN	B	B	10.01	9.63	OPEN	B	OPEN	B	TW	4.75	14.23	4.75	14.25	23.72	15.00
1AF-130	OPEN	B	B	9.41	10.06	OPEN	B	OPEN	B	TW	3.58	10.72	4.92	14.76	17.87	15.00
1AF-131	OPEN	B	B	8.42	11.65	OPEN	B	OPEN	B	TW	3.48	10.42	4.24	12.72	17.37	15.00

Comments: ______________________________

Valve Retest Data Sheet

NOTE: This entire Attachment is N/A if no valve is retested due to exceeding the Code Criteria.

Determine if the stroke time exceeds the Limiting Value.

1. If the stroke time exceeds the Limiting Value, declare the valve inoperable and initiate a CR. (N/A if stroke time is less than the Limiting Value)

2. If the stroke time is less than the Limiting Value, but outside the Code Criteria limits, perform the following Steps:

   a. If the cause is known to be mechanical failure, or if a retest cannot be performed expeditiously, declare the valve inoperable and initiate a CR.

   b. If retesting the valve is desired, perform the following:

NOTE: If necessary, separate marked up sheets of this OST may be used to document necessary manipulations. These sheets would be attached to this procedure and noted in the comments Section of Attachment 9.

(1) Determine which Steps need to be performed to set up conditions for testing the valve. Unit SCO concurrence must be obtained and documented in the Comments section of Attachment 9.

(2) Perform the Steps determined in the previous Step and document stroke times/valve positioning on Sheet 2.

(3) If retest results are still outside the Code Criteria, declare the valve inoperable and initiate a CR.

(4) If retest results are within the Code Criteria, perform the following:

(a) Declare the valve operable.

(b) Initiate a CR identifying test findings for the first and second tests.

(c) Send test results to Responsible Engineer (IST) for evaluation and documentation on the CR.

N/A

Valve Retest Data Sheet

(1) Fill out PRETEST ALIGNMENT, POSTTEST ALIGNMENT, and ACCEPTANCE CRITERIA values for the valve(s) being tested using the values in the initial test Attachment.

PRETEST ALIGNMENT (1)			FULL STROKE TEST		POSTTEST ALIGNMENT (1)			ACCEPTANCE CRITERIA (SEC) (1)					
			Stroke Time (SEC)					CODE CRITERIA				LIMITING VALUE	
								OPEN		SHUT			
Valve Number	Pretest Position	Init	OPEN	SHUT	Post Test Position	Pos Init	Verf Init	Low	High	Low	High	OPEN	SHUT

Certifications and Reviews

This OST was performed as a:

Periodic Surveillance Requirement: B
Post Maintenance Operability Test: ______
Redundant Subsystem Test: ______

Plant Conditions: 100% Mode: 1

OST Completed By: Bill Gross Date: TODAY
Time: 0350

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
B	Bill Gross	DV	David Varn
TT	Thomas Terden		
JS	John Smith		

General Comments/Recommendations/Corrective Actions/Exceptions:

Step			Time	Date
7.1.0.08	Auxiliary Feedwater Pump 1X-SAB	Inoperable	0100	TODAY
7.1.0.089	Auxiliary Feedwater Pump 1X-SAB	Operable	0307	TODAY

Pages Used: All

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

Reviewed By: ______________________ Date: __________
Unit SCO

Reviewed By: ______________________ Date: __________
Responsible Engineer (IST)

Reviewed By: ______________________ Date: __________
ANII

After receiving the final review signature, this OST becomes a QA RECORD and should be submitted to Document Services.

Revision Summary

General

This revision incorporates ESR 99-00010 for 1MS-70 and 1MS-72 IST data changes, following the establishment of IST Code Criteria after the initial run of this procedure.

Description of Changes

Page	Section	Change Description
All		Increased Revision level to 15.
21	7.3	Deleted Step to notify IST, since the Code Criteria is now in the procedure. Deleted the Step to document task completion. These tasks are going away when passport is implemented.
29	Attachment 5	Added acceptance criteria for 1MS-70 and 1MS-72.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-A.3

Determine Entry Requirements for a Contaminated Area

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Determine Entry Requirements for a Contaminated Area

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.3.4 Importance: SRO 3.1 RO 2.5

K/A Statement: Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

Task Standard: Determination made of appropriate requirements for entry to determine position of 1CS-95.

Preferred Evaluation Location: Simulator ______ In Plant X

Preferred Evaluation Method: Perform ______ Simulate X

References: NGGM-PM-0002, Radiation Control and Protection Manual
AP-535, Performing Work in Radiation Control Areas

Validation Time: 15 minutes Time Critical: NO

Candidate: ______________________________

Time Start: __________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ____

____

Examiner: ______________________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

NOTE: This task should be performed after the candidate has completed in-plant JPMs which are located in the RCA and the candidate is still in the RCA.

Attached General RWP H00-0003.
Attached Survey Map # 082900-1.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The Unit-SCO has directed that the position of 1CS-95, MOD HX BYPASS INLET ISOL VLV, be verified.

INITIATING CUES:

You have just been directed to determine the position of 1CS-95, located in the RAB 236 Letdown Heat Exchanger valve gallery.

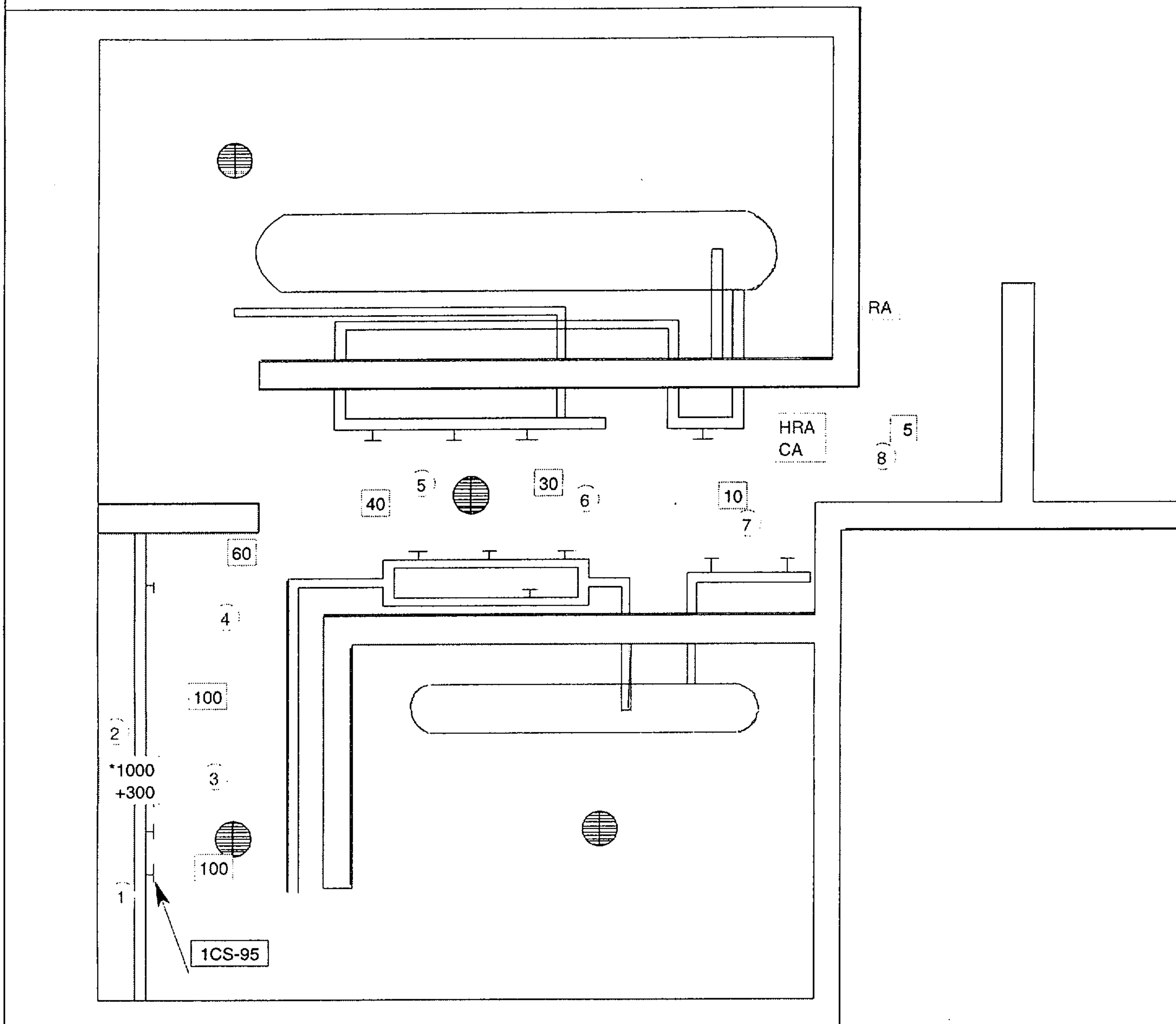
START TIME: ________

STEP 1: Locates area and determines area is contaminated STANDARD: Locates Letdown Heat Exchanger valve gallery room on RAB 236 and determines area is contaminated NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Proceed to HP to obtain survey map, dress requirements, and discuss entry with HP STANDARD: Proceeds to HP to obtain survey map, dress requirements, and discuss entry with HP NOTES: ***CUE: Acting as HP, provide candidate with attached survey map and RWP after determining candidate is obtaining them.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Review survey map to determine contamination level at valve	**CRITICAL STEP**
STANDARD:	Reviews survey map and determines contamination level at 1CS-95 is 250,000 DPM/100 cm^2	
NOTES:	***CRITICAL TO DETERMINE LEVEL TO DETERMINE FURTHER REQUIREMENTS.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Review General RWP to determine entry requirements into contaminated area	**CRITICAL STEP**
STANDARD:	Reviews RWP H00-0003 and determines entry requirements for contaminated areas > 100,000 DPM/cm^2 are FULL PROTECTIVE CLOTHING, and Radiation Control Coverage must be INTERMITTENT	
NOTES:	***CRITICAL TO ENSURE ALL RADIOLOGICAL REQUIREMENTS MET.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

RAB 236 Letdown Ht Exchanger V/G	Survey # 082900-1	Date/Time: 08/29/2000 03:30



Comments: RAB 236 Letdow Hx V/G support Ops removing clearance from 1CS-95 Required upon entry survey of travel path only
HP dose received 1.9 mrem

Symbol Legend (For Example Only)
Dose Rate
*150 — Contact Reading
+ 75 — 30 cm Reading
20 — General Area
HS-50 Hot Spot
RCA Posting
Drip
15 Smear 15 Air Sample 0 RM 15 Wipe

Type: Ops removing clearance
RWP: 00-0003
Reactor Power = 100%

See attached page(s) for survey data details

All dose rates in mrem/hr unless noted

Surveyor: Donald Terry	Reviewed by: Eddie Krajack 8/29/2000

Survey printed on: 09/20/2000 at: 9:12:38 AM

Survey 082900-1 - Data Point Details - Page 1 of 1

Additional Information:

WR/Task #: N/A
Work Area Code: A
Component / Tag Name: N/A
Tag Suffix Name: N/A
Short Name: N/A

Instruments Used:

Survey Instruments	ID #
RO-2	2542
L-177	45605
NA	NA
NA	NA

Counted by:

Postings Legend:

RCA = Radiologically Controlled Area
RA = Radiation Area
HRA = High Radiation Area
LHRA = Locked High Radiation Area
VHRA = Very High Radiation Area
ARA = Airborne Radioactivity Area
CA = Contamination Area
RMA = Radioactive Material Area

Dose Rate (DR) Object Prefixes / Suffixes:

* = Contact
+ = 30 cm
HS = Hot Spot
No prefix = General Area Dose Rate
Suffixes: 'n' = Neutron, 'b' = Beta

All dose rates in mrem/hr unless noted

No.	Type	Value	Units	Position	Notes
1	Smear	b/g 250000	DPM/100 cm2	1CS-95	
2	Smear	b/g 30000	DPM/100 cm2	lead shielding	
3	Smear	b/g 100000	DPM/100 cm2	floor	
4	Smear	b/g 40000	DPM/100 cm2	floor	
5	Smear	b/g 20000	DPM/100 cm2	floor	
6	Smear	b/g 30000	DPM/100 cm2	floor	
7	Smear	b/g 15000	DPM/100 cm2	floor	
8	Smear	b/g <1000	DPM/100 cm2	floor	
DR	g	100	mrem/hr		
DR	g	100	mrem/hr		
DR	g	5	mrem/hr		
DR	g	10	mrem/hr		
DR	g	30	mrem/hr		
DR	g	40	mrem/hr		
DR	g	60	mrem/hr		
DR	g	* 1000	mrem/hr		
		+ 300	mrem/hr		
	Text	1CS-95			

G_E_N_E_R_A_L RWP: H00-0003
REV: 02
INITIAL: 11/01/99 13:50
REVISED: 05/11/00 11:03
VALID THROUGH: 12/31/00
ALARA: GROUP: OPS

```
 @@    @@        @@    @@    @@   @@@@       @@   @@@@
@  @  @  @      @  @  @  @  @  @     @      @  @     @
@  @  @  @ === @  @  @  @  @  @  @@@@  REV @  @  @@@@
@  @  @  @      @  @  @  @  @  @     @      @  @  @
 @@    @@        @@    @@    @@   @@@@       @@   @@@@
```

---------------------------------- LOCATION ----------------------------------

ALL AREAS EXCEPT AREAS POSTED VHRA AND CONTAINMENT WHEN REACTOR CRITICAL.

WORK DESCRIPTION

OPERATIONS ACTIVITIES. TO INCLUDE ROUTINE ROUNDS BY FIRE PROTECTION PERSONNEL.

-------------------------- RADIOLOGICAL CONDITIONS --------------------------

--DOSE RATES--			--AIR ACTIVITY--			DAC RATIO
GENERAL AREA:	*	MREM/HR	PARTICULATE:	0.0E-00	UCI/CC	<25%
WORK AREA:	*	MREM/HR	IODINE:		UCI/CC	
MAX READING:	*	MREM/HR	GASEOUS:		UCI/CC	
NEUTRON:	*	MREM/HR	--SMEARABLE CONTAMINATION--			
BETA:	*	MRAD/HR	GENERAL AREA:	*	DPM/100CM2	
			MAX READING:	*	DPM/100CM2	

ADMINISTRATIVE DOSE LIMIT: 40 MREM

DOSE ALARM: 30 MREM
DOSE RATE ALARM: 500 MREM/HR

---------------- REQUIRED DOSIMETRY AND PROTECTIVE EQUIPMENT ----------------

---- DOSIMETRY ----

--- TLD --- --- SRPDS ---

CHEST

ALARMING DOSIMETER REQUIRED

---- PROTECTIVE CLOTHING ----

DRESS PER INSTRUCTIONS

------------------------------ INSTRUCTIONS ------------------------------

* REVIEW SURVEYS AT THE RCC FOR SPECIFIC WORK AREA RADIOLOGICAL DATA
1. NOTIFY THE RCC PRIOR TO PERFORMING ANY ACTIVITY WHICH COULD CHANGE RADIOLOGICAL CONDITIONS.
2. NOTIFY RADIATION CONTROL PRIOR TO CLIMBING IN THE OVERHEAD.
3. ALARMING DOSIMETER DOSE ALARM IS 50 MREM AND DOSE RATE ALARM IS 100 MREM/HR IN 'RIMS DOWN' MODE (ADMINISTRATIVE LIMIT STILL APPLIES).
4. IN HIGH NOISE AREAS, USE VIBRATING ALARMING DOSIMETERS OR WEAR ALARMING DOSIMETER OUTSIDE THE PC POCKET.
5. CONTAMINATED SYSTEM BREECHES ON LINES GREATER THAN ONE INCH (1") IN DIAMETER NOT ALLOWED ON THIS RWP.

(INSTRUCTIONS CONTINUED ON NEXT PAGE)

SAMPLING REQUIRED: NONE
BRIEFING REQUIRED: NO
SURVEYS: *

RESPONSIBLE PERSON: OPS MANAGER

APPROVED BY: [signature] DATE: 5/11/00 TIME: 11:00
CP&L - HARRIS PLANT

TERMINATION DATE: __/__/__ TIME: __:__

INSTRUCTIONS (CONTINUED)

TASK DESCRIPTION: CONTAMINATION AREA - UPPER EXTREMITY

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
PER INSTRUCTIONS	INTERMITTENT

ADDITIONAL REQUIREMENTS:
1. > 100,000 DPM/100CM2: LABCOAT AND SURGEON GLOVES.
2. < 100,000 DPM/100CM2: SURGEON GLOVES.

TASK DESCRIPTION: CONTAMINATION AREA ENTRIES/WORK <100,000 DPM/100CM2

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
PER INSTRUCTIONS	INTERMITTENT

ADDITIONAL REQUIREMENTS:
1. SHOECOVERS AND RUBBER GLOVES REQUIRED AS A MINIMUM.
2. MULTIPLE SURGEON GLOVES MAY BE USED IN LIEU OF RUBBER GLOVES FOR TASKS REQUIRING MANUAL DEXTERITY.
3. FOR CLIMBING OR CRAWLING: FULL SET OF PROTECTIVE CLOTHING AND A CLOTH HOOD.
4. FOR WORK IN A WET ENVIRONMENT: FULL SET OF PROTECTIVE CLOTHING, WATERPROOF BOTTOMS AND PLASTIC SHOECOVERS REQUIRED AS A MINIMUM.

TASK DESCRIPTION: CONTAMINATION AREA ENTRIES/WORK >100,000 DPM/100CM2

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
FULL PROTECTIVE CLOTHING	INTERMITTENT

ADDITIONAL REQUIREMENTS:
1. MULTIPLE SURGEON GLOVES MAY BE USED IN LIEU OF RUBBER GLOVES FOR TASKS REQUIRING MANUAL DEXTERITY.
2. FOR CLIMBING OR CRAWLING: FULL SET OF PROTECTIVE CLOTHING AND A CLOTH HOOD.
3. FOR WORK IN A WET ENVIRONMENT: WATERPROOF BOTTOMS AND PLASTIC SHOECOVERS REQUIRED AS A MINIMUM.

TASK DESCRIPTION: LOCKED HIGH RADIATION AREA ENTRIES

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
PER INSTRUCTIONS	CONTINUOUS

ADDITIONAL REQUIREMENTS:
1. PRE-JOB BRIEFING REQUIRED.
2. HP SUPERVISOR APPROVAL REQUIRED PRIOR TO EACH ENTRY INTO LHRA'S.
3. CONTINUOUS HP COVERAGE REQUIRED IN LOCKED HIGH RADIATION AREAS.
4. WHEN PERFORMING CONTINUOUS COVERAGE, HP PERSONNEL SHALL NOT ENGAGE IN ANY ACTIVITIES WHICH COULD DISTRACT THEM FROM MONITORING WORKERS AND THE WORK ENVIRONMENT.

(INSTRUCTIONS CONTINUED ON NEXT PAGE) 5/11/00

11:00

INSTRUCTIONS (CONTINUED)

TASK DESCRIPTION: HOT PARTICLE AREA WORK

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
FULL PROTECTIVE CLOTHING W/HOOD	INTERMITTENT

ADDITIONAL REQUIREMENTS:
1. FACESHIELD, DOUBLE RUBBER SHOE COVERS AND DOUBLE RUBBER GLOVES.
2. NOTIFY THE RCC PRIOR TO EACH HPA ENTRY.
3. HOT PARTICLE MONITORING REQUIRED UPON EXIT OF HPA.
4. CHANGE OUTER GLOVES OFTEN WHEN HANDLING HOT PARTICLE GENERATING ITEMS.
5. IF ANY HOT PARTICLE AREA WORK INVOLVES BARE SKIN, HP WILL MONITOR AT THE FREQUENCY PER HPP-626.

TASK DESCRIPTION: REMOVAL OF MATERIAL FROM SPENT FUEL POOL

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
FULL PROTECTIVE CLOTHING	CONTINUOUS

ADDITIONAL REQUIREMENTS:
1. NOTIFY RADIATION CONTROL PRIOR TO REMOVING ANY MATERIAL FROM THE SPENT FUEL POOL.
2. NOTIFY CONTROL ROOM PRIOR TO ADDING ANY WATER TO THE SPENT FUEL POOL.
3. WIPE/WASH DOWN MATERIAL WHEN REMOVING FROM THE SPENT FUEL POOL.
4. AIRBORNE ENGINEERING CONTROLS AS PER RADIATION CONTROL.

TASK DESCRIPTION: FIRE BRIGADE RESPONSE TO INCLUDE THE RCB WITH THE REACTOR CRITICAL

DRESS REQUIREMENTS	RADIATION CONTROL COVERAGE
PER INSTRUCTIONS	CONTINUOUS

ADDITIONAL REQUIREMENTS:
1. FIRE BRIGADE TEAM MEMBERS SHALL RESPOND UTILIZING TURNOUT GEAR.
2. UTILIZE ELECTRONIC ALARMING DOSIMETERS ATTACHED TO THE SCBA.
3. VERIFY THE ALARMING DOSIMETER IS ON.
4. ADMINISTRATIVE DOSE LIMIT: 1000 MREM
5. ALARM SETPOINT: DOSE ALARM 750 MREM
   : DOSE RATE ALARM 10000 MREM/HR
6. NO ENTRY INTO INCORE SUMP WHEN REACTOR IS CRITICAL.

