FINAL SUBMITTAL

H. B. ROBINSON EXAM
50-261/2001-301
MARCH 26 - 30, 2001
(OPERATING)
APRIL 2, 2001 (WRITTEN)

FINAL SCENARIOS
ADMIN TOPICS OUTLINES
CONTROL ROOM SYSTEM AND WALK-THROUGH OUTLINES, AND SIMULATOR SCENARIO OUTLINES

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

Facility:	RNP	Date of Examination:	26-Mar-01
Examination Level:	RO	Operating Test Number:	

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions (KA #)
A.1	CONDUCT OF OPERATIONS	Perform a Manual Shutdown Margin Calculation (FMP-012) (2.1.25)
		Perform an RCP Seal Injection Flow Determination (OP-301-1) (2.1.19)
A.2	EQUIPMENT CONTROL	Review an Equipment Clearance (OPS-NGGC-1301) (2.2.13)
A.3	RADIATION CONTROL	Take Actions to Limit Radiation Exposure in Response to Radiation Alarm (AOP-005) (2.3.10)
A.4	EMERGENCY PLAN	Activate the Emergency Response Data System from the Control Room (EPCLA-01) (2.4.43)

Facility:	RNP	Date of Examination:	26-Mar-01
Examination Level:	SRO-I/U	Operating Test Number:	

	Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions (KA #)
A.1	CONDUCT OF OPERATIONS	Perform a Manual Shutdown Margin Calculation (FMP-012) (2.1.25)
		Determine Work Time Limits for Heat Stress Conditions (AP-020) (2.1.26)
A.2	EQUIPMENT CONTROL	Review / Approve an Equipment Clearance (OPS-NGGC-1301) (2.2.13)
A.3	RADIATION CONTROL	Review / Approve a Liquid Waste Release Permit (EMP-023) (2.3.6)
A.4	EMERGENCY PLAN	Perform an Emergency Action Level Classification and Recommend Protective Actions (EAL-1 / EPCLA-01) (2.4.41 / 2.4.44)

Facility:	RNP	Date of Examination:	26-Mar-01
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B.1 Control Room Systems

	System/JPM Title	Type Code*	Safety Function (KA #)
a.	Depressurize the RCS Following a SGTR (PATH-2)	MASL	3 (027AA1.01)
b.	Shift Operating CCW Pumps (OP-306)	NS	8 (008A4.01)
c.	Depressurize the RHR System in Preparation for SI Alignment (GP-002)	NSL	4P (005A4.01)
d.	Perform Rod Control Exercise and Rod Position Indication Surveillance (OST-011)	NAS	1 (001A2.11)
e.	Manually Initiate Containment Spray (PATH-1)	DASL	5 (011EA1.04)
f.	Perform NIS Comparator Channel Surveillance (OST-007)	NS	7 (015A4.02)
g.	Transfer to Long Term Recirculation (EPP-10)	DASL	2 (006A4.05)

B.2 Facility Walk-Through

a.	Perform Emergency Refill of IVSW Tank Using Service Water (OP-911)	DR	5 (069AA1.03)
b.	Lineup the Deepwell Pumps as Backup to AFW System (OP-402)	D	4S (061A1.04)
c.	Actuate the Halon Suppression System (OP-804)	D	8 (086A4.06)

*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: **RNP** Date of Examination: **26-Mar-01**

Examination Level: **SRO-I** Operating Test Number:

B.1 Control Room Systems

System/JPM Title	Type Code*	Safety Function (KA #)
a. Depressurize the RCS Following a SGTR (PATH-2)	MASL	3 (027AA1.01)
b. Shift Operating CCW Pumps (OP-306)	NS	8 (008A4.01)
c. Restore Normal Power Following a Loss of Off-Site Power (OP-603)	DSL	6 (062A4.07)
d. Perform Emergency Boration (EPP-4)	MASL	1 (004A4.18)
e. Manually Initiate Containment Spray (PATH-1)	DASL	5 (011EA1.04)
f. Perform NIS Comparator Channel Surveillance (OST-007)	NS	7 (015A4.02)
g. Transfer to Long Term Recirculation (EPP-10)	DASL	2 (006A4.05)

B.2 Facility Walk-Through

a. Perform Emergency Refill of IVSW Tank Using Service Water (OP-911)	DR	5 (069AA1.03)
b. Lineup the Deepwell Pumps as Backup to AFW System (OP-402)	D	4S (061A1.04)
c. Actuate the Halon Suppression System (OP-804)	D	8 (086A4.06)

*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:	RNP	Date of Examination:	26-Mar-01
Examination Level:	SRO-U	Operating Test Number:	

B.1 Control Room Systems

System/JPM Title	Type Code*	Safety Function (KA #)
a. Depressurize the RCS Following a SGTR (PATH-2)	MASL	3 (027AA1.01)
b. Shift Operating CCW Pumps (OP-306)	NS	8 (008A4.01)
c.		
d. Perform Emergency Boration (EPP-4)	MASL	1 (004A4.18)
e.		
f.		
g.		

B.2 Facility Walk-Through

a. Perform Emergency Refill of IVSW Tank Using Service Water (OP-911)	DR	5 (069AA1.03)
b. Lineup the Deepwell Pumps as Backup to AFW System (OP-402)	D	4S (061A1.04)
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: **RNP** Scenario Number: **2** Op-Test Number: _____

Examiners _____ Operators _____

_____ _____

_____ _____

Objectives: To evaluate the candidates' ability to perform a plant startup at BOL. To evaluate the candidates' ability to respond to a controlling channel of SG level failure and a VCT level channel failure. To evaluate the candidates' response to trip of a service water pump and a failure of the letdown pressure controller. The candidates will be evaluated on their response to a SGTR. Post-trip response will be evaluated on the candidates' ability to address a failed open SG safety valve on the ruptured SG.

Initial Conditions: IC-202. 13% power BOL; Equipment out of service is CCW Pump 'A'.

Turnover: 13% power, BOL. Severe thunderstorms have been reported in the area. A 0.02 gpm tube leak exists in SG 'A'. AOP-035 has been completed.

Equipment out-of-service is CCW Pump 'A' for breaker overhaul. Pump is expected to be returned to service within 8 hours.

RM-31B is out of service.

Boron concentration is 1420 ppm. Bank D rods are at 129 steps.

Shift orders are to continue the plant startup to 30% power. GP-005 has been completed through Step 8.4.29. Other night orders as currently published are in effect.

Event Number	Malfunction Number (1)	Event Type*	Event Description
1	NA	BOP(N) SRO(N)	Continued Plant Startup
		RO(R) SRO(R)	Control of Reactivity During Plant Startup
2	ICOR LT:476 0 0 AsIs	BOP(I) SRO(I)	Controlling Channel of SG 'A' Level Failure 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	Event Type*	Event Description
3	ICOR LT:112 (NONE 0 0) 100 180 Asls	RO(I) SRO(I)	VCT Level Channel Failure High
4	IMF SWS01A	BOP(C) SRO(C)	Service Water Pump Trip
5	IMF CVC07 (NONE 0 0) 100 0 Asls	RO(C) SRO(C)	Letdown Pressure Control Valve Controller Failure
	NA	RO(N) SRO(N)	Establish Excess Letdown
6	IMF SGN02E 35 0	RO(M) BOP(M) SRO(M)	Steam Generator 'B' Tube Rupture at 35 gpm
	IMF SGN02E 750 600		Steam Generator 'B' Tube Rupture ramping to 750 gpm
7	IMF SGN01F 80 60	BOP(C) SRO(C)	Failed Open SG Safety Valve on Ruptured SG 'B'
8	IMF SIS028 NONE 0 NO_AUTO	RO(C) SRO(C)	Failure of SI Pump 'A' to Automatically Start

* (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-202. 13% power BOL. Equipment out of service is CCW Pump 'A'. Equipment out of service is CCW Pump 'A'. RM-31B is also OOS. Insert a 0.02 gpm tube leak on SG 'A'.	
1	NA	Plant Power Increase and Control of Reactivity - **NO MALFUNCTIONS REQUIRED**
2	ICOR LT:476 0 0 Asls	Controlling Channel of SG 'A' Level Failure Low
3	ICOR LT:112 (NONE 0 0) 100 180 Asls	VCT Level Channel Failure High
4	IMF SWS01A	Service Water Pump Trip
5	IMF CVC07 (NONE 0 0) 100 0 Asls	Letdown Pressure Control Valve Controller Failure
6	IMF SGN02E 35 0	Steam Generator 'B' Tube Rupture at 35 gpm
	IMF SGN02E 750 600	Steam Generator 'B' Tube Rupture ramping to 750 gpm
7	IMF SGN01F 80 60	Failed Open SG Safety Valve on Ruptured SG 'B' - **INSERT UPON ISOLATION OF SG 'B'**
8	IMF SIS028 NONE 0 NO_AUTO	Failure of SI Pump 'A' to Automatically Start

SHIFT TURNOVER SCENARIO # 2

13% power, BOL. Severe thunderstorms have been reported in the area. A 0.02 gpm tube leak exists in SG 'A'. AOP-035 has been completed.

Equipment out-of-service is CCW Pump 'A' for breaker overhaul. Pump is expected to be returned to service within 8 hours.

RM-31B is out of service.

Boron concentration is 1420 ppm. Bank D rods are at 129 steps.

Shift orders are to continue the plant startup to 30% power. GP-005 has been completed through Step 8.4.29. Other night orders as currently published are in effect.

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

Event Description: ***Power Ramp with Control of Reactivity***

Time	Position	Applicant's Actions or Behaviors
	SRO	Directs the actions of GP-005, "Power Operation," commencing with Step 8.4.30
	BOP	***NOTE: The following two steps may be performed whenever plant conditions require Feedwater flow through the FRVs and conditions are suitable for automatic S/G water level control.*** ***Feedwater Regulating Valves should be transferred to automatic control one at a time.*** WHEN feedwater requirements increase up to the capacity of the Feedwater Regulating Bypass Valves, THEN shift feedwater flow control to the Feedwater Regulating Valves (FRVs) by throttling open the FRVs while throttling closed their respective Bypass Valves.
	BOP	WHEN Reactor Power is 15% to 20%, OR the Feedwater Regulating Bypass Valves are at 60% to 90% demand signal, THEN shift each Feedwater Regulating Valve to AUTO as follows: 1. Verify Feed Flow is trending with Steam Flow AND S/G Levels are trending to program level 2. Depress the AUTO pushbutton on the FRV controller, AND slowly close its respective Feedwater Regulating Bypass Valve 3. Verify each FRV in AUTO is maintaining programmed S/G level
	RO	Withdraw Control Rods, as necessary, to allow for the Power Ramp while maintaining Tavg within +0.5 to -2.5 °F of Tref

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

Event Description: ***Power Ramp with Control of Reactivity***

Time	Position	Applicant's Actions or Behaviors
	BOP	WHEN the selected TURBINE FIRST STAGE PRESS indicates greater than 50 psig, THEN perform the following: 1. Depress the HOLD pushbutton. 2. Match the REFERENCE and SETTER indication using the REF Δ and/or REF ∇ pushbuttons. 3. IF desired to increase load with IMP IN inservice, THEN perform the following: a. Depress the IMP IN pushbutton AND check that IMP IN is ILLUMINATED. b. Check the IMP OUT pushbutton is EXTINGUISHED. 4. Adjust the SETTER indication using the REF Δ and/or REF ∇ pushbuttons to indicate no greater than 20.0 load. 5. Depress the GO and/or HOLD pushbuttons AND the REF Δ and/or REF ∇ to continue the load increase to 20% Reactor Power.
	SRO	IF at anytime a load change of greater than or equal to 15% of RTP occurs in any 1 hour period, THEN request E&C to sample the RCS for Dose Equivalent I-131 specific activity within the next 2 to 6 hours to verify it is less than or equal to 1.0FCi/gm (ITS SR 3.4.16.2) ***NOTE: Night Order 00-023 requires documentation of E&C notification for power change.***
	RO	IF Reactor Power is greater than 15%, OR as directed by the Reactor Engineer, THEN verify proper operation of the CAOC program in ERFIS.
	BOP	***NOTE: Rod Control may be shifted to AUTO when Tavg is within 0.5° F of Tref and the AUTO ROD WITHDRAWAL BLOCK status light is extinguished.*** WHEN the highest indicator of Reactor Power listed on Attachment 10.1 indicates less than or equal to 20% power, THEN depress the HOLD pushbutton AND maintain indicated power.