(END OF INSTRUCTIONS) KRRRR 5/11/00 11:00

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The Unit-SCO has directed that the position of 1CS-95, MOD HX BYPASS INLET ISOL VLV, be verified.

INITIATING CUES:

You have just been directed to determine the position of 1CS-95, located in the RAB 236 Letdown Heat Exchanger valve gallery.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.4

Notify State and County Agencies

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Notify State and County Agencies

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.4.43 Importance: SRO NA RO 2.8

K/A Statement: Knowledge of emergency communication systems and techniques.

Task Standard: Attachment 9 of PEP-310 has been communicated to all appropriate State and County agencies.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: PEP-310, Notifications and Communications

Validation Time: 10 minutes Time Critical: YES*

**** JPM Step 9 must be completed within 7 minutes.***

Candidate: ____________________

Time Start: ______ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ____________________

____

Examiner: ____________________ Date: ______

Signature

Tools/Equipment/Procedures Needed:

Completed PEP-310, Attachment 9, available to hand to candidate.
PEP-310, Attachment 12.

Access to Selective Signaling System phone lines.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

A Site Area Emergency was declared 8 minutes ago.

PEP-310, Attachment 9, has been completed.

INITIATING CUES:

You are to communicate PEP-310, Attachment 9, to the State and County agencies using the Manual Method on the Selective Signaling System, Attachment 12.

NOTE: THIS IS A TIME CRITICAL JPM.

START TIME: ________

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates completed PEP-310, Attachment 9, and PEP-310, Attachment 12	
NOTES:	***NOTE: Provide candidate Attachment 9 with INITIATING CUE.*** ***Attachment 12 provides instructions for the MANUAL METHOD of communicating with the State and County agencies.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 2:	Obtain verification code words (Att 12, Step 1A1)	**CRITICAL STEP**
STANDARD:	Obtains verification code words from Emergency Communicator desk in MCR	
NOTES:	***CRITICAL TO ALLOW VERIFICATION OF PROPER AGENCIES CONTACTED.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 3:	Contact Warning Points from MCR (Att 12, Steps 1B and 1C)	**CRITICAL STEP**
STANDARD:	Uses Selective Signaling System, dials "10", listens for tone, then dials "22"	
NOTES:	***CUE: Pausing several seconds between each response, respond with the following:*** ***"Chatham County"*** ***"State of North Carolina"*** ***"Lee County"*** ***"Wake County"*** ***"Hartnett County"*** ***CRITICAL TO ALLOW CONTACTING ALL AGENCIES.*** ***NOTE: If "44" is dialed, phones will ring at Warning Points.***	____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Identifies plant and requests roll call (Att 12, Steps 1D and 1E)	**CRITICAL STEP**
STANDARD:	Says "This is Harris Nuclear Plant, standby" and when responses cease says "This is Harris Nuclear Plant, answer to roll call" "State" "Wake County" "Chatham County" "Hartnett County" "Lee County"	
NOTES:	***CUE: Respond with repeat of agency contacted after each called, i.e., when candidate says "State" respond with "State."*** ***CRITICAL TO ENSURE ALL AGENCIES RECEIVE MESSAGE.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Informs agencies of event classification (Att 12, Step 2A)	**CRITICAL STEP**
STANDARD:	Says "This is the Harris Nuclear Plant. Please record the following information on an Emergency Notification Form."	
NOTES:	***CRITICAL TO ENSURE AGENCIES KNOW EXTENT OF EMERGENCY.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Provides Line 1 information (Att 12, Step 2B)	**CRITICAL STEP**
STANDARD:	Says, "Line 1, this is a drill, initial notification, message #1"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Provides Line 5 information (Att 12, Step 2C)	**CRITICAL STEP**
STANDARD:	Says "Line 5, a Site Area Emergency has been declared."	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 8:	Provides Line 15 information (Att 12, Step 2D)	**CRITICAL STEP**
STANDARD:	Says "Line 15, No recommended protective actions."	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Records current time and date (Att 12, Step 2E)	**TIME CRITICAL STEP**
STANDARD:	Records current time and date	
NOTES:	***TIME CRITICAL TO HAVE COMPLETED PREVIOUS STEPS WITHIN 7 MINUTES.*** ***NOTE: Att 12, Step 3A, NOT required due to being performed previously.*** ***NOTE: Examiner record time _______.***	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Inform agencies of Line 2 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 2 by stating "Line 2" and reads "Site - Harris", "Unit 1", and "Reported by (CANDIDATE NAME)"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.*** ***NOTE: Candidates may or may not repeat previously given information (Lines 1, 5, and 15) during further communication. Either is acceptable.***	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Inform agencies of Line 3 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 3 by stating "Line 3" and reads "Transmittal Time/Date - (TIME/DATE RECORDED)" and "Confirmation Telephone Number - 919-362-3493"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Request authenication and record (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Says "State please supply an authenication number," records number on Line 4, locates and responds with corresponding code word "ANTIGUA", and records code word on Line 4	
NOTES:	***CUE: Respond with authenication number "72".*** ***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Inform agencies of Line 6 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 6 by stating "Line 6" and reads "Emergency Declaration at (TIME/DATE)"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Inform agencies of Line 7 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 7 by stating "Line 7" and reads "EAL 2-1-3, Leakage of primary coolant to secondary coolant with a steam release to the atmosphere"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Inform agencies of Line 8 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 8 by stating "Line 8" and reads "Plant Condition Stable"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Inform agencies of Line 9 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 9 by stating "Line 9" and reads "Reactor Status is shutdown at (TIME/DATE)"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Inform agencies of Line 10 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 10 by stating "Line 10" and reads "Emergency Release is occurring"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Inform agencies of Line 11 data (Att 12, Step 3B)	**CRITICAL STEP**
STANDARD:	Identifies line 11 by stating "Lines 11" and states "Type of release is Ground Level, airborne, started (TIME/DATE)"	
NOTES:	***CRITICAL TO PROVIDE CORRECT INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 19: Inform agencies of lack of Line 12-14 data (Att 12, Step 3B) STANDARD: Identifies lines 12-14 by stating "Lines 12-14" and states "Information is not yet available" (or similar) NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 20: Inform agencies of Line 16 data (Att 12, Step 3B) STANDARD: Identifies line 16 by stating "Line 16" and states "Approved by John Johnson, SEC, (TIME/DATE)" NOTES: ***CRITICAL TO PROVIDE CORRECT INFORMATION.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 21:	Ask if any questions exist (Att 12, Step 3C)	
STANDARD:	Asks if there are any questions	
NOTES:	***CUE: Respond with "No questions."*** ***NOTE: Att 12, Step 3D, NOT required due to responding with this cue.***	____ SAT
COMMENTS:		____ UNSAT
STEP 22:	Inform agencies copies to be sent (Att 12, Step 3E)	
STANDARD:	Says "Copies of this notification will be sent to you via Fax."	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 23:	Log and record responders (Att 12, Step 4A)	**CRITICAL STEP**
STANDARD:	Says "Respond to roll call with your name" and records name on Attachment 12 of PEP-310 "State" "Chatham County" "Hartnett County" "Lee County" "Wake County"	
NOTES:	***CUE: Respond with the following after each called, i.e., when candidate says "State" respond with "Jones."*** ***State "Jones"*** ***Chatham County "Smith"*** ***Hartnett County "Brown"*** ***Lee County "White"*** ***Wake County "Green"*** ***CRITICAL TO ENSURE ALL AGENCIES RECEIVED INFORMATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 24:	Notify end of notification (Att 12, Step 4B)	
STANDARD:	Says "This is the end of the emergency notification. You may leave the network. This is the Harris Nuclear Plant. Out"	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 25:	Fax the form to proper agency locations (Att 12, Step 4C)	
STANDARD:	Faxes the form to the applicable WPs	
NOTES:	***EAMINER CUE: Form has been faxed.***	____ SAT
COMMENTS:		____ UNSAT

STEP 26:	Fax the form to proper plant locations (Att 12, Step 4D)	
STANDARD:	Faxes the form to the TSC and EOF	
NOTES:	***EXAMINER CUE: Form has been faxed.*** ***NOTE: Att 12, Step 4E, NOT required due to NOT having any telecommunications problems.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 27:	Signs completion of notification (Att 12, Step 4F)	
STANDARD:	Signs name and time/date on Attachment 12 of PEP-310	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
	END OF TASK	

STOP TIME: ________

MANUAL STATE/COUNTY EMERGENCY NOTIFICATION FORM MESSAGE# 1

1. ☑A. THIS IS A DRILL ☐B. ACTUAL EMERGENCY ☑INITIAL ☐FOLLOW-UP*
2. Site: HARRIS PLANT Unit: 1 Reported by: ______
3. Transmittal Time/Date: ______ / / Confirmation Phone Number: 919-362-3493
4. Authentication (If required): ______ (Number) ______ (Codeword)

5. Emergency Classification:
☐A. NOTIFICATION OF AN UNUSUAL EVENT ☐B. ALERT
☑C. SITE AREA EMERGENCY ☐D. GENERAL EMERGENCY

6. ☑A. Emergency Declaration at: ☐B Termination at: Time/Date: (8 MIN AGO - TODAY) / / (If B, go to 16)
7. Emergency Description/Remarks: (EAL 2.1.3) Leakage of primary coolant to secondary coolant with a steam release to the atmosphere

8. Plant Condition: ☐A. Improving ☑B. Stable ☐C. Degrading
9. Reactor Status: ☑A. Shutdown: Time/Date: (20 MIN AGO - TODAY) ☐B. ______% Power
10. Emergency Releases: ☐A. None (go to 14) ☐B. Potential (go to 14) ☑C. Is Occurring ☐D. Has Occurred

**11. Type of Release: ☐Elevated ☑Ground Level
☑A. Airborne Started: (10 MIN AGO - TODAY) Time Date Stopped: ______ Time / / Date
☐B. Liquid Started: ______ Time / / Date Stopped: ______ Time / / Date

**12. Release Magnitude: ☐Curies/sec ☐Curies Normal Operating Limits: ☐Below ☐Above
☐A. Noble Gases ______ ☐B. Iodines ______
☐C. Particulates ______ ☐D. Other ______

**13. Estimate of Projected Offsite Dose: ☐New ☐Unchanged Projection Time: ______
Estimated Duration: ______ Hrs

	TEDE mrem	Thyroid CDE mrem
Site Boundary		
2 Miles		
5 Miles		
10 Miles		

**14. Meteorological Data:
A.Wind Direction(from)____ ☐B.Speed (mph)____ ☐C.Stability Class____ ☐D Precipitation (type)____

15. RECOMMENDED PROTECTIVE ACTIONS:
☑A. No recommended Protective Actions
☐B. Evacuate ______
☐C. Shelter In-place ______
☐D. Other ______

16. Approved By: John Johnson (Name) SEC (Title) Time/Date: (8 MIN AGO - TODAY)

* If items 8-14 have not changed, only items 1-7 and 15-16 are required to be completed.
** Information may not be available on Initial Notifications

S/C Use Only	Received By: ______ Time: ______ Date: ______
	Transmitted By: ______

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A Site Area Emergency was declared 8 minutes ago.

PEP-310, Attachment 9, has been completed.

INITIATING CUES:

You are to communicate PEP-310, Attachment 9, to the State and County agencies using the Manual Method on the Selective Signaling System, Attachment 12.

NOTE: THIS IS A TIME CRITICAL JPM.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.4

Perform an Emergency Action Level Classification and Recommend Protective Actions

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform an Emergency Action Level Classification and Recommend Protective Actions

Alternate Path: NONE

Facility JPM #: CR-127 (Significantly Modified)

K/A Rating: 2.4.41 / 2.4.44 Importance: SRO 4.1 / 4.0 RO NA

K/A Statement: Knowledge of the emergency action level thresholds and classifications. / Knowledge of emergency plan protective action recommendations.

Task Standard: General Emergency determined due to three (3) fission product barriers breached (EAL 2-1-4) AND PARs completed satisfactorily.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: Emergency Action Level Flowpath
PEP-110, Emergency Classification and Protective Action Recommendations

Validation Time: 15 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ______ minutes

NOTE: Performance Rating based on 20% for satisfactory classification during simulator scenario, 20% for satisfactory classification during JPM, and 60% for satisfactory protective action recommendation during JPM.

Performance Rating: SAT ______ UNSAT ______

Comments: ____________________

____

Examiner: ____________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

EAL Flowpaths
PEP-110, Attachment 3

NOTE: Provide Attachments A and B of JPM to candidate as directed in JPM Steps.

NOTE: Attachment C is ONLY TO BE USED if candidate does NOT classify event as a GENERAL EMERGENCY.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Following a reactor trip and safety injection, EOP-PATH-2 is being implemented.

The following plant conditions are noted:

- All CSFSTs are currently green or yellow.
- All ESF equipment is functioning.
- Containment conditions are normal.
- One SG Safety is stuck open on SG 'B'.
- SG 'B' level is below the narrow range indication.
- SGs 'A' and 'C' are being controlled at approximately 25% level using AFW.
- EPP-014, Faulted Steam Generator Isolation, has been performed for SG 'B'.
- The most recent RCS activity sample was 89 uCi/cc.
- The GFFD shows no increase in count rate.
- The RCS is subcooled by 52°F.
- Core damage assessments are NOT yet available.
- Emergency dose projections are NOT yet available.

INITIATING CUES:

You are to classify this event, entering the EAL Network at Entry Point "U" as directed by PATH-2.

START TIME: ________

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates EAL Flowpath and PEP-110	
NOTES:	***NOTE: 1) Not required to reference PEP-110.*** ***2) The following JPM steps are decision points required to be made to obtain the correct EAL classification and are addressed for this reason, although NOT all are considered CRITICAL STEPS.***	____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Enters EAL Network at proper location	
STANDARD:	Enters EAL Network at Entry Point "U" and indicates RCS Breached on FPB Status Board	
NOTES:	***NOTE: Given in initial conditions due to being directed to this entry by PATH-2.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3: Initiates monitoring of Critical Safety Functions STANDARD: Directs Unit-SCO to initiate monitoring NOTES: ***NOTE: Crew should be already monitoring due to being in EOP Network.*** COMMENTS:	____ SAT ____ UNSAT
STEP 4: Any Rad Mon in EAL Table 1 in High Alarm STANDARD: <YES> Determines MS Line 'B' Rad Monitor in high alarm NOTES: ***NOTE: Once candidate locates EAL Table 1 Rad Monitors on Rad Monitoring Panels, provide Attachment A, "Rad Monitor Indication".*** COMMENTS:	____ SAT ____ UNSAT

STEP 5: Plant Vent Stack #1 WRGM Effluent Chnl > 3.6E5 uCi/sec STANDARD: <NO> Determines rad monitor indicating normal based on Attachment A indications NOTES: ***NOTE: Attachment A given to candidate previously.*** COMMENTS:	____ SAT ____ UNSAT
STEP 6: Either Cnmt Hi Range Accident Mon > 17.5 R/hr STANDARD: <NO> Determines rad monitor indicating normal based on Attachment A indications NOTES: ***NOTE: Attachment A given to candidate previously.*** COMMENTS:	____ SAT ____ UNSAT

STEP 7:	Any EAL Table 2 Monitor > 1000 times normal	
STANDARD:	<NO> Determines rad monitor indicating normal based on Attachment A indications	
NOTES:	***NOTE: Attachment A given to candidate previously.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Was Entry at Point "T"	
STANDARD:	<NO> Entry determined to be at Point "U"	
NOTES:	***NOTE: Given in initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9: GFFD increased > 1.0E5 cpm in 30 mins STANDARD: <NO> Determines GFFD has not increased NOTES: ***NOTE: Given in initial conditions.*** COMMENTS:	____ SAT ____ UNSAT
STEP 10: RCS Activity (I-131 Dose Equivalent) > 300 uCi/cc STANDARD: <NO> Determines RCS Activity < 300 uCi/cc NOTES: ***NOTE: Given in initial conditions.*** COMMENTS:	____ SAT ____ UNSAT

STEP 11:	Core Cooling CSF red	
STANDARD:	<NO> Determines Core Cooling Status CSF NOT red	
NOTES:	***NOTE: All CSFSTs given as being green or yellow in initial conditions.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Indicate Fuel Intact on FPB Status Board	
STANDARD:	Indicates Fuel Intact on FPB Status Board	
NOTES:	***NOTE: Later determination will cause this to be changed to Breached.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13: EOP PATH-2 entered	**CRITICAL STEP**
STANDARD: **<YES>** Determines EOP PATH-2 entered	
NOTES: ***NOTE: Given in initial conditions. An incorrect decision here would result in determining Fuel intact instead of breached.*** ***CRITICAL TO DETERMINE PROPER EAL CLASSIFICATION.***	____ SAT
COMMENTS:	____ UNSAT
STEP 14: Any Main Steamline Rad mon > 20 mR/hr	**CRITICAL STEP**
STANDARD: **<YES>** Determines Main Steamline Rad monitor 3592 (SG 'B') above 20 mR/hr (21.8 mR/hr)	
NOTES: ***NOTE: Given in initial conditions. An incorrect decision here would result in determining Fuel intact instead of breached.*** ***CRITICAL TO DETERMINE PROPER EAL CLASSIFICATION.***	____ SAT
COMMENTS:	____ UNSAT

STEP 15:	Indicate Fuel and RCS Breached on FPB Status Board	
STANDARD:	Indicates Fuel and RCS Breached on FPB Status Board	
NOTES:	***NOTE: RCS already previously determined to be Breached and Fuel status now changed from Intact to Breached.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Was Entry at Point "V"	**CRITICAL STEP**
STANDARD:	<NO> Entry determined to be at Point "U"	
NOTES:	***NOTE: Given in initial conditions. An incorrect decision here would result in determining Containment intact instead of breached.*** ***CRITICAL TO DETERMINE PROPER EAL CLASSIFICATION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 17: Is Cnmt Phase A or Vent Isolation Required? STANDARD: **<YES>** Determines Phase A and Vent Isolation required due to Safety Injection signal NOTES: ***NOTE: Safety Injection signal required due to SGTR (PATH-2 entered).*** COMMENTS:	____ SAT ____ UNSAT
STEP 18: Pathway for fission products to escape Cnmt exists other than secondary systems (steam/feed) STANDARD: **<NO>** Determines no containment breaches exist directly to atmosphere, other than via SG pathway, based on given conditions NOTES: ***NOTE: No indications given that containment is breached (intial conditions for containment are normal).*** COMMENTS:	____ SAT ____ UNSAT

STEP 19:	Primary-to-secondary leakage in any SG > 10 gpm	**CRITICAL STEP**
STANDARD:	<YES> Determines primary-to-secondary leakage in SG 'B' exceeds 10 gpm based on being required to be in PATH-2	
NOTES:	***NOTE: Indicated by elevated rad levels, requirement for reactor trip and safety injection. An incorrect decision here would result in determining Containment intact instead of breached.*** ***CRITICAL TO DETERMINE PROPER EAL CLASSIFICATION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 20:	Affected SG Safety Valves shut	
STANDARD:	<NO> Determines one Safety open on affected SG	
NOTES:	***NOTE: Given in initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 21: Indicate Cnmt Breached on FPB Status Board STANDARD: Indicates Cnmt Breached on FPB Status Board NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 22: 3 FPBs Breached / Jeopardized STANDARD: <YES> Determines all 3 FPBs are breached NOTES: ***NOTE: Incorrect response to this decision would result in improper classification due to only 2 FPBs being considered breached.*** ***CRITICAL TO ALLOW DETERMINATION OF PROPER EAL CLASSIFICATION AND PARs.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 23:	General Emergency EAL 2-1-4 exceeded	**CRITICAL STEP**
STANDARD:	Determines General Emergency EAL 2-1-4 exceeded	
NOTES:	***CUE: If candidate DOES determine EAL Classification to be General Emergency, direct candidate to now determine PROTECTIVE ACTION RECOMMENDATIONS based on this event.*** ***CONDITIONAL CUE: If candidate does NOT determine EAL Classification to be General Emergency, provide candidate with Attachment C and direct candidate to determine PROTECTIVE ACTION RECOMMENDATIONS based on this attached event.*** ***NOTE: Although conditions are different in Attachment C, same process and responses are used in remainder of JPM.***	____ SAT
COMMENTS:		____ UNSAT
STEP 24:	Locates proper procedure and required information for determining PAR	
STANDARD:	Locates Protective Action Recommendation Process in PEP-110, Attachment 3	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 25:	General Emergency Declared?	**CRITICAL STEP**
STANDARD:	<YES> Determines General Emergency declared based on just determined EAL	
NOTES:	***CRITICAL TO DETERMINE PROPER PAR.***	____ SAT
COMMENTS:	***NOTE: If using Attachment C conditions, this should be YES due to given conditions.***	____ UNSAT
STEP 26:	Substantial core damage is imminent or has occurred	**CRITICAL STEP**
STANDARD:	<YES> Determines substantial core damage is imminent or has occurred.	
NOTES:	***NOTE: For this type of event, should consider any Fuel Breach sufficient to warrant the determination that substantial core damage has occurred (See Note 4 on PAR Flowchart).*** ***CRITICAL TO DETERMINE PROPER PAR.***	____ SAT
COMMENTS:	***NOTE: If using Attachment C conditions, this should be YES due to Core Damage exceeding 1% melt.***	____ UNSAT

STEP 27:	A significant loss of reactor coolant is imminent or has occurred	**CRITICAL STEP**
STANDARD:	<YES> Determines significant loss of reactor coolant is imminent or has occurred.	
NOTES:	***NOTE: For this type of event, should consider any RCS Breach sufficient to warrant the determination that significant loss of reactor coolant is imminent or has occurred (See Note 4 on PAR Flowchart).*** ***CRITICAL TO DETERMINE PROPER PAR.***	____ SAT
COMMENTS:	***NOTE: If using Attachment C conditions, this should be YES due to Containment Hydrogen exceeding 1% or a LOCA.***	____ UNSAT
STEP 28:	Containment failure (Primary or S/G) is imminent or has occurred	**CRITICAL STEP**
STANDARD:	<YES> Determines containment failure (S/G) is imminent or has occurred.	
NOTES:	***NOTE: Faulted/Ruptured S/G with a relief valve open is considered to be an indication that a Containment Breach has occurred (See Note 3 on PAR Flowchart).*** ***CRITICAL TO DETERMINE PROPER PAR.***	____ SAT
COMMENTS:	***NOTE: If using Attachment C conditions, this should be YES due to Containment Hydrogen exceeding 4%.***	____ UNSAT

STEP 29:	Determine wind direction	**CRITICAL STEP**
STANDARD:	Determines wind direction from 220°	
NOTES:	***NOTE: Once candidate locates Meterological Data, provide Attachment B, "Wind Direction and Speed". Wind direction is always given "from".*** ***CRITICAL TO DETERMINE PROPER EVACUATION AND SHELTERING SUBZONES.***	____ SAT
COMMENTS:		____ UNSAT
STEP 30:	Determine evacuation areas	**CRITICAL STEP**
STANDARD:	Determines evacuation subzones to be A,B,C,D,E,F,K,L	
NOTES:	***NOTE: Based on 5 mile radius and wind direction using 5 miles radius /10 mile downwind table.*** ***CRITICAL TO DETERMINE PROPER EVACUATION SUBZONES.***	____ SAT
COMMENTS:		____ UNSAT

STEP 31:	Determine shelter areas	**CRITICAL STEP**
STANDARD:	Determines shelter subzones to be G,H,I,J,M,N	
NOTES:	***NOTE: Based on 10 miles downwind and wind direction using 5 miles radius /10 mile downwind table.*** ***CRITICAL TO DETERMINE PROPER SHELTERING SUBZONES.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE ATTACHMENT C
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

A **GENERAL EMERGENCY** has been declared following a large break loss of coolant accident.