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

Event Description: ***Power Ramp with Control of Reactivity***

Time	Position	Applicant's Actions or Behaviors
	RO	Record the data required on Attachment 10.1.
	SRO	IF all indications of Reactor Power do NOT agree within 5% of each other, THEN contact plant management for further instructions.
	BOP	Perform the following while maintaining 20% Reactor Power: 1. Verify the Turbine Lube Oil Cooler is maintaining the oil temperature leaving the bearings between 140°F and 160°F. 2. IF bearing oil temperature is outside the normal band of 140°F to 160°F, THEN monitor expected bearing oil return and metal temperatures IAW OP-506. 3. Close all Turbine drains: - DV-1, MAIN STEAM DRAIN - DV-2, MAIN STEAM DRAIN - DV-3, MAIN STEAM DRAIN - DV-4, MAIN STEAM DRAIN - DV-5, FIRST STAGE DRAIN - DV-6, MOISTURE SEPARATOR A DRAIN - DV-7, MOISTURE SEPARATOR B DRAIN

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

Event Description: ***Power Reduction with Reactivity Control (DILUTION)***

Time	Position	Applicant's Actions or Behaviors
	RO	Place the RCS MAKEUP MODE selector switch in DILUTE.
	RO	IF desired, THEN, place controller FCV-114A, PRIMARY WTR FLOW DILUTE MODE, in MAN AND adjust the Controller by using the UP/DOWN arrow pushbuttons to adjust FCV-114A Controller output to 30-50%.
	RO	Set the PRIMARY WTR TOTALIZER, YIC-114, to the desired quantity as follows: 1) Depress BUTTON "A". 2) Depress "CLR" BUTTON. 3) Key in the desired quantity AND depress the "ENT" BUTTON.
	RO	***NOTE: The following step will open FCV-114A, PW TO BLENDER, and FCV-114B, BLENDED MU TO VCT, and will start a Primary Water Pump.*** Place the RCS MAKEUP SYSTEM switch in START.
	RO	IF desired, THEN manually adjust controller FCV-114A, PRIMARY WTR FLOW DILUTE MODE, using the UP and DOWN arrow pushbuttons to establish the desired Primary Water flow rate.

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

Event Description: ***Power Reduction with Reactivity Control (DILUTION)***

Time	Position	Applicant's Actions or Behaviors
	RO	IF a VCT high level occurs, THEN verify LCV-115A, VCT/HLDP TK DIV, diverts Letdown flow to Holdup Tanks.
	RO	IF any of the following conditions occur, THEN stop the dilution by placing the RCS MAKEUP SYSTEM switch in STOP: - Rod motion is blocked. - Rod motion is in the wrong direction. - Subcritical Count Rate increases by a factor of two. - The desired condition is exceeded. - PWST level decreases by more than expected.
	RO	WHEN the desired amount of Primary Water has been added to the RCS, THEN verify the following: - FCV-114A, PRIMARY WTR FLOW DILUTE MODE, closes - FCV-114B, BLENDED MU TO VCT, closes - The PRIMARY WTR PUMP stops - The RCS MAKEUP SYSTEM is off
	RO	Return the RCS Makeup System to automatic operation by performing the following: 1) Verify controller FCV-114A, PRIMARY WTR FLOW DILUTE MODE, in AUTO. 2) Place RCS MAKEUP MODE selector switch in AUTO. 3) Place RCS MAKEUP SYSTEM switch in START.
	RO	Record, in AUTO LOG, the total amount of Boric Acid added during the boration operation as indicated by BORIC ACID TOTALIZER, YIC-113. ***NOTE: AUTO LOG is not functional in simulator.***

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

Event Description: ***Steam Generator 'A' Level Transmitter (476) Failure Low***

Time	Position	Applicant's Actions or Behaviors
		SIMULATOR OPERATOR INSTRUCTIONS: ENSURE FRVs HAVE BEEN PLACED IN AUTOMATIC PRIOR TO INSERTING THIS MALFUNCTION.
	BOP	Diagnoses low failure of Steam Generator 'A' Level Transmitter LT-476 - LI-476 decreasing - FR-478 blue pen decreasing - FCV-478 opening with demand increasing - APP-006-A1, SG A FW > STM FLOW, illuminated - APP-006-A3, SG A LVL DEV, illuminated - APP-006-D1, SG A NAR RANGE LO/LO-LO LEVEL, illuminated
	SRO	Enters and directs the actions of AOP-025, "RTGB Instrument Malfunction," Section D, "S/G Narrow Range Level Failure" ***NOTE: Should also direct placing turbine control in HOLD.***
	BOP	***IMMEDIATE ACTION*** Place FRV 'A' (FCV-478) in MANUAL
	BOP	***IMMEDIATE ACTION*** Restore SG 'A' level to between 39% and 52%
	SRO	Direct the actions of OWP-027, SGL-3, "SG A Level Channel LT-476," to remove 476 from service

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

Event Description: ***Steam Generator 'A' Level Transmitter (476) Failure Low***

Time	Position	Applicant's Actions or Behaviors
	SRO	***SELECTED PRECAUTION*** 1) Refer to ITS Table 3.3.1-1 Item 13 for RPS OPERAIBLITY requirements in MODES 1 and 2. Refer to ITS Table 3.3.3-1 Item 13 for PAM OPERABILITY requirements in MODES 1, 2, and 3. Refer to ITS Table 3.3.8-1 Item 1 for AFW instrumentation OPERABILITY requirements in MODES 1, 2, and 3.
	BOP	Perform the following RTGB switch alignment: - FCV-478 CONTROLLER in MANUAL
	SRO	Direct the tripping of the following bistable in the Hagan Racks - SG NO. 1 LO-LO LEVEL LC476A1
	SRO	Return to Main Body of procedure (AOP-025)
	SRO	Implement the EALs

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

Event Description: ***Steam Generator 'A' Level Transmitter (476) Failure Low***

Time	Position	Applicant's Actions or Behaviors
	SRO	Refer to Technical Specifications - TS Table 3.3.1-1 Item 13, RPS Instrumentation (6 hours to trip bistables) - TS Table 3.3.3-1 Item 13, PAM Instrumentation (6 hours to Mode 3 if less than 2 channels) - TS Table 3.3.8-1 Item 1, AFW Instrumentation (6 hours to trip bistables)
	SRO	Contact Work Control SRO to initiate repairs

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

Event Description: ***VCT Level Transmitter (112) Failure High***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnoses high failure of VCT level transmitter LT-112 - VCT/HLDP TK DIV LCV-115A aligns to the Holdup Tank - LI-115 decreasing - Auto makeup occurs at 20 inches - APP-003-E3, VCT HI/LO LVL, illuminated when level decreases to 17 inches
	SRO	Enters and directs the actions of AOP-003, "Malfunction of Reactor Makeup Control"
	RO	Check for failure of a level transmitter as follows: - Obtain VCT level for LT-115 from ERFIS - Obtain VCT level for LT-112 from ERFIS - Check deviation between LT-112 and LT-115 greater than 8" (13%)
	RO	Check LT-115 NOT failed HIGH
	RO	Check LT-115 NOT failed LOW
	RO	Determine LT-112 failed HIGH

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

Event Description: ***VCT Level Transmitter (112) Failure High***

Time	Position	Applicant's Actions or Behaviors
	RO	***CAUTION: With NO operator action, LT-112 failing high with makeup flow less than charging suction flow will result in a loss of Charging Pump suction.*** Stabilize the RCS Makeup System as follows: - Place LCV-115A, VCT / HLDP TK DIV, to VCT postion - Obtain Hagan Rack Key number 10 - Place the selector switch in the bottom of Hagan Rack 19 to LT-115 position - Check selector switch in Hagan Rack 19 selected to LT-115 - Place LCV-115A in AUTO position - Contact I&C to repair failed channel
		SIMULATOR OPERATOR INSTRUCTIONS: Place selector to LT-115 by inserting MRF CVC067 LT-115.
	RO	***CONTINUOUS ACTION*** If VCT level decreases to less than 12.5" (21%), then verify charging pump suction is aligned to the RWST
	RO	Check VCT level greater than 20" (33%)
	RO	Check VCT level less than 51.5" (86%)

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

Event Description: ***VCT Level Transmitter (112) Failure High***

Time	Position	Applicant's Actions or Behaviors
	RO	Verify Charging and Letdown flows are normal for plant conditions
	RO	Check APP-003-D5, BA FLOW DEV, extinguished
	RO	Check APP-003-E5, MAKEUP WATER DEV, extinguished
	RO	Check boration NOT required and Check dilution NOT required
	SRO	Check Technical Specifications for applicable LCO and determine no LCOs apply
	SRO	Contact Work Control SRO to initiate repairs

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

Event Description: ***Trip of Service Water Pump 'A'***

Time	Position	Applicant's Actions or Behaviors
	BOP	Diagnoses trip of Service Water Pump 'A' - SW Pump 'A' control switch red AND green lights illuminated - PI-1616 decreasing - PI-1684 decreasing - APP-008-F4, SW Pump A/B/C/D OVLD, illuminated - APP-008-E4/E5/E6, CW PUMP A/B/C SEAL WTR LOST, momentarily illuminated - APP-008-F7/F8, SOUTH/NORTH SW HDR LO PRESS, illuminated - APP-002-A8/B8/C8/D8, HVH-1/2/3/4 WTR OUTLET LO FLOW, illuminated
	SRO	Enters and directs the actions of APP-008-F4, SW PMP A/B/C/D OVLD
	BOP	START a Standby Service Water Pump
	BOP	Dispatch operator to check breaker AND Current Limiter Fuses for SW Pump 'A' at 480V Bus E-1
	BOP	Throttle CCW Heat Exchanger Return Valves, as necessary, to maintain 40 to 50 psig in the SW Headers.
	SRO	Refer to Technical Specifications 3.7.7, Service Water System (72 hour TS due to Train 'A' inoperable) and Contact Work Control SRO to initiate repairs

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

Event Description: ***Letdown Pressure Control Valve Controller (PCV-145) Failure Closed / Establish Excess Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnoses failure of PCV-145 to closed position - PI-145 increasing - PC-145 demand increasing to CLOSED - TI-141 (letdown temp) increasing - APP-001-D6, LP LTDN LN HI PRESS, illuminated - APP-001-E6, LP LTDN RELIEF HI TEMP, illuminated - APP-003-C3, PRT HI PRESS, illuminated - APP-003-E6, PZR PORV LN HI TEMP, illuminated - APP-003-F6, PZR SAFETY VLV LINE HI TEMP, illuminated
	SRO	Enters and directs the actions of APP-001-D6, LP LTDN LN HI PRESS ***NOTE: Responding to APP-001-E6 will direct performance of actions APP-001-D6 if both are illuminated. May also elect to enter AOP-025, "RTGB Instrument Malfunctions," which is acceptable since same actions will be taken.***
	RO	Attempts to take manual control of PCV-145, but determines no response
	RO	IF PCV-145 failed, THEN remove Letdown from service using OP-301, "Chemical and Volume Control System" (Section 8.3.1)

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

Event Description: ***Letdown Pressure Control Valve Controller (PCV-145) Failure Closed / Establish Excess Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	IF necessary to Isolate Letdown, THEN perform the following: a. CLOSE LCV-460A and LCV-460B, Letdown Line Stop Valves b. CLOSE CVC-200A, LETDOWN ORIFICE ISOLATION c. CLOSE CVC-200B, LETDOWN ORIFICE ISOLATION d. CLOSE CVC-200C, LETDOWN ORIFICE ISOLATION e. CLOSE CVC-204A and CVC-204B, Letdown Line Isolation Valves **CRITICAL TASK TO ISOLATE LETDOWN TO PREVENT LOSS OF COOLANT THROUGH RELIEF VALVE.**
	RO	IF Letdown is required AND PCV-145 failed, THEN place Excess Letdown in service using OP-301-1, "Chemical and Volume Control System (Infrequent Operation)" (Section 8.4.12)
	RO	IF available, THEN perform the following: 1) Place on ERFIS trend Charging Header Pressure (CHP0142A) and RCS Charging Flow (CHF0128A) 2) Update the ERFIS Calorimetric program to reflect Excess Letdown is in service.
	RO	Verify OPEN CC-739, CCW FROM EXCESS LTDN HX.
	RO	Verify Component Cooling Water flow is greater than or equal to 240 gpm as indicated by FI-624.

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

Event Description: ***Letdown Pressure Control Valve Controller (PCV-145) Failure Closed / Establish Excess Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	***NOTE: Additional excess letdown flow may be obtained by placing CVC-389, EXCESS LTDN DIV, to the RCDT position, however considerations should be given to the additional liquid waste generated.*** Position CVC-389, EXCESS LTDN DIV, as required by plant conditions.
	RO	***CAUTION: Excess Letdown HX outlet temperature shall NOT exceed 195° F*** Using HIC-137 positioner slowly open HCV-137, EXCESS LTDN FLOW, allowing for warmup of the Excess Letdown Heat Exchanger.
	RO	Verify HIC-121, CHARGING FLOW FULL OPEN.
	RO	***NOTE: Pressurizer Level will increase if total charging flow exceeds total letdown flow AND Reactor Coolant Pump seal leakoff flow.*** IF normal letdown will be removed from service, THEN perform the following: - Verify one Charging Pump RUNNING - Place the Charging Pump in MANUAL AND REDUCE speed to minimum ***NOTE: Letdown was previously isolated due to lifting the letdown line relief.***