The following conditions are noted:

- Core Exit Thermocouple temperatures are all between 1900°F and 2000°F.
- Radiochemistry analysis indicates that approximately 2.6% of the fuel volume has melted.
- RHR is injecting through the RCS cold legs.
- Containment Spray is operating with Containment Pressure at 18 psig.
- Containment hydrogen concentration is 5.5%.

Determine the Protective Action Recommendations for these conditions.

CANDIDATE ATTACHMENT B
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

WIND DIRECTION AND SPEED

- Wind Direction is 220°.
- Wind Speed is 18 mph.

CANDIDATE ATTACHMENT A
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

RADIATION MONITORING PANEL INDICATIONS

NOTE: Assume all radiation monitors NOT included in this list are indicating at or near their normal value.

MONITOR	DESCRIPTION	READING / ALARM STATUS
REM-1TV-3536	Turbine Building Stack 3A	3.2E-4 uCi/sec / Normal (Green)
REM-1TV-3534	Cond Vac Pump Effluent	Lowering / Was High (Red), now Alert (Yellow)
REM-1BD-3527	Steam Generator Blowdown	Lowering / Was High (Red), now Alert (Yellow)
RM-1MS-3591-SB	Main Steam Line 'A'	0.8 mR/hr / Normal (Green)
RM-1MS-3592-SB	Main Steam Line 'B'	21.8 mR/hr / High (Red)
RM-1MS-3593-SB	Main Steam Line 'C'	0.7 mR/hr / Normal (Green)

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Following a reactor trip and safety injection, EOP-PATH-2 is being implemented.

The following plant conditions are noted:
- All CSFSTs are currently green or yellow.
- All ESF equipment is functioning.
- Containment conditions are normal.
- One SG Safety is stuck open on SG 'B'.
- SG 'B' level is below the narrow range indication.
- SGs 'A' and 'C' are being controlled at approximately 25% level using AFW.
- EPP-014, Faulted Steam Generator Isolation, has been performed for SG 'B'.
- The most recent RCS activity sample was 89 uCi/cc.
- The GFFD shows no increase in count rate.
- The RCS is subcooled by 52oF.
- Core damage assessments are NOT yet available.
- Emergency dose projections are NOT yet available.

INITIATING CUES:

You are to classify this event, entering the EAL Network at Entry Point "U" as directed by PATH-2.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.a

Obtain a Grab Sample on the Plant Vent Stack

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Obtain a Grab Sample on the Plant Vent Stack

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 073A4.02 Importance: SRO 3.7 RO 3.7

K/A Statement: Ability to manually operate and / or monitor in the control room: Radiation monitoring system control panel

Task Standard: Grab sample has been obtained from the Plant Vent Stack WRGM and the system has been realigned.

Preferred Evaluation Location: Simulator X In Plant ______

Preferred Evaluation Method: Perform X Simulate ______

References: OP-118, Radiation Monitoring System

Validation Time: 10 minutes Time Critical: NO

Candidate: ______________________________

Time Start: ________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ____

____

Examiner: ______________________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

OP-118
Supervisory Key for RM-23 (Key # 55 or 61 if simulated in Control Room)

SIMULATOR OPERATOR INSTRUCTIONS: RESET TO ANY 100% POWER IC. PLACE SIMULATOR IN RUN.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is operating at 100% power.

Grab samples are required on the Plant Vent Stack.

INITIATING CUES:

You are to perform OP-118, Section 8.2, to allow grab samples to be taken.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates current copy of OP-118, Section 8.2 NOTES: ***NOTE: CUES listed in JPM may be required to be given even if JPM is performed on simulator due to not all functions being modeled.*** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Check to ensure the SKID CONT-REMOTE indicator is ON (Step 1) STANDARD: Verifies indicator is ON NOTES: ***CUE: Green light is lit.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Insert RM-23 key in the NORM/SUPV switch and turn to the SUPV position (Step 2)	**CRITICAL STEP**
STANDARD:	Inserts key and places in SUPV postion	
NOTES:	***CRITICAL TO ENABLE CHANGING FILTERS / RANGES TO ALLOW PROPER SELECTION FOR SAMPLE.*** ***NOTE: Key # 55 or # 61 must be obtained.*** ***CUE: Key has been inserted and rotated clockwise to the SUPV position.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Reads ERFIS point (Step 3)	
STANDARD:	- Reads ERFIS point RAV3509E and determines value to be 0.76E-06 - Reads ERFIS point RAV3509F and determines value to be 0.513E-03 - Reads ERFIS point RAV3509G and determines value to be 0.544E-02	
NOTES:	***CUE: RAV3509E indicates 0.76E-06.*** ***RAV3509F indicates 0.51E-03.*** ***RAV3509G indicates 0.54E-02.***	____ SAT ____ UNSAT
COMMENTS:	***NOTE: Due to both RAV3509E and RAV3509F being close to mid-scale, either may be selected. If RAV3509E is selected, perform JPM steps 5-8 and step 13. If RAV3509F is selected, perform JPM steps 9-13. Mark steps NOT performed as NA.***	

STEP 5:	Select the ERFIS Point reading closest to the middle of its WRGM/ERFIS Range (Step 3)	**CRITICAL STEP**
STANDARD:	Compares ERFIS points to table and determines RAV3509E is closest to middle of range	
NOTES:	***CRITICAL TO ALLOW DETERMINATION OF PROPER FILTER / SETTINGS TO BE USED.***	____ SAT
COMMENTS:		____ UNSAT ____ NA
STEP 6:	Select WRGM Monitor, Filter and Timer based on the ERFIS Point closest to middle of WRGM/ERFIS Range (Step 3)	**CRITICAL STEP**
STANDARD:	Selects - WRGM Monitor LOW - Filter B - Timer LOW RANGE	
NOTES:	***CRITICAL TO SELECT PROPER FILTER / SETTINGS FOR CORRECT SAMPLING.***	____ SAT
COMMENTS:		____ UNSAT ____ NA

STEP 7:	Adjust the dial on the front panel of the TIMER - LOW RANGE to the desired sample time (Step 4)	**CRITICAL STEP**
STANDARD:	Adjust the dial on the front panel of the TIMER-LOW RANGE to 25.0 (read in xx.x minutes).	
NOTES:	***CRITICAL TO SET TIMER PROPERLY TO ALLOW FOR REPRESENTATIVE SAMPLE.*** ***CUE: Timer indicates 25.0.***	____ SAT
COMMENTS:		____ UNSAT ____ NA
STEP 8:	Depress the appropriate START TIMER button (Step 6)	**CRITICAL STEP**
STANDARD:	Depresses the button associated with the timing mechanism marked TIMER- LOW RANGE	
NOTES:	***CRITICAL TO ALLOW START OF SAMPLING.*** ***CUE: TIMER - LOW RANGE is timing down and is now reading 0.00.*** ***NOTE: Mark JPM steps 9-12 as NA and continue with step 13.***	____ SAT
COMMENTS:		____ UNSAT ____ NA

STEP 9: Select the ERFIS Point reading closest to the middle of its WRGM/ERFIS Range (Step 3) STANDARD: Compares ERFIS points to table and determines RAV3509F is closest to middle of range NOTES: ***CRITICAL TO ALLOW DETERMINATION OF PROPER FILTER / SETTINGS TO BE USED.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT ____ NA
STEP 10: Select WRGM Monitor, Filter and Timer based on the ERFIS Point closest to middle of WRGM/ERFIS Range (Step 3) STANDARD: Selects - WRGM Monitor MID - Filter C - Timer MID/HIGH RANGE NOTES: ***CRITICAL TO SELECT PROPER FILTER / SETTINGS FOR CORRECT SAMPLING.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT ____ NA

STEP 11:	Adjust the dial on the front panel of the TIMER - MID/HIGH RANGE to the desired sample time (Step 5)	**CRITICAL STEP**
STANDARD:	Adjust the dial on the front panel of the TIMER- MID/HIGH RANGE to 60.0 (read in xx.x seconds).	
NOTES:	***CRITICAL TO SET TIMER PROPERLY TO ALLOW FOR REPRESENTATIVE SAMPLE.*** ***CUE: Timer indicates 60.0.***	____ SAT
COMMENTS:		____ UNSAT ____ NA
STEP 12:	Depress the appropriate START TIMER button (Step 6)	**CRITICAL STEP**
STANDARD:	Depresses the button associated with the timing mechanism marked TIMER- MID/HIGH RANGE	
NOTES:	***CRITICAL TO ALLOW START OF SAMPLING.*** ***CUE: TIMER - MID/HIGH RANGE is timing down and is now reading 00.0.***	____ SAT
COMMENTS:		____ UNSAT ____ NA

STEP 13:	Return the RM-23 Panel to the original switch position per Attachment 2 to re-align for normal sampling (Step 7)	**CRITICAL STEP**
STANDARD:	Restores controls to the following configuration: - Places RM-23 NORM/SUPV Key to NORM - Resets TIMER - MID/HIGH RANGE to '00.0 SECONDS' (if MID/HIGH RANGE used) - Resets TIMER - LOW RANGE to '00.0 MINUTES' (if LOW RANGE used) - FILTER A/B Selector - 'A' (if placed in 'B') - Verifies FILTER C/D Selector - 'C' - Verifies POWER OFF/ON Switch - 'ON'	
NOTES:	***CRITICAL TO ALLOW NORMAL SAMPLING ALIGNMENT. ONLY THE REPOSITIONING OF THOSE REQUIRED SWITCHES IS CRITICAL.*** ***CUE:*** ***1) NORM/SUPV Key has been rotated CCW to NORM.*** ***2) Both timers are indicating 00.0.*** ***3) Filters selected are 'A' and 'C'.*** ***4) POWER OFF/ON Switch is ON.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is operating at 100% power.

Grab samples are required on the Plant Vent Stack.

INITIATING CUES:

You are to perform OP-118, Section 8.2, to allow grab samples to be taken.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.b

Perform RHR IST Valve Testing

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform RHR IST Valve Testing

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 005A4.01 Importance: SRO 3.4 RO 3.6

K/A Statement: Ability to manually operate and / or monitor in the control room: Controls and indications for RHR pumps

Task Standard: OST-1008, Section 7.2 and 7.4, has been completed for 1SI-340 and RHR Pump 1A-SA has been restored to operable status.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: OST-1008, 1A-SA RHR Pump Operability Quarterly Interval Modes 1-2-3

Validation Time: 10 minutes Time Critical: NO

Candidate: ______________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ______________________

____

Examiner: ______________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

Marked up OST-1008.
Stopwatch.

SIMULATOR OPERATOR INSTRUCTIONS: RESET TO ANY 100% POWER IC. PLACE SIMULATOR IN RUN.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is operating at 100% power.

OST-1008, 1A-SA RHR Pump Operability Quarterly Interval Modes 1-2-3, is being performed following maintenance for retest of 1SI-340, LOW HEAD SI TRAIN A TO COLD LEGS.

INITIATING CUES:

You are to perform Section 7.2 and 7.4 of OST-1008 for 1SI-340 ONLY and report the results to the Unit-SCO.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OST-1008, Section 7.2, Attachment 4 and Attachment 6, and obtains calibrated stopwatch NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Inform the Control Operator and Unit SCO that the 1A-SA RHR Pump will be made inoperable (Step 7.2.1) STANDARD: Inform the Control Operator and Unit SCO NOTES: ***CUE: Control Operator and Unit SCO acknowledge information.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Record time and date that 1A-SA RHR Pump was made inoperable (Step 7.2.3)	
STANDARD:	Records current time and date on Attachment 6	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
STEP 4:	Verify 1SI-340 is in its pretest position (Step 7.2.4)	
STANDARD:	Verifies 1SI-340 is OPEN by position indication and initial on Attachment 4	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 5:	Provides control power for 1SI-340, LOW HEAD SI TRAIN A TO COLD LEG (Required to perform Step 7.2.6 and 7.2.7)	**CRITICAL STEP**
STANDARD:	Places Control Power switch for 1SI-340 in ON position and verifies power available by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE POWER TO VALVE OPERATOR.*** ***NOTE: Step 7.2.5 is NOT performed due to only performing test for valve 1SI-340.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Perform full stroke close test of 1SI-340 (Step 7.2.6)	**CRITICAL STEP**
STANDARD:	Simultaneously starts the stopwatch and place the control switch for 1SI-340 to the CLOSED position	
NOTES:	***CRITICAL TO START STOPWATCH WHEN VALVE STROKED TO PROVIDE PROPER TIMING.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Stop timing of valve stroke when 1SI-340 is fully closed (Step 7.2.7)	**CRITICAL STEP**
STANDARD:	Stops the stopwatch when 1SI-340 is fully closed and records the time on Attachment 4	
NOTES:	***CRITICAL TO ALLOW COMPARISON TO ACCEPTANCE CRITERIA.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Perform full stroke open test of 1SI-340 (Step 7.2.9)	**CRITICAL STEP**
STANDARD:	Simultaneously starts the stopwatch and place the control switch for 1SI-340 to the OPEN position	
NOTES:	***CRITICAL TO START STOPWATCH WHEN VALVE STROKED TO PROVIDE PROPER TIMING.*** ***NOTE: Step 7.2.8 is NOT performed due to only testing valve 1SI-340.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Stop timing of valve stroke when 1SI-340 is fully open (Step 7.2.10)	**CRITICAL STEP**
STANDARD:	Stops the stopwatch when 1SI-340 is fully open and records the time on Attachment 4	
NOTES:	***CRITICAL TO ALLOW COMPARISON TO ACCEPTANCE CRITERIA.***	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Verify 1SI-340 travel by indicating lights and in required post-test position (Step 7.2.11)	
STANDARD:	Verifies 1SI-340 is full open and initial the Post-Test and Full Stroke Test Verification of Travel entries on Attachment 4	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Removes control power from 1SI-340, LOW HEAD SI TRAIN A TO COLD LEG (Step 7.2.11)	
STANDARD:	Places Control Power switch for 1SI-340 in OFF position and verifies power removed by position indicating lights	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Independently verify 1SI-340 is in its post-test position (Step 7.2.12)	
STANDARD:	Independent Verifier verifies 1SI-340 is open and initials the Post-Test Verifier block on Attachment 4	
NOTES:	***CUE: Inform candidate for purposes of this JPM ONLY, independent verifications are being waived.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13: Sign off completed steps in procedure STANDARD: Signs off Steps 7.2.4 through 7.2.12 when testing of 1SI-340 is complete NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 14: Inform the Control Operator and Unit SCO that the 1A-SA RHR Pump will be made operable (Step 7.2.15) STANDARD: Inform the Control Operator and Unit SCO NOTES: ***CUE: Control Operator and Unit SCO acknowledge information.*** COMMENTS:	____ SAT ____ UNSAT

STEP 15:	Record time and date that 1A-SA RHR Pump was made operable (Step 7.2.14)	
STANDARD:	Records current time and date on Attachment 6	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
STEP 16:	Reviews data and compares to Acceptance Criteria (Step 7.4.1)	**CRITICAL STEP**
STANDARD:	Compares data on Attachment 4 to Acceptance Criteria and determines Acceptance Criteria met	
NOTES:	***CRITICAL TO DETERMINE THAT VALVE MEETS ACCEPTANCE CRITERIA.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 17: Informs Unit SCO of results STANDARD: Informs Unit SCO of results of test NOTES: ***CUE: Unit SCO acknowledges information.*** COMMENTS: ***END OF TASK***	____ SAT ____ UNSAT

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is operating at 100% power.

OST-1008, 1A-SA RHR Pump Operability Quarterly Interval Modes 1-2-3, is being performed following maintenance for retest of 1SI-340, LOW HEAD SI TRAIN A TO COLD LEGS.

INITIATING CUES:

You are to perform Section 7.2 and 7.4 of OST-1008 for 1SI-340 ONLY and report the results to the Unit-SCO.

C
CONTINUOUS
USE

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: Operations Surveillance Test

NUMBER: OST-1008

TITLE: 1A-SA RHR Pump Operability
Quarterly Interval
Modes 1-2-3

NOTE: This procedure has been screened per PLP-100 criteria and determined to be a CASE III procedure. No additional management involvement is required.

1.0 PURPOSE

To verify the operability of the 1A-SA RHR System. Tech Spec 4.5.2.f.2 for A Train is satisfied by running 1A-SA RHR Pump on recirculation and establishing a required differential pressure while checking developed flow. This test is to be performed during Modes 1, 2, and 3 only. Performance of OST-1108 satisfies the 1A-SA RHR Pump requirements of Tech Spec 3.5.2 prior to entry into Mode 3.

Tech Spec 4.0.5 and 4.6.3.1 are satisfied for the pumps and associated valves as listed on Attachments 2,3, and 4 during the pump run and valve test portions of this test. Check valves 1RH-34 and 1SI-320 Stroke Open, and 1RH-70 Stroke Closed tests are also performed as listed on Attachment 2.

This test obtains response time data if necessary for the satisfactory completion of EST-301, that partially satisfies Tech Spec 4.3.2.2 as stated in PLP-106 Attachment 2 Items 2.a, 3.a and 4.a.

2.0 REFERENCES

2.1 Plant Operating Manual Procedures

1. AP-535
2. OP-110
3. OP-111
4. OST-1107
5. OST-1108
6. OST-1814
7. SD-111
8. ISI-111
9. ISI-800
10. ISI-801

2.2 Technical Specifications

1. 4.0.5
2. 4.5.2.f.2
3. 4.6.3.1

2.3 Final Safety Analysis Report

1. TMI-Appendix
2. 6.3.2
3. 6.3.4
4. 7.3.2

2.4 Drawings

1. 5-S-1310, 1320, 1324

2. 6-B-401 0331, 0332, 0333

3. 1364-010929 S06, S19, S22, S23, S32, S33, & S34

2.5 Technical Manuals

1. VM-BJH-V04, Pumps, Residual Heat Removal

2.6 Corrective Action Program (CAP) Items

1. 90H0034

2. 92H0614

2.7 Others

1. HNP-IST-002, HNP IST Program Plan - 2nd Interval

2. LER 96-010

3.0 PREREQUISITES

1. Review the Main Control Room Status File and verify that the system is aligned in a manner that will support the performance of this test. B

2. Coordinate the performance of this OST with other plant evolutions such that the minimum equipment operating requirements of Tech Specs are met. B

3. Verify instrumentation needed for the performance of this test is free of deficiencies that affect instrument indication. B

NOTE: ERFIS computer points PRH5450A, RHR PMP A DIFF PRESS and FRH0605A, HX A HDR FLOW will indicate "NCAL" as the quality code until the pump is running.

4. Check that the ERFIS points used in Attachment 2 reflect present plant conditions with satisfactory quality codes. (I)

5. Obtain any tools and equipment required per Section 5.0. B

6. Complete the Calibration Data Sheet and verify instrumentation is within calibration. B

7. Verify Maintenance support is available for the following:

   - The installation of jumpers in PIC Cab 5 and 7.
   - The installation of the test gauge. (I)

8. Plant is in Mode 1, 2, or 3. B

9. RCS Temperature is greater than or equal to 400°F. B

10. If a leak test for RHR Trains A&B to SI TMI III D.1.1 is due per OST-1814 (as determined by the On-line schedule as being due) or if a leak test for RHR Train A Recirculation Header Vent Valves is due per OST-1814 (as determined by the On-line schedule as being due), a qualified VT-2 Level II Examiner is available to perform inspection. Additional VT-2 Level II Examiners can be used to minimize Inop/Run times. If OST-1814 tasks are not due, N/A this step. N/A

11. Personnel taking vibration data must be qualified per Reference 2.1.0.08. (I)

12. Verify all prerequisites are met, then obtain Unit SCO permission to perform this OST.

Bill Gross
Signature

Date

4.0 PRECAUTIONS AND LIMITATIONS

1. If a Safety Injection signal is received, during the performance of this procedure, terminate this test and return the RHR system to an operable status.

2. Do not operate an RHR Pump at shutoff head of 190 psig for longer than 80 minutes.

3. Failure to follow the radiological controls of AP-535 could result in personnel and equipment contamination.

4. During the period that 1SI-331 is not SHUT, an operator **must** remain at the valve and be in direct communication with the control room.

5. Do not exceed the following RHR Pump starting duty:

   - Two pump starts from ambient temperature are allowed

   - One start from operating temperature is allowed

   - For additional starts, allow 15 minutes run time or 45 minutes idle time between starts.

6. If any valve stroke time falls outside its Code Criteria, the valve will be immediately retested per the retest instructions or declared inoperable.

5.0 TOOLS AND EQUIPMENT

1. Calibrated Vibrometer

2. Calibrated Stopwatches (2)

3. Pressure Gauge (1) - Ashcroft pressure gauge or equivalent with a range of 0-60 PSIG and an accuracy of ±2% of full scale or better

4. Switched jumper

5. Locked Valve key

6.0 ACCEPTANCE CRITERIA

1. This test will be completed satisfactorily if all the data taken on Attachments 2, 3 and 4 is within the stated acceptance criteria.

7.0 PROCEDURE

NOTE: • Use of computer points is preferred over process indicators, where available.

• The next two steps should be signed off at the completion of test.

1. If, during the performance of this test, a valve stroke time exceeds its Code Criteria, immediately retest the valve per Attachment 5. (Otherwise step is N/A) ________

2. If, during the performance of this test, a valve exhibits abnormal or erratic action, document the condition in the comments section of Attachment 6.(Otherwise step is N/A) ________

7.1 1A-SA RHR Pump Test

1. Obtain calibrated stopwatches needed for this test. i

2. Perform pre-start checks on 1A-SA RHR Pump per OP-111. ________

3. Direct Maintenance to install suction pressure test gauge (0-60 PSIG Ashcroft) at Instrument Rack A1-R31-ESF-A on the test connection at 1RH-8-DV1, Instrument Valve for PI-601A. ________

4. Record 1A-SA RHR Pump idle suction pressure as read on the test gauge at PI-601A on Attachment 2. ________

5. SHUT 1SI-327, LOW HEAD SI TRAIN B TO HOT LEG CROSSOVER. ________

6. Verify 1SI-340 and 1RH-31 are in their pretest position and initial on Attachment 4. ________

7. Place the LOW HEAD SI TRAIN A TO COLD LEG CONT PWR & VLV POS (Control Power for 1SI-340) switch to ON. ________

8. Inform the Control Operator and Unit SCO that the 1A-SA RHR Pump will be made inoperable. ________

NOTE: Performance of the following Step initiates an LCO for 1A-SA RHR Pump.

9. Simultaneously start the stopwatch and momentarily place the control switch for 1SI-340, LOW HEAD SI TRAIN A TO COLD LEG to SHUT. ________

10. Stop the stopwatch when 1SI-340 reaches the SHUT position and record the time on Attachment 4. ________

11. Record time and date that 1A-SA RHR Pump was made inoperable on Attachment 6. ________

7.1 1A-SA RHR Pump Test (continued)

NOTE: The stroking of 1RH-31, RHR PUMP 1A-SA MINI FLOW will require additional personnel to operate stopwatches, one person needed to time the valve in the SHUT direction and another standing by to immediately time the valve in the OPEN direction due to the valve automatically opening once the valve is fully SHUT.

12. Stroke time 1RH-31, RHR PUMP 1A-SA MINI FLOW VALVE in the SHUT direction and record time on Attachment 4. ①

13. Stroke time 1RH-31, RHR PUMP 1A-SA MINI FLOW VALVE in the OPEN direction and record time on Attachment 4. ____

14. Verify OPEN 1RH-31 SA, RHR PUMP A-SA MINI FLOW. ____

15. Start RHR PUMP 1A-SA. ____

NOTE: During the period that 1SI-331 is not SHUT, an operator must remain at the valve and be in direct communications with the control room.

16. Align the RHR System to Recirc to the RWST by performing the following:

    a. Unlock and OPEN 1SI-448, Lo Head SI Recirc to RWST Root Isol Vlv. ____

    b. Unlock and OPEN 1SI-331, Lo Head SI Recirc to RWST Isol Vlv, 10 turns from SHUT. This throttled position will prevent pump run-out during a loss of instrument air. ____

17. Verify SHUT 1RH-31 SA, RHR PUMP 1A-SA MINI FLOW. ____

NOTE: The pump differential pressure established in the following Step should be as close to 101 psid as possible to meet IST acceptance criteria.

18. Perform the following to establish an RHR Pump differential pressure of 100 to 102 psid as indicated on ERFIS Computer Point PRH5450A or PDI-5450A (RHR PUMP A DIFF PRESS):

    a. If the differential pressure is less than 100 psid, throttle SHUT HC-603A1, RHR HEAT XCHG A OUT FLOW CONT 1RH-30, to establish a differential pressure of 100 to 102 psid, otherwise N/A this Step. ____

    b. If the differential pressure is greater than 102 psid, throttle OPEN 1SI-331 to establish a differential pressure of 100 to 102 psid, otherwise N/A this Step. ____

7.1 1A-SA RHR Pump Test (continued)

19. If OST-1814 is due (as indicated by the On-line schedule as being due), start leak inspection at this time and continue with the performance of this test. Otherwise, N/A this step.

(1) ____

20. Allow pump to run for at least 2 minutes after conditions are as stable as the system permits before recording data. ____

21. Record Residual HX 1A Outlet Temp (TRH0606A) on Attachment 2. ____

NOTE: Flow within the acceptance criteria through FE-605A also verifies Satisfactory Stroke OPEN Criteria for Check Valves 1RH-34 and 1SI-320.

22. Record RHR Loop A Flow (FRH0605A or FI-605A1, HX A HDR FLOW) on Attachment 2. ____

23. Calculate and record temperature corrected flow as directed per Note 5, on Attachment 2. ____

____
Verified

24. Record 1A-SA Pump operating suction press from test gauge at PI-601A, on Attachment 2. ____

25. Isolate test gauge by shutting 1RH-8-DV1, Instrument Valve. ____

26. Record 1A-SA RHR Pump differential pressure as indicated on PRH5450A or PDI-5450A on Attachment 2. ____

NOTE:
- The IST Program requires all readings to be taken in units of velocity (inches/second).
- To ensure consistent readings are being recorded the vibration data recorded on Attachment 3 should be the values which the qualified operator stored for each point in the Vibrometer.

27. Measure vibration and complete Attachment 3 using the values that were stored in the vibrometer. ____

7.1 1A-SA RHR Pump Test (continued)

28. If Response Time Testing of 1A-SA RHR Pump is required (as indicated by the On-line schedule as being due), perform the following substeps: (Otherwise mark this step N/A)

(i)

a. Stop 1A-SA RHR Pump. ______

b. Station an Operator in the Main Control Room with a stopwatch to measure the time from closure of 1A-SA RHR Pump Breaker until the flow rate reads greater than or equal to 3905 gpm on FI-605A1. ______

c. Simultaneously start 1A-SA RHR Pump and the stopwatch. ______

d. Stop the stopwatch when flow, as indicated on FI-605A1, reads greater than or equal to 3905 gpm. ______

e. Record the time measured in Step 7.1.0.028.d on Attachment 2. ______

f. Forward a copy of Attachment 2 to the Responsible Engineer (Response Time) for the completion of EST-301. ______

CAUTION

If 1RH-31, RHR PUMP A-SA MINI FLOW valve fails to OPEN when the following step is performed, the RHR Pump 1A-SA will be in a dead-headed condition. This condition could damage the pump.

---

29. Shut 1SI-331, Lo Head SI Recirc to RWST Isol Vlv ______

30. Verify OPEN 1RH-31 SA, RHR PUMP 1A-SA MINI FLOW. ______

31. Record RHR Pump B Disch Press as indicated on PRH0600B or PI-600B, RHR PUMP B DISCH PRESS, on Attachment 2. ______

7.1 1A-SA RHR Pump Test (continued)

32. At Instrument Rack A1-R31-ESF-A (216 RAB), record, 1A-SA RHR Pump flow from FIS-01RH-0602ASAW on Attachment 2. ______ (1)

33. OPEN 1SI-327 SB, LOW HEAD SI TRAIN B TO HOT LEG CROSSOVER. ______

______ Verified

34. Record Pump 1B-SB discharge pressure as indicated on PRH0600B or PI-600B on Attachment 2. ______

35. Record 1A-SA RHR Pump flow from FIS-01RH-0602ASAW on Attachment 2. ______

36. If OST-1814 RHR Trains A&B to SI TMI III D.1.1 Leak Test is being performed, hold at this step until leak test is completed. Otherwise, N/A this step. ______

37. Stop RHR PUMP 1A-SA. ______

38. Perform the following to reduce residual pressure in the RHR Pump discharge line:

   a. Open 1SI-331, until indicated pressure on PI-600A has decreased to the normal value of approx. 50 to 60 psig. ______

39. Perform the following to secure the RWST Recirc lineup:

   a. SHUT and lock 1SI-331. ______

   ______ Verified

   b. SHUT and lock 1SI-448. ______

   ______ Verified

40. Simultaneously start the stopwatch and momentarily place the control switch for 1SI-340 to OPEN. ______

41. Stop the stopwatch when 1SI-340 reaches the OPEN position and record the time on Attachment 4. ______

7.1 1A-SA RHR Pump Test (continued)

1

42. Place 1SI-340 to OPEN/PULL TO LOCK. ______

43. Verify OPEN 1RH-30, RHR HEAT XCHG A OUT FLOW CONT. This step can be N/A if 1RH-30 was not throttled in Step 7.1.0.018.a as indicated by Step 7.1.0.018.a being N/A. ______

______
Verifier

44. Place the LOW HEAD SI TRAIN A TO COLD LEG CONT PWR & VLV POS (Control Power for 1SI-340) switch to OFF. ______

45. Verify 1SI-340 and 1RH-31 are in their Post-Test position and initial the Post-Test and Full Stroke Test Verification of Travel entries on Attachment 4. ______

NOTE: The following step will restore 1A-SA RHR Pump to an operable status.

46. Independently verify 1SI-340 and 1RH-31 are in their Post-Test position and initial the Post-Test Verifier block on Attachment 4. ______

47. Record the time and date that 1A-SA RHR Pump is operable on Attachment 6. ______

48. Inform the Control Operator and Unit SCO that 1A-SA RHR Pump is operable. ______

NOTE: If the Acceptance Criteria in the next two steps is met for Pressure and Flow, it will also satisfy the Stroke CLOSED Criteria for 1RH-70.

49. Calculate and record the 1B-SB RHR Pump discharge pressure increase per Note 2 on Attachment 2. ______

______
Verified

50. Calculate and record the 1A-SA RHR Pump flow increase per Note 3 on Attachment 2. ______

______
Verified

51. Direct Maintenance to remove the 0 to 60 PSIG Ashcroft test gauge from the test connection at 1RH-8-DV1, Instrument Valve for PI-601A located at Instrument Rack A1-R31-ESF-A and install plug. ______

______
Verified

7.2 IST Valve Test

NOTE:
- Steps 7.2.0.04 through 7.2.0.012 are to be signed off when testing of the first seven valves listed on Attachment 4 (1SI-340 thru 1SI-326) has been completed.
- Valve position will be verified by indicating lights.

1. Obtain a calibrated stopwatch for use in the tests. ________

2. Inform the Control Operator and Unit SCO that the 1A-SA RHR Pump will be made inoperable. ________

NOTE: Performance of the following Step initiates an LCO for 1A-SA RHR Pump. Placing the valve being tested to its post-test position restores the system to an operable status.

3. Record time and date that 1A-SA RHR Pump was made inoperable on Attachment 6. ________

CAUTION

R The impact of stroking the following valves should be analyzed to ensure that no flow path would be established that would allow gravity flow of RWST water to the RCS or Containment Sump, or unwanted flow between systems. (Reference 2.6.0.01)

---

4. Verify the valve to be tested is in its pretest position and initial on Attachment 4. ________

5. Prior to stroking 1RH-25, perform the following substeps to prevent undesired flow to CSIP suction: (Step is N/A when not stroking 1RH-25)

   a. Verify VCT pressure is greater than or equal to 20 psig as indicated on PI-117.1. N/A

   b. Verify that RHR Pump A discharge pressure has decreased to the normal value of 50 to 60 psig as indicated on PI-600A. ________

NOTE: 1SI-300, 1SI-322, 1SI-326, and 1SI-340 need to be timed in both directions of travel.

6. Simultaneously start the stopwatch and place the control switch, for the valve to be tested, to the position opposite its pretest position. ________

7. Stop the stopwatch when the valve reaches its required position and record the time on Attachment 4. ________

7.2 IST Valve Test

8. If 1SI-310 SA, CONTAINMENT SUMP TO RHR PUMP A-SA, has been stroked OPEN **and** OST-1814 RHR Train A Recirculation Header Vent Valves TMI III D.1.1 Leak Test is due (as indicated by Task O S RM 093 being due), perform the following steps. Otherwise, N/A these steps.

   a. Perform OST-1814 RHR Train A Recirculation Header Vent Valves TMI III D.1.1 Leak Test. Hold at this step until leak test is completed. N/A

   b. When OST-1814 RHR Train A Recirculation Header Vent Valves TMI III D.1.1 Leak Test is completed, continue with Step 7.2.0.09.

9. Place the control switch, for the valve being tested, to its Post-Test position. Simultaneously start the stopwatch if timing is required. ______

10. If timing, stop the stopwatch when the valve reaches its Post-Test position and record the time on Attachment 4. ______

11. Verify the valve has gone to its Post-Test position and initial the Post-Test and Full Stroke Test Verification of Travel entries on Attachment 4. ______

12. Independently verify the valve being tested is in its post-test position and initial the Post-Test Verifier block on Attachment 4. ______

13. Observe caution prior to Step 7.2.0.04 and repeat Steps 7.2.0.04 through 7.2.0.012 until the first seven valves listed on Attachment 4 (1SI-340 thru 1SI-326) are tested. 1

NOTE: The following step will restore A Train RHR to an operable status.

14. Record time and date that 1A-SA RHR Pump is operable on Attachment 6. ______

15. Inform the Control Operator and Unit SCO that 1A-SA RHR Pump is operable. ______

7.3 1RH-20 and 1RH-30 Valve Testing

1. Verify OPEN HC-603A1, RHR HEAT XCHG A OUT FLOW CONT 1RH-30. ①

2. Inform the Control Operator and Unit SCO that the 1A-SA RHR Pump will be made inoperable.

NOTE: Performance of the following Step initiates an LCO for 1A-SA RHR Pump. Removing the jumpers and placing the valve being tested to its post-test position restores the system to an operable status.

3. Record time and date that 1A-SA RHR Pump was made inoperable on Attachment 6.

NOTE: Concurrent Verification is the preferred method when installing jumpers and lifting leads.

4. Direct Maintenance to perform the following:

   a. In PIC Cab 5 lift Black lead 10331G off of terminal 22 on TB-A.

   Lead lifted ______

   b. With the switch closed, install a switched jumper in PIC Cab 5, between terminal 22 and black lead 10331G.

   Installed ______

NOTE: Valve position shall be verified by stem position.

5. Station an Operator with a stopwatch at 1RH-30 and establish communications between the Operator, Maintenance at PIC Cab 5, and the Control Room.

6. Verify 1RH-30 in its pretest position and initial on Attachment 4.

7. Press the DECREASE push button for HC-603A1 (1RH-30) and verify that the valve is SHUT.

8. Simultaneously have the Operator at 1RH-30 start the stopwatch and have Maintenance at PIC Cab 5 OPEN the installed switch for 1RH-30.

9. Stop the stopwatch when 1RH-30 reaches the OPEN position and record time on Attachment 4.

10. Verify that 1RH-30 goes to the OPEN position and initial the Fail-Safe Test Position Verified block on Attachment 4.

11. Adjust HC-603A1 (1RH-30) until it reaches 100% demand.

7.3 1RH-20 and 1RH-30 Valve Testing

12. Direct Maintenance to perform the following:

    a. Remove the switched jumper in PIC Cab 5, from between terminal 22 and black lead 10331G.

    Removed (I) ______

    ______ Verifier

    b. In PIC Cab 5 land Black lead 10331G on terminal 22 on TB-A.

    Landed ______

    ______ Verifier

13. Cycle 1RH-30 SHUT then OPEN and initial the Full Stroke Test Verification of Travel on Attachment 4. ______

14. Initial for the Post-Test position on Attachment 4. ______

15. Independently verify 1RH-30 is OPEN and initial the Post-Test Verifier entry on Attachment 4. ______

16. Verify SHUT FK-605A1, RHR HEAT XCHG A BYP FLOW CONT 1RH-20. ______

NOTE: Concurrent Verification is the preferred method when installing jumpers and lifting leads.

17. Direct Maintenance to perform the following:

    a. In PIC Cab 7 lift black lead 10333B off of terminal 19 on TB-G.

    Lifted ______

    b. With the switch closed, install a switched jumper in PIC Cab 7, between terminal 19 and black lead 10333B.

    Installed ______

NOTE: Valve position shall be verified by stem position.

18. Station an Operator with a stopwatch at 1RH-20 and establish communications between the Operator, Maintenance at PIC Cab 7, and the Control Room. ______

19. Verify 1RH-20 in its pretest position and initial on Attachment 4. ______

20. Adjust FK-605A1 (1RH-20) and verify that the valve is OPEN. ______

7.3 1RH-20 and 1RH-30 Valve Testing (continued)

21. Simultaneously have the Operator at 1RH-20 start the stopwatch and have Maintenance at PIC Cab 7 OPEN the installed switch for 1RH-20. ________ 1

22. Stop the stopwatch when 1RH-20 reaches the SHUT position and record time on Attachment 4. ________

23. Verify that 1RH-20 goes to the SHUT position and initial the Fail-Safe Test Position Verified on Attachment 4. ________

24. Adjust FK-605A1 (1RH-20) until it reaches 0% demand. ________

NOTE: The following step will restore A Train RHR to an operable status.

25. Direct Maintenance to perform the following:

   a. Remove the switched jumper in PIC Cab 7, from between terminal 19 and black lead 10333B.

   Removed ________

   ____
   Verifier

   b. In PIC Cab 7 land black lead 10333B on terminal 19 on TB-G.

   Landed ________

   ____
   Verifier

26. Cycle 1RH-20 OPEN then SHUT and initial the Full Stroke Test Verification of Travel on Attachment 4. ________

27. Initial for the Post-Test position on Attachment 4. ________

28. Independently verify 1RH-20 is SHUT and initial the Post-Test Verifier entry on Attachment 4. ________

29. Inform the Control Operator and Unit SCO that 1A-SA RHR Pump is operable. ________

30. Record time and date that 1A-SA RHR Pump is operable on Attachment 6. ________

7.4 Test Completion

1. Verify all data taken on Attachments 2, 3 and 4 is within its stated acceptance criteria. ______

2. Complete the applicable portions of Attachment 6. ______

8.0 DIAGRAMS/ATTACHMENTS

Attachment 1 - Calibration Data

Attachment 2 - Performance Data

Attachment 3 - Vibration Data

Attachment 4 - Valve Test Data

Attachment 5 - Valve Retest Data Sheet

Attachment 6 - Certifications and Reviews

Calibration Data

INST/MODEL DESCRIPTION	INST ID NO.	CAL DUE DATE
Calibrated Vibrometer	1	1
Calibrated Stopwatch	CT-1448	02-01-01
Calibrated Stopwatch	1	1
0 to 60 PSIG ASHCROFT (OR EQUIVALENT)		

Performance Data

Section 7.1 1A-SA RHR Pump

NOTE 1: ERFIS Computer point PRH5450A, RHR PMP A DIFF PRESS, will indicate "NCAL" as the quality code until the pump is running.