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

Event Description: ***Letdown Pressure Control Valve Controller (PCV-145) Failure Closed / Establish Excess Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	Record the following charging line and RCP seal injection flows. - FT-122 RCS CHARGING FLOW from ERFIS CHF0128A - FI-124 - FI-127 - FI-130 - Add the flows recorded above for the TOTAL Charging Pump flow
		CUE: WHEN LOCAL SEAL INJECTION FLOWS ARE REQUESTED, PROVIDE VALUES USING INSTRUCTOR SCREEN INDICATIONS.
	RO	***NOTE: It is NOT necessary to readjust RCP Seal Injection Flows to the normal range of 8 to 13 gpm for evolutions which will only last for several hours, provided the seal injection flow is maintained within 6 to 20 gpm for RCP Continuous operation. Seal injection flow shall be ≥ 6 gpm to each RCP when in MODES 1, 2, 3 and 4. (TS 3.4.17)*** ***CAUTION: IF care is NOT exercised WHEN throttling closed on HIC-121 OR CVC-297A, B, or C, the Charging Pump discharge pressure may increase AND result in lifting the Charging Pump discharge relief valve(s) which may not reseat. Maintaining a flow path greater than the charging pump(s) capacity will prevent the discharge relief valve(s) from being challenged.*** IF Charging flow is changed, THEN while maintaining Charging Pump discharge pressure less than 2500 psig, throttle the following valves, as necessary, to establish Seal Injection flow to an acceptable range: - CVC-297A, RCP "A" SEAL WATER FLOW CONTROL VALVE - CVC-297B, RCP "B" SEAL WATER FLOW CONTROL VALVE - CVC-297C, RCP "C" SEAL WATER FLOW CONTROL VALVE

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

Event Description: ***Letdown Pressure Control Valve Controller (PCV-145) Failure Closed / Establish Excess Letdown***

Time	Position	Applicant's Actions or Behaviors
	RO	IF seal injection flow cannot be increased to an acceptable range, THEN, while MAINTAINING Charging Pump discharge PRESSURE LESS THAN 2500 psig AND TOTAL CHARGING PUMP FLOW GREATER THAN OR EQUAL to the value recorded previously, perform the following: 1) Throttle close HIC-121 to obtain acceptable seal injection flows. 2) Throttle the following valves, as necessary, to establish Seal Injection flow to an acceptable range: - CVC-297A, RCP "A" SEAL WATER FLOW CONTROL VALVE - CVC-297B, RCP "B" SEAL WATER FLOW CONTROL VALVE - CVC-297C, RCP "C" SEAL WATER FLOW CONTROL VALVE
	SRO	IF Pressurizer level continues increasing, THEN contact Chemistry to perform the alignment for purging the Pressurizer Liquid sample line with full flow to the VCT IAW CP-003.
	SRO	IF Pressurizer level continues to increase, THEN evaluate the time excess letdown will be required against the rate of Pressurizer level increase and length of time available to remain with excess letdown in service.
	SRO	Refers to TS 3.4.9, Pressurizer, and 3.4.17, Chemical and Volume Control System
	SRO	Contact Work Control SRO to initiate repairs

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (AOP-035 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Diagnoses 35 gpm tube leak on Steam Generator 'B' - R-15 (condenser air removal) increasing - RR1, Channel 17 (R-15), illuminated - Charging flow increasing - PZR level decreasing - VCT level decreasing - APP-036-D8, PROCESS MONITOR HI RAD, illuminated
	SRO	Enters and directs the actions of AOP-035, "Steam Generator Tube Leak" ***NOTE: May concurrently perform the actions of AOP-005, "Radiation Monitoring."***
	SRO	Check RCS level NOT decreasing in an uncontrolled manner and goes to Step 15
	RO	Control charging flow to maintain desired RCS level
	SRO	***CONTINUOUS ACTION*** If RCS leakage exceeds charging flow, go to Step 7

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (AOP-035 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Notify Chemistry Personnel To Periodically Sample All S/Gs For Activity And Boron Concentration
	SRO	Determine Leak Rate Using At Least One Of The Following Methods: - Perform OST-051, Reactor Coolant System Leakage Evaluation - Perform a Charging versus Letdown balance - Notify Chemistry personnel to perform isotopic analysis of S/G samples for leak rate determination - Use R-15 to monitor for low level Primary-to-Secondary leakage using OP-504, Condenser Air Removal - Use CP-014 Conversion Factors to correlate R-15 to leakage
	RO	***CONTINUOUS ACTION*** Checks Leak Rate Greater than the following limits: - 500 gpd (0.34 gpm) for a single SG, OR - 1 gpm for all SGs
		SIMULATOR OPERATOR INSTRUCTIONS: As directed by the Lead Examiner, after the leak rate is determined to be greater than the limits, increase leak rate in ruptured SG.
	RO	Determines leak rate is exceeding capacity of charging pump
	SRO	Returns to Step 7 of AOP-035

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (AOP-035 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Adjust Charging Flow as follows: - If only one Charging Pump is running, start an additional Charging Pump - Place running Charging Pump Speed Controllers in MAN and adjust output to maximum
	RO	Check RCS level decreasing in an uncontrolled manner
	RO	Check letdown in service
	RO	Verify all Letdown flowpaths isolated as follows: - CVC-460 A&B, LTDN LINE STOP valves CLOSED - HIC-137, EXCESS LTDN FLOW controller ADJUSTED TO 0% - CVC-387, EXCESS LTDN STOP valve CLOSED
	RO	Establish maximum available Charging Flow as follows: - Verify all available Charging Pumps running - Place running Charging Pump Speed Controllers in MAN and adjust output to maximum while maintaining Charging Pump Discharge pressure less than 2500 psig - Observe maximum charging flow on FI-122A
	RO	Check RCS level decreasing in an uncontrolled manner

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct a Reactor Trip and go to PATH-1
	RO	***IMMEDIATE ACTION*** Verify SI Initiated or manually initiate SI
	BOP	***IMMEDIATE ACTIONS*** Verify Turbine tripped Verify E-1 and E-2 Energized
	RO	***IMMEDIATE ACTION*** Verify SI Initiated or manually initiate SI
	SRO	Open Foldout 'A'
	BOP	***FOLDOUT ITEM*** <u>MSR ISOLATION CRITERIA</u> IF ANY Purge OR Shutoff Valve does not indicate fully closed, THEN place the associated RTGB Switch to CLOSE

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Verify Phase A Isolation valves CLOSED ***FOLDOUT ITEM*** EXCESS LETDOWN ISOLATION CRITERIA IF a Phase A Isolation signals occurs, THEN verify: - CVC-387, EXCESS LTDN STOP - CLOSED - HIC-137, EXCESS LTDN FLOW - CONTROLLER AT 0%
	BOP	Verify FW Isolation valves CLOSED and both FW Pumps TRIPPED
	BOP	Verify both MDAFW Pumps RUNNING and starts the SDAFW Pump is additional feedwater is required
	RO	Determines only one SI Pump RUNNING and starts SI Pump 'A'
	RO	Verify both RHR Pumps RUNNING
	RO	Verify SI valves properly aligned