NOTE 2: Calculate Disch. Pressure Increase as follows:

______ - ______ = ______

Step 7.1.0.034 — Step 7.1.0.031 = Step 7.1.0.049 Disch Press Inc.

NOTE 3: Calculate Flow Increase as follows:

______ - ______ = ______

Step 7.1.0.035 — Step 7.1.0.032 = Step 7.1.0.050 Flow Increase

NOTE 4: If the Acceptance Criteria is met for flow and pressure, the "stroke closed" test of check valve 1RH-70 has been verified.

NOTE 5: RHR pump flow must be temperature corrected per the following equation prior to evaluating pump performance against the established acceptance criteria:

$$Q_{ind} \times [(4.72E\text{-}7 \times T^2) + (1.38E\text{-}5 \times T) + 0.937\ ] = Q_{corr}$$

Where: Q_{corr} = Corrected or Actual Flow Rate
Q_{ind} = Indicated Flow Rate
T = Fluid Temperature

(4.72E-7) x (______ Step 7.1.0.021) x (______ Step 7.1.0.021) = ______ A

[(1.38E-5) x (______ Step 7.1.0.021)] + 0.937 = ______ B

______ Step 7.1.0.022 X (______ A + ______ B) = ______ Q_{corr}

NOTE 6: 100 psid and 3663 gpm are per T.S. 3/4.5.2.f.2

(1)

Performance Data

Section 7.1 1A-SA RHR Pump

INSTRUCTIONS

1. If pump hydraulic data does not meet acceptance criteria:
   a. Declare the pump INOPERABLE.
   b. Initiate a CR.

STEP NO.	PARAMETER	INSTRUMENT	READING	ACCEPTANCE CRITERIA
7.1.0.04	IDLE SUCTION PRESSURE	TEST GAUGE at PI-601A		≥ 10 psig
7.1.0.021	RESIDUAL HX 1A OUTLET TEMP	TRH0606A		N/A
7.1.0.022	RHR LOOP A FLOW	FRH0605A or FI-605A1		N/A
7.1.0.023	Temperature Corrected 1A-SA RHR PUMP FLOW	Q_{corr} NOTE 5		3663 to 4303.2 GPM NOTE 6
7.1.0.023	Check Valve 1RH-34 Stroke OPEN	FRH0605A or FI-605A1	SAT/UNSAT	≥ 3663 GPM
7.1.0.023	Check Valve 1SI-320 Stroke OPEN	FRH0605A or FI-605A1	SAT/UNSAT	≥ 3663 GPM
7.1.0.024	OPER SUCTION PRESSURE	TEST GAUGE at PI-601A		≥ 10 PSIG
7.1.0.026	RHR PUMP A DIFF PRESS	PRH5450A or PDI-5450A NOTE 1		100 to 102 PSID NOTE 6
7.1.0.028.e	Time to reach required flow	Stopwatch		N/A
7.1.0.031	RHR PUMP B DISCH PRESS	PRH0600B or PI-600B		N/A
7.1.0.032	1A-SA RHR PUMP FLOW	FIS-01RH-0602A SAW		N/A
7.1.0.034	RHR PUMP B DISCH PRESS	PRH0600B or PI-600B		N/A
7.1.0.035	1A-SA RHR PUMP FLOW	FIS-01RH-0602A SAW		N/A
7.1.0.049	1B-SB RHR PUMP DISCH PRESS INCREASE	NOTE 2		< 33 PSIG NOTE 4
7.1.0.050	1A-SA RHR PUMP FLOW INCREASE	NOTE 3		≤ 50 GPM NOTE 4
7.1.0.050	Check Valve 1RH-70 Stroke Closed	NOTE 2,3	SAT/UNSAT	NOTE 4

Vibration Data for RHR Pump 1A-SA

INSTRUCTIONS:

1. If pump vibration data is greater than the Acceptable Range but within the Alert Range:
   a. Prepare an E-mail or Memo to the Surveillance Testing Scheduling Coordinator directing the test frequency of the pump to be doubled.
   b. Attach a copy of the E-mail or Memo to the test package.

2. If pump vibration data meets the Required Action Criteria:
   a. Declare the pump INOPERABLE.
   b. Initiate a Condition Report (CR).

Step 7.1.0.027

RHR Pump 1A-SA	IN/SEC	ACCEPTANCE CRITERIA		
		Acceptable Range	Alert Range	Required Action
Axial		≤0.0575	>0.0575 to ≤0.138	>0.138
Top Parallel		≤0.325	>0.325 to ≤0.70	>0.70
Top Perpendicular		≤0.325	>0.325 to ≤0.70	>0.70
Bottom Parallel		≤0.1725	>0.1725 to ≤.414	>0.414
Bottom Perpendicular		≤0.13	>0.13 to ≤0.312	>0.312

Valve Testing

NOTE : All spaces next to valve number shall be filled in with an appropriate entry ; initials, data, or N/A as applicable.

PRETEST ALIGNMENT		FULL STROKE TEST					FAIL SAFE TEST		POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (SEC)					
			Verification of Travel by Ind Lights (INIT)		Stroke Time (SEC)							CODE CRITERIA				LIMITING VALUE	
												OPEN		SHUT			
Valve Number	Pretest Position	Init	Stem	Ind Lights	OPEN	SHUT	Fail Safe Position	Position Verified	Posttest Position	Pos Init	Verf Init	Low	High	Low	High	OPEN	SHUT
1SI-340	OPEN		N/A				N/A	N/A	OPEN Pull to Lock & Control Pwr OFF			9.82	13.28	9.29	12.55	17.32	16.38
1RH-31	OPEN	I	N/A	I	I	I	N/A	N/A	OPEN	I	I	6.54	10.90	5.40	9.00	15.26	12.60
1RH-25	SHUT	↓	N/A	↓	↓	N/A	N/A	N/A	SHUT	↓	↓	17.20	23.28	N/A	N/A	30.36	N/A
1SI-300	SHUT	↓	N/A	↓	↓		N/A	N/A	SHUT	↓	↓	10.77	14.57	10.22	13.82	15.00	15.00

Comments: ______________________________

Valve Testing

NOTE: All spaces next to valve number shall be filled in with an appropriate entry; initials, data, or N/A as applicable.

PRETEST ALIGNMENT			FULL STROKE TEST				FAIL SAFE TEST		POSTTEST ALIGNMENT			ACCEPTANCE CRITERIA (SEC)					
			Verification of Travel by Ind Lights (INIT)		Stroke Time (SEC)							CODE CRITERIA				LIMITING VALUE	
												OPEN		SHUT			
Valve Number	Pretest Position	Init	Stem	Ind Lights	OPEN	SHUT	Fail Safe Position	Position Verified	Posttest Position	Pos Init	Verf Init	Low	High	Low	High	OPEN	SHUT
1SI-310	SHUT		N/A			N/A	N/A	N/A	SHUT			10.77	14.55	N/A	N/A	15.00	N/A
1SI-322	OPEN		N/A				N/A	N/A	OPEN			10.48	14.16	10.26	13.86	18.48	18.09
1SI-326	OPEN		N/A				N/A	N/A	OPEN			7.43	12.37	7.36	12.26	16.32	16.16
1RH-30	OPEN			N/A		N/A	OPEN		OPEN			7.65	12.75	N/A	N/A	20.40	N/A
1RH-20	SHUT			N/A	N/A		SHUT		SHUT			N/A	N/A	2.04	6.12	N/A	10.20

Comments: ____

Valve Retest Data Sheet

NOTE: This entire Attachment is N/A if no valve is retested due to exceeding the Code Criteria.

Determine if the stroke time exceeds the Limiting Value.

1. If the stroke time exceeds the Limiting Value, declare the valve inoperable and initiate a CR. (N/A if stroke time is less than the Limiting Value)

2. If the stroke time is less than the Limiting Value, but outside the Code Criteria limits, perform the following Steps:

   a. If the cause is known to be mechanical failure, or if a retest cannot be performed expeditiously, declare the valve inoperable and initiate a CR(except for PMTRs).

   b. If retesting the valve is desired, perform the following:

NOTE: If necessary, separate marked up sheets of this OST may be used to document necessary manipulations. These sheets would be attached to this procedure and noted in the comments Section of Attachment 6.

(1) Determine which Steps need to be performed to set up conditions for testing the valve. Unit SCO concurrence must be obtained and documented in the Comments section of Attachment 6.

(2) Perform the Steps determined in the previous Step and document stroke times/valve positioning on Sheet 2.

(3) If retest results are still outside the Code Criteria, declare the valve inoperable and initiate a CR(except for PMTRs).

(4) If retest results are within the Code Criteria, perform the following:

(a) Declare the valve operable.

(b) Initiate a CR identifying test findings for the first and second tests.

(c) Send test results to Responsible Engineer (IST) for evaluation and documentation on the CR.

Valve Retest Data Sheet

(1) Fill out PRETEST ALIGNMENT, POSTTEST ALIGNMENT, and ACCEPTANCE CRITERIA values for the valve(s) being tested using the values in the initial test Attachment.

PRETEST ALIGNMENT (1)			FULL STROKE TEST		POSTTEST ALIGNMENT (1)			ACCEPTANCE CRITERIA (SEC) (1)					
			Stroke Time (SEC)					CODE CRITERIA				LIMITING VALUE	
								OPEN		SHUT			
Valve Number	Pretest Position	Init	OPEN	SHUT	Posttest Position	Pos Init	Verf Init	Low	High	Low	High	OPEN	SHUT

Certifications and Reviews

This OST was performed as a:

Periodic Surveillance Requirement: ________
Postmaintenance Operability Test: ________
Redundant Subsystem Test: ________

Plant Conditions: ______________________ Mode: ________

OST Completed By: ______________________ Date: ________
Time: ________

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
B	Bill Gross		

General Comments/Recommendations/Corrective Actions/Exceptions:

1 PMTR for 1SI-340 only. Steps not required.

Pages Used: ______________________

Certifications and Reviews (continued)

		Time	Date
Step 7.1.0.011	1A-SA RHR Pump Inoperable	1	1
Step 7.1.0.047	1A-SA RHR Pump Operable	↓	↓
Step 7.2.0.03	1A-SA RHR Pump Inoperable		
Step 7.2.0.014	1A-SA RHR Pump Operable		
Step 7.3.0.03	1A-SA RHR Pump Inoperable	1	1
Step 7.3.0.030	1A-SA RHR Pump Operable	↓	↓

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

____________________ Date: ________
Unit SCO

Reviewed By: ____________________ Date: ________
Responsible Engineer (IST)

Reviewed By: ____________________ Date: ________
Responsible System Engineer

Reviewed By: ____________________ Date: ________
ANII

After receiving the final review signature, this OST becomes a QA RECORD and should be submitted to Document Services.

Revision 13 Summary

General

This revision updated ISI baseline data for 1RH-25 dated 8/2/00. Also incorporated improvements to help minimize delay in performing section 7.2 due to current need to wait for discharge pressure to lower before proceeding. Admin changes made to remove task numbers from procedure due to Passport implementation and allow all documentation for testing of 1SI-341 and 1RH-31 to be completed in Section 7.1 per operator comment.

Description of Changes

Page	Section	Change Description
All		Updated to Revision 13.
4	3.0.4	Corrected NOTE to state that computer point will show "NCAL" quality code until the pump is running.
	3.0.10	Deleted task number for OST-1814 since Passport is deleting task numbers.(O S RM 092 and O S RM 093)
6	7.1.6	Added 1RH-31 to step.
8	7.1.19	Deleted task number for OST-1814 since Passport is deleting task numbers. (O S RM 092)
9	7.1.28	Deleted task number for Response Time Testing since Passport is deleting task numbers. (O S ER 065)
	7.1.29	Modified step to Shut 1SI-331. Moved Verifications to step 39 so that residual discharge pressure can be relieved to the RWST in step 38.
10	7.1.38,39	Added step to Open 1SI-331 after the RHR Pump is secured to allow pressure in the discharge line to be relieved to the RWST. This will prevent delay in performing Section 7.2. Shutting and verification of recirc valves moved here also.
11	7.1.45	Added 1RH-31 to step.
12	7.2.1	Deleted second NOTE since section 7.1 was changed to complete all documentation for 1SI-340 and 1SI-326 in that section.
17	7.4	Deleted step to document completion of tasks since task numbers are being deleted by Passport implementation.
22	Attachment 4	Updated ISI baseline data for 1RH-25.
24	Attachment 5	Added to 2.a and 2.b.3 that CRs are not necessary for PMTRs per IST program.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.c

Establish High Head SI Flow

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Establish High Head SI Flow

Alternate Path: Cold leg injection valves fail to open

Facility JPM #: CR-122 (Modified)

K/A Rating: 006A4.07 Importance: SRO 4.4 RO 4.4

K/A Statement: Ability to manually operate and / or monitor in the control room: ECCS pumps and valves

Task Standard: Alternate injection flow path is established.

Preferred Evaluation Location: Simulator X In Plant ______

Preferred Evaluation Method: Perform X Simulate ______

References: FRP-C.2, Response to Degraded Core Cooling
PATH-1 Guide

Validation Time: 15 minutes Time Critical: NO

Candidate: ______________________

Time Start: ________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ______________________

____

Examiner: ______________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

FRP-C.1.
PATH-1 Guide, Attachment 1.

SIMULATOR OPERATOR INSTRUCTIONS: REFER TO NEXT PAGE, "SIMULATOR SETUP INSTRUCTIONS".

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant has experienced a LB LOCA.

A MAGENTA path has been identified on CSFST for Core Cooling and a transition has been made to FRP-C.2, Response to Degraded Core Cooling.

INITIATING CUES:

You are to verify proper SI valve alignment and flow per FRP-C.2.

SIMULATOR SETUP INSTRUCTIONS

1) Reset to a 100% power IC.

2) Insert overrides to prevent 1SI-3 and 1SI-4 from opening, either automatically or manually.

3) Insert a large break LOCA

3) Perform the actions of EOP PATH-1, up through Step 53.

4) Acknowledge and reset all alarms and place the simulator in FREEZE

START TIME: ________

STEP 1:	Locates proper procedure and required information (FRP-C.2, Step 1)	
STANDARD:	Locates FRP-C.2 and PATH-1 Guide, Attachment 1	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Verifies charging line isolated (PATH-1, Att 1, 1st Bullet)	
STANDARD:	Verifies 1CS-235 and 1CS-238 closed by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Verifies CSIP suction from RWST aligned (PATH-1, Att 1, 2nd Bullet)	
STANDARD:	Verifies LCV-115B and LCV-115D open by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Verifies CSIP suction from VCT isolated (PATH-1, Att 1, 3rd Bullet)	
STANDARD:	Verifies LCV-115C and LCV-115E closed by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Verifies BIT inlet aligned (PATH-1, Att 1, 4th Bullet)	
STANDARD:	Verifies 1SI-1 and 1SI-2 open by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Determines BIT outlet improperly aligned (PATH-1, Att 1, 4th Bullet)	
STANDARD:	Determines 1SI-3 and 1SI-4 closed by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** ***NOTE: Steps 6-8 will result in requiring an alternate path later in JPM.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7: Attempts to align BIT outlet valves (PATH-1, Att 1, 4th Bullet) STANDARD: Places 1SI-3 and 1SI-4 control switches to OPEN NOTES: ***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** ***NOTE: Steps 6-8 will result in requiring an alternate path later in JPM.*** COMMENTS:	____ SAT ____ UNSAT
STEP 8: Determines BIT outlet improperly aligned (PATH-1, Att 1, 4th Bullet) STANDARD: Determines 1SI-3 and 1SI-4 still closed by position indicating lights NOTES: ***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** ***NOTE: Steps 6-8 will result in requiring an alternate path later in JPM.*** ***CUE: If informed of failure as SRO, acknowledge report.*** COMMENTS:	____ SAT ____ UNSAT

STEP 9: Verifies CSIP alternate miniflow isolation valves properly aligned (PATH-1, Att 1, 5th Bullet) STANDARD: Verifies 1CS-746 and 1CS-752 closed by position indicating lights (due to RCS pressure <1800 psig) NOTES: ***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** COMMENTS:	____ SAT ____ UNSAT
STEP 10: Verifies CSIP alternate miniflow block valves properly aligned (PATH-1, Att 1, 6th Bullet) STANDARD: Verifies 1CS-745 and 1CS-753 open by position indicating lights NOTES: ***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** COMMENTS:	____ SAT ____ UNSAT

STEP 11:	Verifies CSIP normal miniflow valves properly aligned (PATH-1, Att 1, 7th Bullet)	
STANDARD:	Verifies 1CS-214, 1CS-182, 1CS-I96, and 1CS-210 closed by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Verifies low head SI to cold leg valves properly aligned (PATH-1, Att 1, 8th Bullet)	
STANDARD:	Verifies 1SI-340 and 1SI-341 open by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Verifies low head SI to hot leg crossover valves properly aligned (PATH-1, Att 1, 9th Bullet)	
STANDARD:	Verifies 1SI-326 and 1SI-327 open by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Verifies low head SI to hot leg valve 1SI-359 properly aligned (PATH-1, Att 1, 10th Bullet)	
STANDARD:	Verifies 1SI-359 closed by position indicating lights	
NOTES:	***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15: Verifies RHR pump suction from RWST properly aligned (PATH-1, Att 1, 11th Bullet) STANDARD: Verifies 1SI-322 and 1SI-323 open by position indicating lights NOTES: ***NOTE: Steps 2 through 15 may be performed in any order provided Steps 7 and 8 are performed immediately following Step 6.*** COMMENTS:	____ SAT ____ UNSAT
STEP 16: Verifies CSIPs running (FRP-C.2, Step 2.a) STANDARD: Verifies CSIPs 1A-SA and 1B-SB running by pump status lights NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 17: Determines SI flow is inadequate (FRP-C.2, Step 2.b) STANDARD: Determines flow indication on FI-943 is zero NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 18: Energizes control power to alternate high head SI to cold legs valve 1SI-52 (FRP-C.2, Step 2.b.1 RNO - Skill of Craft) STANDARD: Places control power for 1SI-52 to ON and verifies control power orange light ON when control switch for 1SI-52 taken out of Pull-To-Lock position NOTES: ***CRITICAL TO ALLOW OPERATING THE VALVE. VERIFICATION OF LIGHT NOT CRITICAL.*** ***NOTE: Only one set of Steps 18-20, 21-23, 24-26, or 27-29 are to be performed. Preferred that lower number steps be performed, but acceptable to perform any set. Each of these sets is an alternate path.*** ***If Steps 18-20 are not performed, check Step as "N/A".*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT ____ N/A

		CRITICAL STEP
STEP 19:	Establishes alternate high head SI to cold legs valve 1SI-52 flow path (FRP-C.2, Step 2.b.1 RNO - Skill of Craft)	
STANDARD:	Places 1SI-52 control switch to OPEN and verifies valve opens by position indicating lights	
NOTES:	***CRITICAL TO ESTABLISH ALTERNATE HIGH HEAD INJECTION.*** ***NOTE: If Steps 18-20 are not performed, check Step as "N/A".***	____ SAT ____ UNSAT
COMMENTS:		____ N/A
STEP 20:	Verifies SI flow indication (FRP-C.2, Step 2.b.1 RNO - Skill of Craft)	
STANDARD:	Verifies flow indication on FI-940 indicates > 200 gpm and FI-943 indicates zero.	
NOTES:	***NOTE: If Steps 18-20 are not performed, check Step as "N/A".*** ***If Steps 18-20 are performed, continue with Step 30.***	____ SAT ____ UNSAT
COMMENTS:		____ N/A

STEP 21:	Energizes control power for SI to hot leg valve 1SI-86 (FRP-C.2, Step 2.b.2 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places control power to ON and verifies control power orange light ON when control switch for 1SI-86 taken out of Pull-To-Lock position	
NOTES:	***CRITICAL TO ALLOW OPERATING THE VALVE. VERIFICATION OF LIGHT NOT CRITICAL.*** ***NOTE: Only one set of Steps 18-20, 21-23, 24-26, or 27-29 are to be performed. Preferred that lower number steps be performed, but acceptable to perform any set. Each of these sets is an alternate path.*** ***If Steps 21-23 are not performed, check Step as "N/A".***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A
STEP 22:	Establishes high head SI to hot legs valve 1SI-86 flow path (FRP-C.2, Step 2.b.2 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places 1SI-86 control switch to OPEN and verifies valve opens by position indicating lights	
NOTES:	***CRITICAL TO ESTABLISH ALTERNATE HIGH HEAD INJECTION.*** ***NOTE: If Steps 21-23 are not performed, check Step as "N/A".***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A