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Verify at least one CCW Pump RUNNING
	BOP	Determines SW Pump 'A' is NOT running due to previously tripping
	BOP	If North or South SW Header Low Press alarms illuminated, then CLOSE V6-16C OR V6-16A and V6-16B
	RO	Verify CV Fans HVH-1, HVH-2, HVH-3, and HVH-4 RUNNING
	BOP	Verify ISVW System INITIATED
	BOP	Verify Control Room Ventilation aligned for Pressurization Mode

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify both EDGs RUNNING
	BOP	***CONTINUOUS ACTION*** Restart Battery Chargers within 30 minutes of power loss using OP-601, "DC Supply System"
	RO	***CONTINUOUS ACTION*** If CV pressure exceeds 10 psig, then perform the following: - Verify CV Spray initiated - Verify all CV Spray Pumps RUNNING with valves properly aligned - Verify approximately 12 gpm Spray Additive Tank flow - Verify Phase B Isolation valves CLOSED - STOP all RCPs
	BOP	If automatic Steam Line Isolation required, then verify all MSIVs and MSIV Bypasses CLOSED
	SRO	Direct an operator to locally open breaker for HVS-1, AUX BUILDING SUPPLY FAN, at MCC-5 (7J) within 60 minutes of SI initiation
		SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF EPS214 to RACK_OUT.

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	If RCS pressure is LESS THAN 1350 psig, then verify SI flow or align SI valves as necessary
	RO	If RCS pressure is LESS THAN 125 psig, then verify RHR flow or align RHR valves as necessary
	BOP	Verify at least 300 gpm AFW flow available or level in at least one SG greater than 8%
	BOP	Verify AFW valves properly aligned
	BOP	Control AFW flow to maintain SG levels between 8% and 50% ***NOTE: May isolate AFW flow to SG 'B' if level is above 8% due to SGTR.***
	RO	If RCP Thermal Barrier Cooling Water High OR Low Flow alarms are illuminated, then verify at least one Charging Pump running

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Place Steam Dump Mode Selector Switch to STEAM PRESS mode
	BOP	If RCS temperature is LESS THAN 547 °F, then perform the following: - Attempt to limit the cooldown - If RCS cooldown continues and is NOT due to SI flow, then CLOSE the MSIVs and MSIV Bypasses
	BOP	If RCS temperature is greater than 547°F and NOT trending to 547°F, then dump steam using Condenser Dumps or Steam Line PORVs to attain 547°F
	RO	Verify proper operation of PZR PORVs and Spray
	RO	If RCS subcooling if less than 35°F AND at least one SI pump is running, then STOP all RCPs
	SRO	If any SG is completely depressurized or depressurizing in an uncontrolled manner, then Reset SPDS, initiate monitoring of CSFSTs, and go to EPP-11, "Faulted SG Isolation"

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Determine high radiation levels exist or have existed on the following radiation monitors: - R-15, Condenser Air Ejector Gas - R-19B, SG Blowdown SG 'B' - R-31B, Steamline 'B' Monitor ***NOTE: All of these monitors are likely to be decreasing, but if abnormal levels no longer exist, it is expected that they will still be considered abnormal due to previous indications.***
	SRO	Transition to and direct the actions of PATH-2 (Entry Point J)
	RO	Reset SPDS
	SRO	Initiate monitoring of CSFSTs
	SRO	Open Foldout C

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	***FOLDOUT ITEM*** IF BOTH conditions below are met prior to commencing cooldown to required CET temperature, THEN stop all RCPs: - SI Pumps - AT LEAST ONE RUNNING AND CAPABLE OF DELIVERING FLOW TO THE CORE - RCS Subcooling - LESS THAN 35 °F
	BOP	***FOLDOUT ITEM*** IF EITHER condition below occurs, THEN Go To EPP-11, Faulted Steam Generator Isolation, unless the faulted S/G is already isolated: - Any S/G pressure is decreasing in an uncontrolled manner - Any S/G has completely depressurized
	RO	***CONTINUOUS ACTION*** When below 10^{-10} amps, than energize SR Detectors and transfer recorder
	SRO	Request periodic activity sample of all SGs
	BOP	Verify Steam Dump Mode Selector Switch in STEAM PRESS mode

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Open QCV-10426 to bypass Condensate Polishers
	RO	If RCS subcooling if less than 35°F AND at least one SI pump is running, then STOP all RCPs
	SRO	Identify SG 'B' as the ruptured SG
	BOP	Maintain at least one SG available for RCS cooldown
	BOP	Verify SG 'B' Steam Line PORV setpoint at 1035 psig using status board
	BOP	Verify RCS temperature less than 547°F and close SG 'B' MSIV and MSIV Bypass

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 and EPP-11 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
		SIMULATOR OPERATOR INSTRUCTIONS: APPROXIMATELY ONE MINUTE AFTER MSIV IS CLOSED ON SG 'B', FAIL OPEN SG SAFETY VALVE BY INSERTING MFI SGN01F.
	BOP	***CONTINUOUS ACTION*** When SG 'B' pressure decreases below 1035 psig, then verify Steam Line 'B' PORV closed
		NOTE: CREW WILL BE REQUIRED TO TRANSITION TO EPP-11, "FAULTED SG ISOLATION," UPON RECOGNITION OF FAULT ON SG 'B'. THIS MAY OCCUR ANYTIME AFTER SAFETY VALVE FAILS OPEN. SCENARIO IS WRITTEN ASSUMING IDENTIFICATION OCCURS SHORTLY AFTER FAULT OCCURS.
	SRO	Transitions to and directs the actions of EPP-11, "Faulted SG Isolation," based on Foldout C item for Secondary Integrity Criteria (SG pressure decreasing in an uncontrolled manner).
	SRO	Maintain At Least One S/G Available For RCS Cooldown
	BOP	Identifies SGs 'A' and 'C' as intact based on pressure stable and increasing
	BOP	Identifies SG 'B' as faulted based on pressure decreasing in an uncontrolled manner

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (EPP-11 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Directs isolation of SG 'B' in accordance with Supplement G, "Steam Generator Isolation"
		NOTE: NEXT 5 PAGES (PAGES 36 THROUGH 40) OF SCENARIO ADDRESS SUPPLEMENT 'G' ACTIONS FOR STEAM GENERATOR ISOLATION (PAGE HEADER IDENTIFIES THESE PAGES). CONTINUATION OF PATH-2 ACTIONS ARE LOCATED IMMEDIATELY FOLLOWING SUPPLEMENT 'G' ACTIONS. THE REMAINING ACTIONS ON THIS PAGE ARE THE COMPLETION OF EPP-11 ACTIONS.
	SRO	Maintain SG 'B' isolated during subsequent recovery actions
	RO	Determines CST level is >10%
	SRO	Determines Secondary Radiation levels are NOT normal and transitions to PATH-2, Entry Point J
		NOTE: ACTIONS FOR PATH-2 FOLLOWING PERFORMANCE OF EPP-11 ARE LOCATED ON PAGE 41 OF SCENARIO.

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (SUPPLEMENT 'G' ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Determines appropriate step is Step 18 due to SG 'B' being faulted
		CRITICAL TASK TO ISOLATE RUPTURED / FAULTED SG TO MINIMIZE RADIOLOGICAL RELEASE TO ENVIRONMENT.
	BOP	Determines SG 'B' faulted due to pressure decreasing in an uncontrolled manner
	BOP	Verify V1-3B, MSIV -CLOSED
	BOP	Verify MS-353B, MSIV V1-3B BYP - CLOSED
	BOP	Verify FRV B - CLOSED
	BOP	Verify FRV B BYP - CLOSED

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (SUPPLEMENT 'G' ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify V2-6B, FW HDR SECTION Valve - CLOSED
	BOP	Verify V2-14B, SDAFW PUMP DISCH Valve - CLOSED
	BOP	Verify V2-16B, AFW HDR DISCH Valve - CLOSED
	BOP	Verify STEAM LINE PORV - CLOSED
	BOP	Verify V1-8B, SDAFW STEAM SHUTOFF Valve - CLOSED
	BOP	Verify S/G B Blowdown AND Blowdown Sample Valve Status - Light Indication - CLOSED

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (SUPPLEMENT 'G' ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Check S/G "B" MSIV Above And Below Seat Drain Valves - CLOSED
		CUE: (Valves are normally closed) Inform CR that valves have been verified closed.
	BOP	Dispatch Operator To E-1/E-2 Room To Perform The Following: - At MCC-9, open breaker V2-14B, SDAFW PUMP TO S/G B (CMPT-1C) - At MCC-6, open V1-8B, SDAFW PUMP STEAM ISOLATION (CMPT-16M)
		SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF EPS226 to RACK_OUT (V1-8B) and MRF EPS254 to RACK_OUT (V2-14B).
	BOP	Dispatch Operator To The Aux. Bldg. To Perform The Following: - At MCC-10, open breaker V2-16B, MDAFW PUMP HEADER DISCHARGE TO S/G B (CMPT-4F)
		SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF EPS266 to RACK_OUT (V2-16B).
	BOP	Dispatch Operator To The Pipe Jungle To Close MS-29, SG "B" BYPASS DRN & WARM-UP LINE TO AFW PUMP (located above/right of V1-8B)
		SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF MSS048 to 0.

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (SUPPLEMENT 'G' ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Go To Step 49
	BOP	Check All Faulted AND Ruptured SGs - ISOLATED
	BOP	Determines SG 'B' is ruptured
	BOP	Use auxiliary boilers for auxiliary steam
	BOP	Bypass the Condensate Polishers as follows: a. Verify QCV-10426, SECONDARY BYPASS - OPEN b. Locally depress the OFF Pushbutton on Condensate Polisher Vessels A, B, C, D, E and F ***CUE: Inform CR that 'OFF' pushbuttons have been depressed.***

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (SUPPLEMENT 'G' ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify Hotwell return to CST isolated as follows: a. Locally verify C-48A, LCV-1417B INLET - CLOSED b. Locally verify C-48B, LCV-1417B DISCHARGE - LOCKED CLOSED ***CUE: Inform CR that C-48A and C-48B are closed.***
	BOP	Dispatch An Operator To Close GS-36, MANUAL GLAND STEAM DUMP ***CUE: Inform CR that GS-36 has been closed.***
	BOP	Informs SRO that Supplement 'G' is completed

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Reset SPDS
	SRO	Initiate monitoring of CSFSTs
	SRO	Open Foldout C
	RO	***CONTINUOUS ACTION*** When below 10^{-10} amps, than energize SR Detectors and transfer recorder ***NOTE: Performed first time through PATH-2.***
	SRO	Request periodic activity sample of all SGs ***NOTE: Performed first time through PATH-2.***
	BOP	Verify Steam Dump Mode Selector Switch in STEAM PRESS mode ***NOTE: Performed first time through PATH-2.***

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Open QCV-10426 to bypass Condensate Polishers ***NOTE: Performed first time through PATH-2.***
	RO	If RCS subcooling if less than 35°F AND at least one SI pump is running, then STOP all RCPs ***NOTE: Performed first time through PATH-2.***
	SRO	Identify SG 'B' as the ruptured SG ***NOTE: Performed first time through PATH-2.***
	BOP	Maintain at least one SG available for RCS cooldown ***NOTE: Performed first time through PATH-2.***
	BOP	Verify SG 'B' Steam Line PORV setpoint at 1035 psig using status board ***NOTE: Performed first time through PATH-2.***
	BOP	Verify RCS temperature less than 547°F and close SG 'B' MSIV and MSIV Bypass ***NOTE: Performed first time through PATH-2.***

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	***CONTINUOUS ACTION*** When SG 'B' pressure decreases below 1035 psig, then verify Steam Line 'B' PORV closed ***NOTE: Performed first time through PATH-2.***
	BOP	Close SG 'B' Steam Supply to SDAFW Pump ***NOTE: Performed during Supplement 'G'.***
	BOP	Verify SG Blowdown Isolation and Sample valves closed ***NOTE: Performed during Supplement 'G'.***
	SRO	Direct operator to locally close warmup steam supply from SG 'B' to SDAFW Pump ***NOTE: Performed during Supplement 'G'.***
	SRO	Direct operator to locally close SG 'B' MSIV above and below seat drains ***NOTE: Performed during Supplement 'G'.***

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Isolate feed flow to SG 'B' due to being ruptured and faulted ***NOTE: Performed during Supplement 'G'.***
	BOP	***CONTINUOUS ACTION*** If not previously isolated, then isolate feed flow to SG 'B' when level is above 8%
	SRO	***CONTINUOUS ACTION*** Direct operator to locally open the following breakers after feed flow is isolated to SG 'B': - V1-8B - V2-14B - V2-16B ***NOTE: Performed during Supplement 'G'.***
	BOP	Control feed flow to maintain intact SG levels between 8% and 50%
	BOP	Verify NO other SGs with uncontrolled level increase