STEP 23:	Verifies SI flow indication (FRP-C.2, Step 2.b.2 RNO - Skill of Craft)	
STANDARD:	Verifies flow indication on FI-940 indicates zero and FI-943 indicates > 200 gpm	
NOTES:	***NOTE: If Steps 21-23 are not performed, check Step as "N/A".*** ***If Steps 21-23 are performed, continue with Step 30.***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A
STEP 24:	Energizes control power for alternate high head SI to hot leg valve 1SI-107 (FRP-C.2, Step 2.b.3 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places control power to ON and verifies control power orange light ON when control switch for 1SI-107 taken out of Pull-To-Lock position	
NOTES:	***CRITICAL TO ALLOW OPERATING THE VALVE. VERIFICATION OF LIGHT NOT CRITICAL.*** ***NOTE: Only one set of Steps 18-20, 21-23, 24-26, or 27-29 are to be performed. Preferred that lower number steps be performed, but acceptable to perform any set. Each of these sets is an alternate path.*** ***If Steps 24-26 are not performed, check Step as "N/A".***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A

STEP 25:	Establishes alternate high head SI to hot legs valve 1SI-107 flow path (FRP-C.2, Step 2.b.3 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places 1SI-107 control switch to OPEN and verifies valve opens by position indicating lights	
NOTES:	***CRITICAL TO ESTABLISH ALTERNATE HIGH HEAD INJECTION.*** ***NOTE: If Steps 24-26 are not performed, check Step as "N/A".***	____ SAT ____ UNSAT ____ N/A
COMMENTS:		
STEP 26:	Verifies SI flow indication (FRP-C.2, Step 2.b.3 RNO - Skill of Craft)	
STANDARD:	Verifies flow indication on FI-940 indicates > 200 gpm and FI-943 indicates zero.	
NOTES:	***NOTE: If Steps 24-26 are not performed, check Step as "N/A".*** ***If Steps 24-26 are performed, continue with Step 30.***	____ SAT ____ UNSAT ____ N/A
COMMENTS:		

STEP 27:	Opens Charging Line Isolation valve 1CS-235 (FRP C.2, Step 2.b.4 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places 1CS-235 control switch to OPEN and verifies valve opens by position indicating lights	
NOTES:	***CRITICAL TO ESTABLISH ALTERNATE HIGH HEAD INJECTION.*** ***NOTE: Only one set of Steps 18-20, 21-23, 24-26, or 27-29 are to be performed. Preferred that lower number steps be performed, but acceptable to perform any set. Each of these sets is an alternate path.*** ***If Steps 27-29 are not performed, check Step as "N/A".***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A
STEP 28:	Opens Charging Line Isolation valve 1CS-238 (FRP C.2, Step 2.b.4 RNO - Skill of Craft)	**CRITICAL STEP**
STANDARD:	Places 1CS-238 control switch to OPEN and verifies valve opens by position indicating lights	
NOTES:	***CRITICAL TO ESTABLISH ALTERNATE HIGH HEAD INJECTION.*** ***NOTE: If Steps 27-29 are not performed, check Step as "N/A".***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A

STEP 29:	Verifies Charging Flow (FRP-C.2, Step 2.b.4 RNO - Skill of Craft)	
STANDARD:	Verifies FI-122 indicates > 0 gpm	
NOTES:	***NOTE: If Steps 27-29 are not performed, check Step as "N/A".***	____ SAT ____ UNSAT ____ N/A
COMMENTS:		
STEP 30:	Verifies RHR pumps running due to RCS pressure < 190 psig (FRP-C.2, Step 2.c and Step 2.d)	
STANDARD:	Verifies RHR pumps 1A-SA and 1B-SB running by pump status lights	
NOTES:		____ SAT ____ UNSAT
COMMENTS:		

STEP 31: Verifies adequate RHR flow (FRP-C.2, Step 2.e) STANDARD: Verifies both RHR train flows indicate > 1000 gpm NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 32: Informs Unit SCO that SI alignment and flow has been verified, but alternate path was established due to failure of BIT outlet valves STANDARD: Informs Unit SCO NOTES: ***CUE: Unit SCO acknowledges report.*** COMMENTS: ***END OF TASK***	____ SAT ____ UNSAT

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant has experienced a LB LOCA.

A MAGENTA path has been identified on CSFST for Core Cooling and a transition has been made to FRP-C.2, Response to Degraded Core Cooling.

INITIATING CUES:

You are to verify proper SI valve alignment and flow per FRP-C.2.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-B.1.c

Manually Align SI Following a LOSP

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Manually Align SI Following a LOSP

Alternate Path: CSIP alternate miniflow valve fails to close.

Facility JPM #: CR-056

K/A Rating: 006A4.02 Importance: SRO 3.8 RO NA

K/A Statement: Ability to manually operate and / or monitor in the control room: Valves

Task Standard: SI valves have been manually aligned per EPP-003, Step 2.

Preferred Evaluation Location: Simulator X In Plant ______

Preferred Evaluation Method: Perform X Simulate ______

References: EPP-003, Loss of All AC Power Recovery with SI Required

Validation Time: 5 minutes Time Critical: NO

Candidate: ____________________________

Time Start: ________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ____

____

Examiner: __________________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

EPP-003.

SIMULATOR OPERATOR INSTRUCTIONS: REFER TO NEXT PAGE, "SIMULATOR SETUP INSTRUCTIONS".

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant was at 100 % power with the "B" EDG OOS.

A reactor trip occurred due to a loss of off-site power and the "A" EDG could not be started.

EPP-001 was entered and followed until power could be restored to 1A-SA and 1B-SB from off-site.

A transition has been made to EPP-003.

INITIATING CUES:

You are to manually align SI valves per EPP-003, Step 2, in preparation of establishing SI flow.

SIMULATOR SETUP INSTRUCTIONS

1) Reset to a 100% power IC.

2) Insert a failure of the "A" EDG to start <IMF DSG01 1>

3) Shift the "B" EDG to "Local and Maintenance Mode" <MRF DSG021 LOCAL and MRF DSG022 MAINTAIN>.

4) Then insert a loss of all AC <IMF EPS01 1>.

5) Once the plant is stable, initiate an SI and wait 60 seconds and RESET the SI signal.

6) Open the breakers for the sequencers <MRF EPS124 OPEN and MRF EPS125 OPEN> and control power for both CCW pumps <MRF CCW038 RACK_OUT and MFR CCW039 RACK_OUT>.

7) Then fail RCP "A" seal to the extent that a safety injection is needed <IMF RCS14A 100 0; IMF RCS15A; IMF RCS16A; and IMF RCS18A 4 0>.

8) Allow the pressurizer to empty and pressure to drop to < 1500 psig, then restore power to all buses <DMF EPS01>.

9) Use the EOP-001 attachment to restore power to 1A-SA and 1B-SB from off-site.

10) Fail 1CS-746 in the OPEN position <IOR XA2O189G OFF and IOR XA2O189R ON>.

11) Acknowledge and reset all alarms and place the simulator in FREEZE

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates EPP-003, Step 2 NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Open CSIP suction from RWST valve, LCV-115B (Step 2.a) STANDARD: Control switch for LCV-115B placed in OPEN and valve verified open by indicating lights NOTES: ***CRITICAL TO ALIGN SUCTION TO CSIPs FROM RWST.*** ***NOTE: Steps 2 and 3 can be performed in any order AND it is only critical to open one or the other valves although it is expected that both valves will be opened.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 3:	Open CSIP suction from RWST valve, LCV-115D (Step 2.a)	**CRITICAL STEP**
STANDARD:	Control switch for LCV-115D placed in OPEN and valve verified open by indicating lights	
NOTES:	***CRITICAL TO ALIGN SUCTION TO CSIPs FROM RWST.*** ***NOTE: Steps 2 and 3 can be performed in any order AND it is only critical to open one or the other valves although it is expected that both valves will be opened.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Close VCT Outlet valve, LCV-115C (Step 2.b)	**CRITICAL STEP**
STANDARD:	Control switch for LCV-115C placed in CLOSE and valve verified closed by indicating lights	
NOTES:	***CRITICAL TO ENSURE PROPER ALIGNMENT FOR SI.*** ***NOTE: Steps 4 and 5 can be performed in any order AND it is only critical to close one or the other valves although it is expected that both valves will be closed.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Close VCT Outlet valve, LCV-115E (Step 2.b)	**CRITICAL STEP**
STANDARD:	Control switch for LCV-115E placed in CLOSE and valve verified closed by indicating lights	
NOTES:	***CRITICAL TO ENSURE PROPER ALIGNMENT FOR SI.*** ***NOTE: Steps 4 and 5 can be performed in any order AND it is only critical to close one or the other valves although it is expected that both valves will be closed.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Close Charging Line Isolation valve, 1CS-235 (Step 2.c)	**CRITICAL STEP**
STANDARD:	Control switch for 1CS-235 placed in CLOSE and valve verified closed by indicating lights	
NOTES:	***CRITICAL TO ENSURE PROPER ALIGNMENT FOR SI.*** ***NOTE: Steps 6 and 7 can be performed in any order AND it is only critical to close one or the other valves although it is expected that both valves will be closed.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7: Close Charging Line Isolation valve, 1CS-238 (Step 2.c) STANDARD: Control switch for 1CS-238 placed in CLOSE and valve verified closed by indicating lights NOTES: ***CRITICAL TO ENSURE PROPER ALIGNMENT FOR SI.*** ***NOTE: Steps 6 and 7 can be performed in any order AND it is only critical to close one or the other valves although it is expected that both valves will be closed.*** COMMENTS:	____ SAT ____ UNSAT
STEP 8: Verifies RCS pressure below pressure which CSIP miniflow valves should be closed (Step 2.d) STANDARD: RCS pressure determined to be < 1800 psig NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 9: Checks CSIP 'A' alternate miniflow valve, 1CS-746 closed (Step 2.e) STANDARD: Determines 1CS-746 is open by position indicating lights NOTES: ***NOTE: Steps 9 through 11 or Step 12 may be performed in either order.*** COMMENTS:	____ SAT ____ UNSAT
STEP 10: Attempts to close CSIP 'A' alternate miniflow valve, 1CS-746 (Step 2.e) STANDARD: Places 1CS-746 control switch to CLOSE and determines valve has failed to close NOTES: ***NOTE: Steps 10 and 11 are the alternate path for this JPM.*** COMMENTS:	____ SAT ____ UNSAT

STEP 11:	Closes the failed alternate miniflow valve associated block valve, 1CS-745 (Step 2.e RNO)	**CRITICAL STEP**
STANDARD:	Places 1CS-745 control switch in CLOSE and verifies valve closed by indicating lights	
NOTES:	***CRITICAL TO ISOLATE FAILED OPEN MINIFLOW VALVE.*** ***NOTE: Steps 10 and 11 are the alternate path for this JPM.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Checks CSIP 'B' alternate miniflow valve, 1CS-752 closed (Step 2.e)	
STANDARD:	Determines 1CS-752 is closed by position indicating lights	
NOTES:	***NOTE: Steps 9 through 11 or Step 12 may be performed in either order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Closes normal miniflow isolation valve, ICS-182 (Step 2.f)	**CRITICAL STEP**
STANDARD:	Places 1CS-182 control switch in CLOSE and verifies valve closed by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE REQUIRED SI FLOW.*** ***NOTE: Steps 13 through 16 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 14:	Closes normal miniflow isolation valve, ICS-196 (Step 2.f)	**CRITICAL STEP**
STANDARD:	Places 1CS-196 control switch in CLOSE and verifies valve closed by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE REQUIRED SI FLOW.*** ***NOTE: Steps 13 through 16 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Closes normal miniflow isolation valve, ICS-210 (Step 2.f)	**CRITICAL STEP**
STANDARD:	Places 1CS-210 control switch in CLOSE and verifies valve closed by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE REQUIRED SI FLOW.*** ***NOTE: Steps 13 through 16 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Closes normal miniflow isolation valve, ICS-214 (Step 2.f)	**CRITICAL STEP**
STANDARD:	Places 1CS-214 control switch in CLOSE and verifies valve closed by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE REQUIRED SI FLOW.*** ***NOTE: Steps 13 through 16 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Opens BIT Inlet valve, 1SI-1 (Step 2.g)	**CRITICAL STEP**
STANDARD:	Places 1SI-1 control switch in OPEN and verifies valve open by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE SI FLOW TO RCS.*** ***NOTE: Either Step 17 or 18 is critical. Steps 17 through 20 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Opens BIT Inlet valve, 1SI-2 (Step 2.g)	**CRITICAL STEP**
STANDARD:	Places 1SI-2 control switch in OPEN and verifies valve open by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE SI FLOW TO RCS.*** ***NOTE: Either Step 17 or 18 is critical. Steps 17 through 20 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Opens BIT Outlet valve, 1SI-3 (Step 2.g)	**CRITICAL STEP**
STANDARD:	Places 1SI-3 control switch in OPEN and verifies valve open by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE SI FLOW TO RCS.*** ***NOTE: Either Step 19 or 20 is critical. Steps 17 through 20 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT
STEP 20:	Opens BIT Outlet valve, 1SI-4 (Step 2.g)	**CRITICAL STEP**
STANDARD:	Places 1SI-4 control switch in OPEN and verifies valve open by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE SI FLOW TO RCS.*** ***NOTE: Either Step 19 or 20 is critical. Steps 17 through 20 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant was at 100 % power with the “B” EDG OOS.

A reactor trip occurred due to a loss of off-site power and the “A” EDG could not be started.

EPP-001 was entered and followed until power could be restored to 1A-SA and 1B-SB from off-site.

A transition has been made to EPP-003.

INITIATING CUES:

You are to manually align SI valves per EPP-003, Step 2, in preparation of establishing SI flow.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.d

Restore Off-Site Power to an Emergency Bus

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Restore Off-Site Power to an Emergency Bus

Alternate Path: NONE

Facility JPM #: CR-027

K/A Rating: 062A4.01 Importance: SRO 3.1 RO 3.3

K/A Statement: Ability to manually operate and / or monitor in the control room: All breakers (including available switchyard)

Task Standard: Bus 1A-SA is energized from off-site power.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: OP-156.02, AC Electrical Distribution

Validation Time: 10 minutes Time Critical: NO

Candidate: ____________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____________________

____

Examiner: ____________________ Date: ________

Signature

Tools/Equipment/Procedures Needed:

OP-156.02.
Synchronization Key.

SIMULATOR OPERATOR INSTRUCTIONS:

1) Initialize to any 100% power IC.
2) Disable EDG 1A-SA.
3) Insert a loss of offsite power.
4) Verify EDG 1B-SB is supplying its bus.
5) Ensure switchyard is re-energized.
6) Acknowledge and reset all alarms and place the simulator in FREEZE.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

A loss of off-site power has occurred.

Bus 1B-SB is being carried by the EDG, but EDG 1A-SA failed to start. The switchyard has been re-energized.

INITIATING CUES:

You are to restore power to Bus 1A-SA from off-site power per OP-156.02, Section 8.17.

The dispatcher has given permission to re-energize the bus from off-site power. All initial conditions have been met.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OP-156.02, Section 8.17 NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Verifies the START UP XFMR 1A LOCKOUT SU 1A relay on SU XFMR PROTECTIVE RELAY PANEL 1A is reset (Step 8.17.2.1.a) STANDARD: Verifies the START UP XFMR 1A LOCKOUT SU 1A relay on SU XFMR PROTECTIVE RELAY PANEL 1A reset by black flag and white indicating light lit NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Closes 52-2, Startup Xfmr 1A/Cape Fear Tie, and / or 52-3, Startup Xfmr 1A (Step 8.17.2.1.b)	**CRITICAL STEP**
STANDARD:	Places 52-2 and / or 52-3 control switch to CLOSE and verifies closed by position indicating lights	
NOTES:	***CRITICAL TO ALLOW PROVIDING POWER FROM OFF-SITE TO BUS.*** ***NOTE: Either one or both of the switches may be taken to close.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Verifies power available to SUT from X-windings (Step 8.17.2.1.c.1)	
STANDARD:	Rotates Start Up Xfmr A X Winding Voltage through all positions and verifies voltmeter EI-503, X Winding Volts, reading between 6.55 and 7.25KV	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5: Verifies power available to SUT from Y-windings (Step 8.17.2.1.c.2) STANDARD: Rotates Start Up Xfmr A Y Winding Voltage through all positions and verifies voltmeter EI-504, Y Winding Volts, reading between 6.55 and 7.25KV NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 6: Verifies Auxiliary Bus 1D de-energized (Step 8.17.2.1.d) STANDARD: Directs AO to verify that all load feeder breakers are open on Auxiliary Bus 1D as required per the Unit SCO. NOTES: ***CUE: AO reports all load feeder breakers on Aux Bux 1D are open.*** COMMENTS:	____ SAT ____ UNSAT

STEP 7:	Energizes synchronizing circuit (Step 8.17.2.1.e)	**CRITICAL STEP**
STANDARD:	Places the START UP XFMR A TO AUX BUSES A & D SYNCHRONIZER switch in the BKR 101 position	
NOTES:	***CRITICAL TO ENABLE CLOSING OF BREAKER.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Energizes Aux Bus 1D (Step 8.17.2.1.f)	**CRITICAL STEP**
STANDARD:	Places BKR 101, START UP XFMR A TO AUX BUS D, in the CLOSE position and verifies breaker closes by position indicating lights	
NOTES:	**CRITICAL TO PROVIDE POWER TO AUX BUS.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 9: Verifies proper voltage on Aux Bus 1D (Step 8.17.2.1.g) STANDARD: Verifies voltage on EI-561, AUX BUS 1D VOLT, is between 6.55 to 7.25KV. NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 10: De-energizes synchronizing circuit (Step 8.17.2.1.h) STANDARD: Places the START UP XFMR A TO AUX BUSES A & D SYNCHRONIZER switch in the OFF position NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 11:	Closes Aux Bus 1D supply to Bus 1A-SA (Step 8.17.2.1.i)	**CRITICAL STEP**
STANDARD:	Places BREAKER 104, AUX BUS D TO EMERGENCY BUS A-SA, in the CLOSE position and verifies breaker closes by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE POWER TO BUS.***	____ SAT
COMMENTS:		____ UNSAT
	NOTE: Steps 8.17.2.1.j not performed due to breaker 106 being open and Step 8.17.2.1.k only provides directions to continue in procedure if breaker is open.	
STEP 12:	Energizes synchronizing circuit for breaker 105 (Step 8.17.2.1.l)	**CRITICAL STEP**
STANDARD:	Places EMERGENCY BUS A-SA TO AUX BUS D SYNCHRONIZER Switch in the SYNC position	
NOTES:	***CRITICAL TO ALLOW CLOSURE OF BREAKER.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13: Closes supply breaker to 1A-SA from Aux Bus D (Step 8.17.2.1.m) STANDARD: Places BREAKER 105 SA, EMERGENCY BUS A-SA TO AUX BUS D TIE, in the CLOSE position and verifies breakers closes by position indicating lights NOTES: ***CRITICAL TO PROVIDE POWER TO BUS.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT
STEP 14: Verifies proper voltage on Bus 1A-SA (Step 8.17.2.1.n) STANDARD: Verifies EI-6956A1 SA, EMER BUS A VOLTS, indicates between 6.55 and 7.25KV across each phase. NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 15:	De-energizes synchronizing circuit (Step 8.17.2.1.o)	
STANDARD:	Places the EMERGENCY BUS A-SA TO AUX BUS D SYNCHRONIZER Switch in the OFF position	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
STEP 16:	Verifies Emergency Bus A3 Supply Breaker, A3 B-SA, closed (Step 8.17.2.1.p.1)	
STANDARD:	Verifies breaker closed by position indicating lights	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 17:	Verifies Emergency Bus A SA to Xfmr A3 SA, A3 A-SA, closed (Step 8.17.2.1.p.2)	**CRITICAL STEP**
STANDARD:	Places breaker A3 A-SA in the CLOSE position and verifies breakers closes by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE POWER TO BUS.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 18:	Verifies Emergency Bus A2 Supply Breaker, A2 B-SA, closed (Step 8.17.2.1.p.3)	
STANDARD:	Verifies breaker closed by position indicating lights	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 19:	Verifies Emergency Bus A SA to Xfmr A2 SA, A2 A-SA, closed (Step 8.17.2.1.p.4)	
STANDARD:	Verifies breaker closed by position indicating lights	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 20:	Verifies Emergency Bus A1 Supply Breaker, A1 B, closed (Step 8.17.2.1.p.5)	
STANDARD:	Verifies breaker closed by position indicating lights	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 21:	Verifies Emergency Bus A SA to Xfmr A1, A1 A-SA, closed (Step 8.17.2.1.p.6)	**CRITICAL STEP**
STANDARD:	Places breaker A1 A-SA in the CLOSE position and verifies breakers closes by position indicating lights	
NOTES:	***CRITICAL TO PROVIDE POWER TO BUS.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 22:	Informs Unit-SCO that Bus 1A-SA is being supplied by off-site power	
STANDARD:	Informs Unit SCO	
NOTES:	***CUE: Unit SCO acknowledges report.***	
COMMENTS:		____ SAT ____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A loss of off-site power has occurred.

Bus 1B-SB is being carried by the EDG, but EDG 1A-SA failed to start. The switchyard has been re-energized.

INITIATING CUES:

You are to restore power to Bus 1A-SA from off-site power per OP-156.02, Section 8.17.

The dispatcher has given permission to re-energize the bus from off-site power. All initial conditions have been met.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.e

Secure One Train of CCW to the RHR HXs

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Secure One Train of CCW to the RHR HXs

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 008A4.01 Importance: SRO NA RO 3.3

K/A Statement: Ability to operate and / or monitor in the control room: CCW indications and controls

Task Standard: Train 'A' CCW is supplying the RHR HX and the non-essential loop.

Preferred Evaluation Location: Simulator X In Plant ____

Preferred Evaluation Method: Perform X Simulate ____

References: OP-145, Component Cooling Water

Validation Time: 10 minutes Time Critical: NO

Candidate: ______________________

Time Start: ________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ______________________

____

Examiner: ______________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

OP-145.

SIMULATOR OPERATOR INSTRUCTIONS:

1) Initialize to an IC where RHR is in operation (IC-2).

2) Ensure both 'A' and 'B' CCW pumps are operating.

3) Ensure the following valves are open: 1CC-147, 1CC-167, 1CC-113, and 1CC-127.

4) Ensure the following valves are closed: 1CC-99 and 1CC-128.

5) Adjust CCW flows <MRF CCW030 25>.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is in Mode 4. Train 'B' RHR has been removed from service.

Both trains of CCW are in operation, with Train 'A' CCW supplying only the essential loop and Train 'B' CCW supplying the essential and non-essential loops.

INITIATING CUES:

You are to secure CCW Pump 'B' in accordance with OP-145, Section 8.14.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OP-145, Section 8.14 NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Isolates CCW for the RHR HX to be taken out of service (Step 8.14.2.1.1) STANDARD: Closes 1CC-167, CCW FROM RHR HEAT EXCHANGER B-SB, and verifies the valve closed NOTES: ***CRITICAL TO ESTABLISH FLOW LIMITATIONS WITHIN THE CAPABILITY OF A SINGLE PUMP.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 3:	Verifies system flow within limits of a single pump (Step 8.14.2.1.2)	
STANDARD:	Verifies total system flow is less than 11,000 gpm by adding the indication on FI-652.1 and FI-653.1	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
STEP 4:	Verifies 1CC-99, CCW HEAT EXCHANGER A TO NONESSENTIAL SUP, open (Step 8.14.2.1.3, 1st Bullet)	**CRITICAL STEP**
STANDARD:	Places 1CC-99 control switch in OPEN and verifies the valve opens by observing position indicating lights	
NOTES:	***CRITICAL TO ALLOW SUPPLYING THE NON-ESSENTIAL LOOP FROM THE RUNNING CCW PUMP.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 5:	Verifies 1CC-113, CCW HEAT EXCHANGER B TO NONESSENTIAL SUP, open (Step 8.14.2.1.3, 2nd Bullet)	
STANDARD:	Verifies 1CC-113 OPEN by observing position indicating lights	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Verifies 1CC-127, CCW NONESSENTIAL RETURN TO HEADER B, open (Step 8.14.2.1.3, 3rd Bullet)	
STANDARD:	Verifies 1CC-127 OPEN by observing position indicating lights	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Verifies 1CC-128, CCW NONESSENTIAL RETURN TO HEADER A, open (Step 8.14.2.1.3, 4th Bullet)	**CRITICAL STEP**
STANDARD:	Places 1CC-128 control switch in OPEN and verifies the valve opens by observing position indicating lights	
NOTES:	***CRITICAL TO ALLOW SUPPLYING THE NON-ESSENTIAL LOOP FROM THE RUNNING CCW PUMP.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Stop CCW Pump 1B-SB (Step 8.14.2.1.4)	**CRITICAL STEP**
STANDARD:	Places CCW Pump 1B-SB control switch in STOP and verifies the pump stops by observing breaker indicating lights	
NOTES:	***CRITICAL TO ESTABLISH A SINGLE RUNNING CCW PUMP.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9: Verifies proper flow indication (Step 8.14.2.1.5) STANDARD: Verifes flow indication on FI-652.1 is < 11,000 gpm and FI-653.1 is 0 gpm NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 10: Verifies adequate system pressure (Step 8.14.2.1.5) STANDARD: Verifies CCW header pressure indicates > 75 psig on PI-649 and PI-650 NOTES: COMMENTS: ***END OF TASK***	____ SAT ____ UNSAT

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in Mode 4. Train 'B' RHR has been removed from service.

Both trains of CCW are in operation, with Train 'A' CCW supplying only the essential loop and Train 'B' CCW supplying the essential and non-essential loops.

INITIATING CUES:

You are to secure CCW Pump 'B' in accordance with OP-145, Section 8.14.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.f

Place Containment Cooling in Maximum Cooling Mode

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Place Containment Cooling in Maximum Cooling Mode

Alternate Path: Lead fan in AH-1 fails to start.

Facility JPM #: CR-033 (Modified)

K/A Rating: 022A4.01 Importance: SRO NA RO 3.6

K/A Statement: Ability to operate and / or monitor in the control room: CCS fans

Task Standard: Containment Cooling Air Handling Unit fans are running in Maximum Cooling Mode.

Preferred Evaluation Location: Simulator X In Plant ________

Preferred Evaluation Method: Perform X Simulate ________

References: OP-169, Containment Cooling And Ventilation
APP-ALB-029, Main Control Board

Validation Time: 10 minutes Time Critical: NO

Candidate: ________________________________

Time Start: __________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____

____

Examiner: ________________________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

OP-169.
APP-ALB-029.

SIMULATOR OPERATOR INSTRUCTIONS:
1) Initialize to a 100% power IC.
2) Ensure Train A Containment Cooling Fans are running in hi-speed (AH-2 A-SA and B-SA and AH-3 A-SA and B-SA).
3) NSW to 'A' ESW header and 'B' ESW pump is running.
4) Insert override / malfunction to cause trip of AH-1 A-SB fan after start.
Trigger E1 = IMF HVA01A
Trigger E1 = IOR XN29B03 ALARM_ON
5) Acknowledge and reset all alarms and FREEZE simulator.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

A Containment Entry is required. Train 'A' Containment Fan Cooler fans are currently running.

NSW is aligned to 'A' ESW header and 'B' ESW pump is running.

INITIATING CUES:

You are to start up the Containment Fan Cooler Units in the maximum cooling mode.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OP-169, Section 8.1 (Step 8.1.2.1) NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Starts a fan in LO-SPD for AH-1 STANDARD: Places the control switch for fan cooler AH-1 A-SB to LO-SPD and determines the fan fails starts by observing fan position indicating lights NOTES: ***SIMULATOR OPERATOR: ONCE FAN IS STARTED IN LOW SPEED, CAUSE FAN TO TRIP BY USING TRIGGER E1.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3: Determines fan trip STANDARD: Determines fan has tripped based on position indicating lights and alarm ALB-029-03-2, CONTAINMENT FAN COOLERS AH-1 LOW FLOW - O/L NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 4: Refers to APP-ALB-029-03-2 and determines need to start standby fan (APP-ALB-029, Action 2) STANDARD: References alarm procedure and determines need to start remaining fan for AH-1 NOTES: ***CONDITIONAL CUE: If candidate defers to Unit SCO for guidance, acknowledge report and direct candidate to follow procedure.*** COMMENTS:	____ SAT ____ UNSAT

STEP 5: Starts the remaining fan for AH-1 in LO-SPD STANDARD: Places AH-1 B-SB control switch in LO-SPD and verifies fan starts by observing fan status lights NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 6: Places control switch for AH-1 B-SB in STOP STANDARD: Places AH-1 B-SB in STOP position NOTES: COMMENTS:	____ SAT ____ UNSAT

STEP 7:	Starts AH-1 B-SB in HI-SPD	**CRITICAL STEP**
STANDARD:	Before AH-1 B-SB coasts down, places control switch in HI-SPD and verifies fan starts by observing fan status lights	
NOTES:	***CRITICAL FOR PROPER ALIGNMENT OF CONTAINMENT COOLING.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Stops one fan in AH-2	**CRITICAL STEP**
STANDARD:	Places either AH-2 A-SA or AH-2 B-SA control switch to STOP and verifies fan stops by observing fan status lights	
NOTES:	***CRITICAL FOR PROPER ALIGNMENT OF CONTAINMENT COOLING.***	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Starts AH-4 A-SB in LO-SPD	
STANDARD:	Places AH-4 A-SB control switch in LO-SPD and verifies fan starts by observing fan status lights	
NOTES:	***NOTE: Steps 9 and 10 can be performed in either order.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 10:	Starts AH-4 B-SB in LO-SPD	
STANDARD:	Places AH-4 B-SB control switch in LO-SPD and verifies fan starts by observing fan status lights	
NOTES:	***NOTE: Steps 9 and 10 can be performed in either order.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 11:	Places control switch for AH-4 A-SB in STOP	
STANDARD:	Places AH-4 A-SB in STOP position	
NOTES:	***NOTE: Steps 11 - 12 or Steps 13 - 14 may be performed in either order, provided Step 12 is performed immediately following Step 11 and Step 14 is performed immediately following Step 13.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Starts AH-4 A-SB in HI-SPD	**CRITICAL STEP**
STANDARD:	Before AH-4 A-SB coasts down, places control switch in HI-SPD and verifies fan starts by	
NOTES:	***CRITICAL FOR PROPER ALIGNMENT OF CONTAINMENT COOLING.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Places control switch for AH-4 B-SB in STOP	
STANDARD:	Places AH-4 B-SB in STOP position	
NOTES:	***NOTE: Steps 11 - 12 or Steps 13 - 14 may be performed in either order, provided Step 12 is performed immediately following Step 11 and Step 14 is performed immediately following Step 13.***	____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Starts AH-4 B-SB in HI-SPD	**CRITICAL STEP**
STANDARD:	Before AH-4 B-SB coasts down, places control switch in HI-SPD and verifies fan starts by observing fan status lights	
NOTES:	***CRITICAL FOR PROPER ALIGNMENT OF CONTAINMENT COOLING.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15: Verifies post accident damper CV-D5 is open STANDARD: Verifies CV-D5 is OPEN on Status Light Box 5 NOTES: ***NOTE: Steps 15 and 16 may be performed in either order.*** COMMENTS:	____ SAT ____ UNSAT
STEP 16: Verifies post accident damper CV-D7 is open STANDARD: Verifies CV-D7 is OPEN on Status Light Box 6 NOTES: ***NOTE: Steps 15 and 16 may be performed in either order.*** ***CUE: If APP-028-05-1 alarms, inform candidate that other personnel will respond to the alarm.*** COMMENTS:	____ SAT ____ UNSAT

STEP 17:	Inform Unit SCO that Containment Fan Coolers are aligned for maximum cooling operation	
STANDARD:	Informs Unit SCO	
NOTES:	***CUE: Unit SCO acknowledges report.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A Containment Entry is required. Train 'A' Containment Fan Cooler fans are currently running.

NSW is aligned to 'A' ESW header and 'B' ESW pump is running.

INITIATING CUES:

You are to start up the Containment Fan Cooler Units in the maximum cooling mode.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.g

Perform Control Rod Exercise Test

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform Control Rod Exercise Test

Alternate Path: Two shutdown bank rods drop while withdrawing to full withdrawn position.

Facility JPM #: NEW

K/A Rating: 003AA1.05 Importance: SRO NA RO 4.1

K/A Statement: Ability to operate and / or monitor the following as they apply to the Dropped Control Rod: Reactor power - turbine power

Task Standard: The reactor has been manually tripped in response to two dropped rods.

Preferred Evaluation Location: Simulator X In Plant ______

Preferred Evaluation Method: Perform X Simulate ______

References: OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 - 3
AOP-001, Malfunction of Rod Control and Indication System

Validation Time: 15 minutes Time Critical: NO

Candidate: ______________________________

Time Start: __________ Time Finish: ________

Performance Time: ________ minutes

Performance Rating: SAT ________ UNSAT ________

Comments: ____

____

Examiner: ______________________________ Date: ________
Signature

Tools/Equipment/Procedures Needed:

Marked up OST-1005.
AOP-001.

SIMULATOR OPERATOR INSTRUCTIONS:
1) Initialize to a 100% power IC.
2) Enter malfunction to prevent auto opening of Reactor Trip Breakers <IMF RPS-01B 3 1>.
3) SEE INSTRUCTIONS AT STEP 5 TO ENTER ADDITIONAL MALFUNCTIONS.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is operting at 100% power.

OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 - 3, is being performed.

INITIATING CUES:

You are to perform OST-1005, Section 7.1, commencing with Shutdown Bank A.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OST-1005 and refers to Section 7.1 NOTES: COMMENTS:	___ SAT ___ UNSAT
STEP 2: Records Shutdown Bank 'A' positions on Attachment 1 (Step 7.1.1.a) STANDARD: Records both Group Position indications as '228' and records all DRPI position indications as '228' NOTES: COMMENTS:	___ SAT ___ UNSAT

STEP 3:	Selects Shutdown Bank 'A' (Step 7.1.1.b)	**CRITICAL STEP**
STANDARD:	Rotates the ROD BANK SELECTOR switch to the 'SB A' position	
NOTES:	***CRITICAL TO ALLOW MOVEMENT OF SHUTDOWN BANK 'A'.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Inserts Shutdown Bank 'A' rods (Step 7.1.1.c)	**CRITICAL STEP**
STANDARD:	Places the ROD MOTION lever in the 'IN' position and inserts Shutdown Bank 'A' rods 10 steps by observing Group Position indication	
NOTES:	***CRITICAL TO CAUSE SHUTDOWN BANK 'A' RODS TO MOVE INWARD.*** ***NOTE: Precautions and limitations limits rod insertion to no more than 12 steps.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5: Records Shutdown Bank 'A' positions on Attachment 1 (Step 7.1.1.d) STANDARD: Records both Group Position indications as '218' and records all DRPI position indications as '216' NOTES: **SIMULATOR OPERATOR INSTRUCTIONS: INSERT MALFUNCTIONS WHICH CAUSE 2 SHUTDOWN BANK 'A' RODS TO DROP INTO CORE <u>AFTER RODS ARE WITHDRAWN 6-7 STEPS</u> DURING THE PERFORMANCE OF THE FOLLOWING STEP <IMF CRF03A 2 J13 and IMF CRF03B 2 C7>.** COMMENTS:	____ SAT ____ UNSAT
STEP 6: Withdraws Shutdown Bank 'A' rods (Step 7.1.1.e) STANDARD: Places the ROD MOTION lever in the 'OUT' position and withdraws Shutdown Bank 'A' rods 10 steps by observing Group Position indication NOTES: ***CRITICAL TO CAUSE SHUTDOWN BANK 'A' RODS TO MOVE OUTWARD.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 7:	Determines 2 Shutdown Bank 'A' rods have dropped into the core	
STANDARD:	Determines 2 rods have dropped into the core by observing all / or some of the following: - Individual Rod Bottom Light on DRPI - Decreasing Reactor power - Decreasing Tavg - ALB-13-7-4, ONE ROD AT BOTTOM alarm - ALB-13-7-3, TWO OR MORE RODS AT BOTTOM alarm - ALB-13-4-2, POWER RANGE HIGH NEUTRON FLUX RATE ALERT alarm - ALB-12-4-3, REACTOR TRIP POWER RANGE HIGH FLUX RATE alarm - ALB-13-4-5, POWER RANGE CHANNEL DEVIATION alarm - ALB-13-8-5, COMPUTER ALARM ROD DEV/SEQ NIS PWR RANGE TILTS alarm	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 8:	Informs the Unit SCO of the multiple dropped rods and manually trips the reactor (AOP-001, Section 4.0, Immediate Action Step 1)	**CRITICAL STEP**
STANDARD:	Informs the Unit SCO and manually trips the reactor	
NOTES:	***CRITICAL TO MANUALLY TRIP THE REACTOR.*** ***NOTE: Immediate operator action for AOP-001. Additionally, tripped RPS bistables due to NEGATIVE RATE TRIP also require reactor trip.*** ***NOT critical to inform Unit SCO prior to tripping reactor.***	
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is operting at 100% power.

OST-1005, Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 - 3, is being performed.

INITIATING CUES:

You are to perform OST-1005, Section 7.1, commencing with Shutdown Bank A.

C
CONTINUOUS
USE

CAROLINA POWER & LIGHT COMPANY

SHEARON HARRIS NUCLEAR POWER PLANT

UNIT 1

PLANT OPERATING MANUAL

VOLUME 3

PART 9

PROCEDURE TYPE: Operation Surveillance Test

NUMBER: OST-1005

TITLE: Control Rod and Rod Position Indicator Exercise Quarterly Interval Modes 1 - 3

NOTE: This procedure has been screened per PLP-100 criteria and determined to be a CASE II procedure. This procedure requires Superintendent evaluation with concurrence of the Superintendent - Shift Operations as to level of management required to be involved in preparations and conduct of this test.

1.0 PURPOSE

This test verifies through freedom of movement the operability of each Control Rod Assembly, Control Rod Drive Mechanism and associated control circuit to satisfy Technical Specification Surveillance Requirement 4.1.3.1.2.

2.0 REFERENCES

2.1 Plant Operating Manual Procedures

1. OP-104
2. SD-104

2.2 Technical Specifications

1. 3.1.3.1
2. 3.1.3.5
3. 3.1.3.6
4. 4.1.3.1.2

2.3 Final Safety Analysis Report

1. 3.9.4
2. 4.6.3
3. 7.7.1

2.4 Technical Manuals

1. VM-PKO, Westinghouse Rod Control System Technical Manual
2. VM-PKP, Westinghouse Digital Rod Position Indication Technical Manual

3.0 PREREQUISITES

1. Review the Main Control Room Status File and verify that the Rod Control System is aligned in a manner that will support the performance of this test.

   B

2. The performance of this OST has been coordinated with other plant evolutions such that the minimum equipment operating requirements of Tech Specs are met.

   B

3. Both A and B data trains are available on DRPI for the Shutdown Banks.

   B

4. Energize additional Pressurizer heaters as desired to help minimize pressure transients while rods are manipulated.

   B

5. Instrumentation needed for the performance of this test is free of deficiency tags that affect instrument indication.

   B

CAUTION

This procedure involves an infrequent test or evolution with the potential to reduce margins of safety or introduce transients or accidents or introduce personnel safety or radiological hazards if performed incorrectly.

---

6. A PLP-100 Shift brief has been performed by the applicable level of management.

   B

7. Verify all prerequisites are met, then obtain the Superintendent - Shift Operations permission to perform this OST.

Bill Gross

Signature   Date

4.0 PRECAUTIONS AND LIMITATIONS

NOTE: With DRPI operating at either full or half accuracy, rod movement of 10 steps should ensure a DRPI indication change of at least 6 steps.

1. When testing Rod Control Assemblies in Modes 1 - 3, do not exceed 12 steps movement on any non-controlling Rod Control Assembly.

2. Each rod bank is to be moved a minimum of 10 steps as indicated on the group step counters and 6 steps as indicated on DRPI.

3. This test should not be used for Post Maintenance testing unless the Post Maintenance test is being performed in conjunction with normal rod exercising per Tech Spec. 4.1.3.1.2 since Tech Specs 3.1.3.5 and 3.1.3.6 allow suspension of their requirements only during the rod exercise surveillance.

4. When exercising Control Rod Assemblies, the action requirements for Rod Insertion Limits and associated annunciators for Shutdown and Control Bank rods per Technical Specifications 3.1.3.5 and 3.1.3.6 do not apply.

5. All rods must be returned to the initial Group Step Counter positions to ensure rod insertion limits and proper bank overlap are restored. If Control Bank D is tested with Rod Bank Selector in AUTO or MAN, then Control Bank D does not have to be returned to the initial position but must be kept above rod insertion limits.

6. When withdrawing rods, ensure that any power limitations in effect are not exceeded.

7. Minimize the time the rods in each bank are out of their normal position.

8. When rods are being withdrawn, caution must be used to prevent the step counters from exceeding the full out position of the rods. If this occurs, the P/A converter for the affected bank (Control Banks only) may need to be reset to match actual rod position.

5.0 TOOLS AND EQUIPMENT

None Applicable

6.0 ACCEPTANCE CRITERIA

This test will be completed satisfactorily if all of the following conditions are verified.

1. Each rod moves at least 10 steps in any one direction as indicated on the group step counters and 6 steps as indicated on DRPI.

2. Each rod is returned to its pre-test position on both group step counters and DRPI, except when performing section 7.3.

3. The individual rod positions as indicated by the DRPI are in agreement with the step counters within plus or minus 12 steps.

7.0 PROCEDURE

NOTE:
- If in Mode 1, testing of Control Bank D can be conducted during lowering of plant power per Section 7.3.
- If Control Bank D is less than 10 steps, then testing of Control Bank D rods can be conducted per Section 7.2.

7.1 Shutdown and Control Bank Testing

1. Refer to Attachment 1 and test all rod banks listed per the following instructions:

NOTE: Substeps 7.1.0.0.1.a through 7.1.0.0.1.g are to be signed off when testing of the components listed in Attachment 1 is completed.

a. For the rod bank being tested, record on Attachment 1 the rod heights as indicated by Group Step Counters and DRPI.

____

b. Rotate the Rod Bank Selector to the bank being tested.

____

NOTE: When inserting rods, the Bank Low Insertion and Bank Low-Low Insertion Limit Alarm may be actuated.

c. With the Rod Motion lever, drive the rod bank being tested IN 10 steps as indicated by Group Step Counters.

____

d. Record on Attachment 1, the rod heights for the bank being tested, as indicated by Group Step Counters and DRPI.

____

7.1 Shutdown and Control Bank Testing (continued)

CAUTION

When withdrawing rods, ensure that any power limits in effect are not exceeded.

---

e. With the Rod Motion lever, pull the rod bank being tested OUT 10 steps as indicated by Group Step Counters. ______

f. Record on Attachment 1, the rod height for the bank being tested, as indicated by Group Step Counters and DRPI. ______

g. Repeat Substeps 7.1.0.0.1.a through 7.1.0.0.1.f of above for all remaining rod banks to be tested. ______

2. Review and ensure all Group Step Counter and DRPI positions recorded on Attachment 1 per Substep 7.1.0.0.1.f match the positions recorded in Substep 7.1.0.0.1.a. ______

7.2 Control Bank D Testing When Less Than 10 Steps

NOTE: This section can be marked N/A if not performed.

1. Refer to Attachment 1 and test Control Bank D per the following:

a. Record on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI. ______

b. Rotate the Rod Bank Selector to CBD. ______

CAUTION

When withdrawing rods, ensure that any power limits in effect are not exceeded.

---

c. With the Rod Motion lever, pull Control Bank D OUT 10 steps as indicated by Group Step Counters. ______

7.2 Control Bank D Testing When Less Than 10 Steps (continued)

d. Record on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

____

e. With the Rod Motion lever, drive Control Bank D IN 10 steps as indicated by Group Step Counters.

____

f. Record on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

____

2. Review and ensure Control Bank D Group Step Counter and DRPI positions recorded on Attachment 1 Substep 7.2.0.0.1.f match the positions recorded in Substep 7.2.0.0.1.a.

____

7.3 Control Bank D Testing When Lowering Plant Power

NOTE: This section can be marked N/A if not performed.

1. Refer to Attachment 1 and test Control Bank D per the following:

a. Record on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

____

b. As power is reduced verify that Control Bank D rods are inserted either automatically or manually.

____

c. When Control Bank D is inserted at least 10 Steps, record on Attachment 1 the rod heights of Control Bank D as indicated by Group Step Counters and DRPI.

____

7.4 Test Completion

1. Verify the Rod Bank Selector is in AUTO or MAN as required by plant conditions.

   ____

2. Review all data taken on Attachment 1 and verify all acceptance
R criteria in Section 6.0 has been met. (Reference 2.3.0.0.3).

   ____

3. Document Task O S QN 077 completion.

   ____

4. Complete applicable sections of Attachment 2, Certifications and Reviews, and inform the Unit SCO when this OST is completed.

   ____

8.0 DIAGRAMS/ATTACHMENTS

Attachment 1 - Data Sheet

Attachment 2 - Certifications and Reviews.

Data Sheet

SHUTDOWN BANK A										
Section 7.1 Step	Step Counters		DRPI							
	SC-SBA1	SC-SBA2	G3	C9	J13	N7	J3	C7	G13	N9
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

SHUTDOWN BANK B										
Section 7.1 Step	Step Counters		DRPI							
	SC-SBB1	SC-SBB2	E5	E11	L11	L5	G7	G9	J9	J7
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

SHUTDOWN BANK C					
Section 7.1 Step	Step Counters	DRPI			
	SC-SBC1	E3	C11	L13	N5
7.1.0.0.1.a					
7.1.0.0.1.d					
7.1.0.0.1.f					

Data Sheet

CONTROL BANK A										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBA1	SC-CBA2	F2	B10	K14	P6	K2	B6	F14	P10
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

CONTROL BANK B										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBB1	SC-CBB2	F4	D10	K12	M6	K4	D6	F12	M10
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

CONTROL BANK C										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBC1	SC-CBC2	D4	D12	M12	M4	H6	F8	H10	K8
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

Data Sheet

CONTROL BANK D										
Section 7.1 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.1.0.0.1.a										
7.1.0.0.1.d										
7.1.0.0.1.f										

OR

CONTROL BANK D										
Section 7.2 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.2.0.0.1.a										
7.2.0.0.1.d										
7.2.0.0.1.f										

OR

CONTROL BANK D										
Section 7.3 Step	Step Counters		DRPI							
	SC-CBD1	SC-CBD2	H2	B8	H14	P8	F6	F10	K10	K6
7.3.0.0.1.a										
7.3.0.0.1.c										

Certifications and Reviews

This OST was performed as a: Periodic Surveillance Requirement: ________
Postmaintenance Operability Test: ________
Redundant Subsystem Test: ________

Plant Conditions: ______________________________ Mode: ________

OST Completed By: ______________________________ Date: ________
Time: ________

OST Performed By:

Initials	Name (Print)	Initials	Name (Print)
B	Bill Gross		

General Comments/Recommendations/Corrective Actions/Exceptions:

Pages Used: ______________________________

OST Completed with NO EXCEPTIONS/EXCEPTIONS:

______________________________ Date: ________
Unit SCO

Reviewed By: ______________________________ Date: ________
Superintendent - Shift Operations

After receiving the final review signature, this OST becomes a QA RECORD and should be submitted to Document Services.

Revision Summary

General

Changes procedure from monthly performance to quarterly performance per TS Amendment 93 changes. Other editorial changes.

Description of Changes

Page	Section	Change Description
All		Updated revision level.
1		Adds continuous use header. Removes continuous use box from title page. Changes title from monthly to quarterly per TS Amendment 93.
8	7.4.3	Changed task number from O S MN 031 (monthly) to O S QN 077 (quarterly) per TS Amendment 93 changes.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.2.a

Locally Reset the Turbine Driven Auxiliary Feed Pump

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Locally Reset the Turbine Driven Auxiliary Feed Pump

Alternate Path: NONE

Facility JPM #: IP-001

K/A Rating: WE05EA1.1 Importance: SRO 4.0 RO 4.1

K/A Statement: Ability to operate and / or monitor the following as they apply to the Loss of Secondary Heat Sink: Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features.

Task Standard: The TURBINE OVERSPEED TRIP red light is extinguished on the AFW Control Panel 1X-SAB.

Preferred Evaluation Location: Simulator ______ In Plant X

Preferred Evaluation Method: Perform ______ Simulate X

References: OP-137, Auxiliary Feedwater System

Validation Time: 10 minutes Time Critical: NO

Candidate: ______________________________

Time Start: __________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ____

____

Examiner: ______________________________ Date: ______

Signature

Tools/Equipment/Procedures Needed:

OP-137 or Wall-mounted operator aid.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA. The TDAFW pump may start at any time.

INITIAL CONDITIONS:

The unit has tripped from 100 percent power. The turbine-driven AFW pump has tripped on overspeed and is needed for plant cooldown. The cause of the overspeed trip has been identified and corrected.

1MS-70 and 1MS-72 are shut.

INITIATING CUES:

You are to reset the turbine-driven AFW pump mechanical overspeed trip linkage.

The Trip and Throttle Valve will be reopened from the Control Room.

START TIME: ________

STEP 1: Locates proper procedure and required information. STANDARD: Locates OP-137, Section 8.4, or refers to wall-mounted operator aid NOTES: COMMENTS:	____ SAT ____ UNSAT
STEP 2: Verify the flat side of the tappet nut is aligned toward the tappet lever STANDARD: Verify the flat side of the tappet nut is aligned toward the tappet lever NOTES: ***CUE: The flat side of the tappet nut is aligned toward the tappet lever.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Pull the connecting rod toward the Trip and Throttle valve until the rod locks in place	**CRITICAL STEP**
STANDARD:	Pulls the connecting rod toward the Trip and Throttle valve until the rod locks in place	
NOTES:	***CRITICAL TO ALLOW OPENING THE VALVE.*** ***CUE: The connecting rod is locked in place.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Verify the Trip and Throttle valve operator in the shut position	
STANDARD:	Verifies the Trip and Throttle valve operator in the shut position by observing the T & T VALVE OPERATOR CLOSED light on the Aux Feedwater Control Panel 1X-SAB	
NOTES:	***CUE: The T & T Valve Operator light indication on panel 1X-SAB is RED light OFF and GREEN light ON.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Verify the flat side of the tappet nut is against the tappet lever	
STANDARD:	Verifies the flat side of the tappet nut is against the tappet lever	
NOTES:	***CUE: The flat side of the tappet nut is against the tappet lever.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Verify the latch lever is being held up by the trip hook	
STANDARD:	Verifies the latch lever is being held up by the trip hook	
NOTES:	***CUE: The latch lever is being held up by the trip hook.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Verify the Turbine Overspeed Trip is reset	
STANDARD:	Verifies the TURBINE OVERSPEED TRIP red light is extinguished on the AFW Control Panel 1X-SAB.	
NOTES:	***CUE: The Turbine Overspeed Trip red light is OFF on panel 1X-SAB.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Inform the control room that the valve has been reset	
STANDARD:	Informs the control room	
NOTES:	***CUE: The control acknowledges the report.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The unit has tripped from 100 percent power. The turbine-driven AFW pump has tripped on overspeed and is needed for plant cooldown. The cause of the overspeed trip has been identified and corrected.

1MS-70 and 1MS-72 are shut.

INITIATING CUES:

You are to reset the turbine-driven AFW pump mechanical overspeed trip linkage.

The Trip and Throttle Valve will be reopened from the Control Room.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA. The TDAFW pump may start at any time.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.2.b

Emergency Makeup to the Spent Fuel Pool

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Emergency Makeup to the Spent Fuel Pool

Alternate Path: Makeup valve from Train 'B' ESW fails to open.

Facility JPM #: IP-137A (Modified)

K/A Rating: 033A2.03 Importance: SRO 3.5 RO 3.1

K/A Statement: Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based on these predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Abnormal spent fuel pool water level or loss of water level

Task Standard: Emergency makeup is established to the Spent Fuel Pool.

Preferred Evaluation Location: Simulator ______ In Plant X

Preferred Evaluation Method: Perform ______ Simulate X

References: OP-116, Fuel Pool Cooling and Cleanup

Validation Time: 20 minutes Time Critical: NO

Candidate: ______________________________

Time Start: __________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ______________________________

____

Examiner: ______________________________ Date: ______

Signature

Tools/Equipment/Procedures Needed:

OP-116.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA.

INITIAL CONDITIONS:

The plant is in mode 6 with the core offloaded. Fuel Pool Cooling is shutdown per Section 7.1 of OP-116.

A leak has developed in the Unit 1 Spent Fuel Pool. Gates 3 and 4 are open.

The ONLY available source of Fuel Pool Makeup is ESW. Both trains of ESW are available for emergency makeup.

INITIATING CUES:

You are to fill the Unit 1 SFP from Train 'B' ESW using OP-116, Section 8.13.

START TIME: ________

STEP 1: Locates proper procedure and required materials. STANDARD: Locates OP-116, Section 8.13, and gangbox located in the 236 RAB at the entrance to the 216 Pipe Tunnel area which contains all required materials NOTES: ***CUE: For the purposes of this JPM, the location of the needed items is sufficient. DO NOT remove hoses and couplings from storage location. Jumper connection will be simulated.*** COMMENTS:	____ SAT ____ UNSAT
STEP 2: Verify shut 1CT-23, RWST to SFP Pump Suction STANDARD: Verifies 1CT-23 shut by turning handwheel in clockwise direction with no movement of handwheel NOTES: ***CUE: Handwheel is not moving.*** COMMENTS:	____ SAT ____ UNSAT

STEP 3:	Connect jumper to Designated SFPCCS Emerg Makeup Conn Vent Vlv, 1SF-76	**CRITICAL STEP**
STANDARD:	Connects jumper to 1SF-76 (located downstream of 1CT-23)	
NOTES:	***CRITICAL TO ESTABLISH FLOW PATH FROM ESW TO SFP.*** ***CUE: Hose is connected to vent pipe.*** **NOTE: Ensure candidate attaches hose with check valve closest to valve 1SF-76.** ***CONDITIONAL CUE: If candidate does NOT describe which end of hose connects to 1SF-76, ask which end is connected.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Connect jumper to 1SW-1239, DG 1B SW Return Hdr SFCW Emerg M/U Conn	
STANDARD:	Connects jumper to 1SW-1239 (located on Diesel Generator 1B ESW return line in 236 RAB)	
NOTES:	***CUE: Hose is connected to vent line.***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A
STEP 5:	Open 1SF-10, RWST to A Supply Isolation	**CRITICAL STEP**
STANDARD:	Opens 1SF-10 by rotating handwheel in counterclockwise direction and verifies movement	
NOTES:	***CRITICAL TO ESTABLISH FLOW PATH FROM ESW TO SFP.*** ***CUE: Handwheel has rotated in counterclockwise direction and will move no further.***	
COMMENTS:		____ SAT ____ UNSAT ____ N/A

STEP 6:	Attempts to open 1SW-1239, DG 1B SW Return Hdr SFCW Emerg M/U Conn	
STANDARD:	Attempts to rotate handwheel for 1SW-1239 in counterclockwise direction	
NOTES:	***CUE: Valve handwheel will NOT move.***	____ SAT
COMMENTS:		____ UNSAT ____ N/A
STEP 7:	Determines Train 'B' ESW cannot be used and informs control room	
STANDARD:	Notifies control room	
NOTES:	***CONDITIONAL CUE (only to be given if candidate requests directions from control room): Control room acknowledges report and informs candidate to establish makeup using other train of ESW.***	____ SAT
COMMENTS:		____ UNSAT ____ N/A

STEP 8:	Connect jumper to 1SW-269, DG 1A SW Return Hdr SFCW Emerg M/U Backup Conn	**CRITICAL STEP**
STANDARD:	Connects jumper to 1SW-269 (located on Diesel Generator 1A ESW return line in 236 RAB)	
NOTES:	***CRITICAL TO ESTABLISH FLOW PATH FROM ESW TO SFP.*** ***CUE: Hose is connected to vent line.***	____ SAT
COMMENTS:		____ UNSAT ____ N/A
STEP 9:	Open 1SW-269, DG 1A SW Return Hdr SFCW Emerg M/U Backup Conn	**CRITICAL STEP**
STANDARD:	Opens 1SW-269 by rotating handwheel in counterclockwise direction and verifies movement	
NOTES:	***CRITICAL TO ESTABLISH FLOW PATH FROM ESW TO SFP.*** ***CUE: Handwheel has rotated in counterclockwise direction and will move no further.***	____ SAT
COMMENTS:		____ UNSAT ____ N/A

STEP 10:	Informs control room that Train 'A' of ESW is inoperable due to valve being open	
STANDARD:	Informs control room	
NOTES:	***CUE: Control room acknowledges report.***	____ SAT
COMMENTS:		____ UNSAT ____ N/A
STEP 11:	While closely monitoring fuel pool levels, open 1SF-76, SFPCCS Emerg Makeup Conn Vent Vlv	**CRITICAL STEP**
STANDARD:	Opens 1SF-76 by rotating handwheel in counterclockwise direction and verifies movement	
NOTES:	***CRITICAL TO ESTABLISH FLOW PATH FROM ESW TO SFP.*** ***CUES:*** ***• Handwheel has rotated in counterclockwise direction and will move no further.*** ***• If hose installation is backwards in JPM Step 3, report "NO FLOW EXISTS."*** ***• If hose installation is correct in JPM Step 3, report "FLOW EXISTS."***	____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Informs control room that emergency makeup has been established from Train 'A' ESW to the SFP	
STANDARD:	Informs control room	
NOTES:	***CUE: Control room acknowledges report.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in mode 6 with the core offloaded. Fuel Pool Cooling is shutdown per Section 7.1 of OP-116.

A leak has developed in the Unit 1 Spent Fuel Pool. Gates 3 and 4 are open.

The ONLY available source of Fuel Pool Makeup is ESW. Both trains of ESW are available for emergency makeup.

INITIATING CUES:

You are to fill the Unit 1 SFP from Train 'B' ESW using OP-116, Section 8.13.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.2.c

Inhibit Both Trains of SSPS

CANDIDATE: ______________________________

EXAMINER: ______________________________

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Inhibit Both Trains of SSPS

Alternate Path: NONE

Facility JPM #: IP-141

K/A Rating: 012A4.05 Importance: SRO NA RO 3.6

K/A Statement: Ability to operate and / or monitor in the control room: Channel defeat controls

Task Standard: All fuses listed in Attachment 1 of AOP-036 have been removed.

Preferred Evaluation Location: Simulator ______ In Plant X

Preferred Evaluation Method: Perform ______ Simulate X

References: AOP-036, Safe Shutdown Following a Fire

Validation Time: 10 minutes Time Critical: NO

Candidate: ______________________________

Time Start: __________ Time Finish: ______

Performance Time: ______ minutes

Performance Rating: SAT ______ UNSAT ______

Comments: ______________________________

____

Examiner: ______________________________ Date: ______
Signature

Tools/Equipment/Procedures Needed:

AOP-036, Attachment 1.
SSPS Cabinet Key.

READ TO OPERATOR

DIRECTION TO CANDIDATE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA.

INITIAL CONDITIONS:

A major fire has occurred on RAB 286' in the Cable Spread Room 'A'.

INITIATING CUES:

You are to inhibit both trains of SSPS per AOP-036, Attachment 1, Sheet 23 of 46, Step 7.

START TIME: ________

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates AOP-036, Attachment 1, and obtains SSPS Cabinet Key 96	
NOTES:	***CUE: Any SSPS key is acceptable to be used if Key 96 is NOT available.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 2:	Removes Train 'A' Output Relay Power fuses	**CRITICAL STEP**
STANDARD:	Opens Train 'A' cabinet 1 and removes TRAIN A, OUTPUT CABINET NO. 1, OUTPUT RELAY POWER fuses	
NOTES:	***CRITICAL TO DISABLE SSPS TRAIN 'A'.*** ***CUE: Fuses have been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.***	
COMMENTS:		____ SAT ____ UNSAT

STEP 3: Removes Train 'A' fuse 61 STANDARD: Opens Train 'A' cabinet 2 and removes TRAIN A, OUTPUT CABINET NO. 2, fuse 61 NOTES: ***CRITICAL TO DISABLE SSPS TRAIN 'A'.*** ***CUE: Fuses has been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT
STEP 4: Removes Train 'A' fuse 62 STANDARD: Opens Train 'A' cabinet 2 and removes TRAIN A, OUTPUT CABINET NO. 2, fuse 62 NOTES: ***CRITICAL TO DISABLE SSPS TRAIN 'A'.*** ***CUE: Fuses has been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 5: Removes Train 'B' Output Relay Power fuses STANDARD: Opens Train 'B' cabinet 1 and removes TRAIN B, OUTPUT CABINET NO. 1, OUTPUT RELAY POWER fuses NOTES: ***CRITICAL TO DISABLE SSPS TRAIN 'B'.*** ***CUE: Fuses have been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT
STEP 6: Removes Train 'B' fuse 61 STANDARD: Opens Train 'B' cabinet 2 and removes TRAIN B, OUTPUT CABINET NO. 2, fuse 61 NOTES: ***CRITICAL TO DISABLE SSPS TRAIN 'B'.*** ***CUE: Fuses has been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.*** COMMENTS:	**CRITICAL STEP** ____ SAT ____ UNSAT

		CRITICAL STEP
STEP 7:	Removes Train 'B' fuse 62	
STANDARD:	Opens Train 'B' cabinet 2 and removes TRAIN B, OUTPUT CABINET NO. 2, fuse 62	
NOTES:	***CRITICAL TO DISABLE SSPS TRAIN 'B'.*** ***CUE: Fuses has been removed.*** ***NOTE: Steps 2 through 7 may be performed in any order.***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Informs control room that both trains of SSPS have been inhibited	
STANDARD:	Informs control room	
NOTES:	***CUE: Control room acknowledges report.*** ***FOLLOWUP QUESTION: Where are the removed fuses stored?***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: ________

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

A major fire has occurred on RAB 286' in the Cable Spread Room 'A'.

INITIATING CUES:

You are to inhibit both trains of SSPS per AOP-036, Attachment 1, Sheet 23 of 46, Step 7.

DO NOT operate actual plant equipment unless specifically authorized to do so. Follow standard ALARA practices in the RCA.