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Verify proper operation of PZR PORVs
	RO	Reset SI
	RO / BOP	***CONTINUOUS ACTION*** If offsite power is lost, then restart ESF equipment
	RO	Reset Containment Spray
	RO	Reset Phase A and Phase B
	BOP	Establish IA to Containment

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify all AC buses energized by offsite power
	RO	If RCS pressure is greater than 275 psig, then STOP both RHR pumps
	RO	***CONTINUOUS ACTION*** If RCS pressure decreases below 275 psig, then RESTART both RHR pumps
	BOP	Verify SG 'B' isolated ***NOTE: Although it may be noted that SG 'B' has developed a steam break subsequent to isolating per PATH-2, this decision must be answered 'YES' to allow continuation in PATH-2 so that the proper transition to EPP-17 can be made (See OMM-022, Section 8.3.7 for further discussion on Continuous Loops).***

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	If SG 'B' pressure is NOT greater than 220 psig, then go to EPP-17, "SGTR With Loss of Reactor Coolant: Subcooled Recovery" ***NOTE: Depending on several factors, including when AFW was isolated to SG 'B' and the pace which the crew has taken through PATH-1 and PATH-2, SG 'B' pressure is likely to still be above 220 psig. If this is the case and the crew makes a determination to continue in PATH-2, they will be directed to transition to EPP-17 upon checking SG pressure after the completion of the RCS cooldown. This scenario is written assuming the decision to transition to EPP-17 is made after the cooldown is performed. Either flowpath is acceptable, provided EPP-17 is implemented.***
	BOP	Determines SGs 'A' and 'C' available for RCS cooldown
	RO	Acknowledges note that Main Steamline Isolation will occur if the High Steam Flow rate setpoint is exceeded after the Low Steamline Pressure SI signal is blocked
	SRO	Determines Required Core Exit Temperature using table, based on current pressure in SG 'B' (ruptured SG)
	RO	Blocks PZR pressure and high steamline ΔP signals when PZR pressure less than 2000 psig

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Monitors CSF-4 since RCPs are running
	BOP	Determines condenser available for steam dump
	RO	Tavg SI Signal blocked when below 543 °F and before maximum steam dump flow
	BOP	Places Steam Dump Control Switch to Bypass T-avg Interlock
	BOP	Dumps steam from SG 'A' and 'C' at maximum rate
	RO	Determines at least 1 charging pump running

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Aligns charging pump suction aligned to the RWST
	RO	Establishes charging flow to maintain PZR level
	BOP	When CETs below target temperature, reduces steam flow to stabilize RCS temperature
	SRO	Allows RCS temperature to stabilize before continuing
	BOP	Determines SG 'B' pressure is continuing to decrease
	SRO	Determines SG 'B' pressure has decreased to less than 250 psig above the pressures of SG 'A' and 'C'

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

Event Description: ***Rupture / Faulted Steam Generator 'B' (PATH-2 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Transitions to EPP-17, "SGTR with Loss of Reactor Coolant: Subcooled Recovery"
		TERMINATE THE SCENARIO WHEN THE RCS COOLDOWN HAS BEEN COMPLETED AND A TRANSITION HAS BEEN MADE TO EPP-17.

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

Event Description: ***Failed Open Safety Valve on Ruptured Steam Generator***

Time	Position	Applicant's Actions or Behaviors
		ACTIONS FOR THIS EVENT ARE INCLUDED IN THE ACTIONS FOR EVENT 6.

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

Event Description: ***Failure of SI Pump 'A' to Automatically Start***

Time	Position	Applicant's Actions or Behaviors
		ACTIONS FOR THIS EVENT ARE INCLUDED IN THE ACTIONS FOR EVENT 6.

Facility: **RNP** Scenario Number: **1** Op-Test Number: _____

Examiners _____ Operators _____

_____ _____

_____ _____

_____ _____

Objectives: To evaluate the candidate's ability to perform a power reduction from 100% power. To evaluate the candidates' ability to respond to a failure of the selected first stage pressure transmitter and a trip of a HDP, requiring a power reduction to < 85% power. During the power reduction, the candidates will be evaluated on their ability to control reactivity. The candidates will be evaluated on their ability to respond to a pressurizer pressure transmitter failure and a charging pump trip. A sequence of events will result in a loss of heat sink event coincident with an ATWS. Post-trip complications will include a failure of one PORV to open when feed and bleed initiated.

Initial Conditions: IC-201, 100% power MOL; Equipment OOS is AFW Pump 'A' and SI Pump 'A'. SI Pump 'B' is aligned to Train 'A'.

Turnover: Power is 100% at MOL. Severe thunderstorms have been reported in the area. A 0.02 gpm tube leak exists in SG 'A'. AOP-035 has been completed.

AFW Pump 'A' has been out of service for 4 hours to allow maintenance to perform stator insulation checks. Technical Specification 3.7.4 has been entered and 164 hours remain before a shutdown to Mode 3 would be required.

SI Pump 'A' has been out of service for 26 hours for bearing inspections. SI Pump 'B' is aligned to Train 'A' in accordance with OP-202.

RM-31B is out of service.

Boron concentration is 791 ppm. Bank D rods are at 218 steps.

Shift orders are to commence a power power reduction to 75% for condenser air leakage troubleshooting. Other night orders as currently published are in effect.

Event Number	Malfunction Number (1)	Event Type*	Event Description
1	NA	BOP(N) SRO(N)	Commence 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.

Event Number	Malfunction Number	Event Type*	Event Description
2	ICOR PT:446 0 90 Asls	BOP(I) SRO(I)	Selected First Stage Pressure Transmitter (446) Failure Low
3	IMF CFW12A	BOP(C) SRO(C)	Heater Drain Pump 'A' Trip with Automatic Failure of FRV 'C'
	NA	RO(R) SRO(R)	Reactivity Control During Response to Heater Drain Pump Trip
4	ICOR PT:444 2500 180 Asls	RO(I) SRO(I)	Controlling Channel of Pressurizer Pressure (444) Failure High
5	IMF CVC05A	RO(C) SRO(C)	Charging Pump 'A' Trip
6	IMF CFW24 6e+06 5:00 Asls	RO(M) BOP(M) SRO(M)	Loss of Main Feedwater due to Feed Header Break
	IMF EPS05B IMF EDG03B	RO(M) BOP(M) SRO(M)	Fault on 480V Bus E2 with Lockout of 'B' EDG
	IMF CFW01C	RO(M) BOP(M) SRO(M)	Overspeed Trip of SDAFW Pump
7	IMF RPS01A 2 3 IMF RPS01B 2 3	RO(M) BOP(M) SRO(M)	Failure of Reactor to Trip from Control Room
8	IMF PRS03C	RO(C) SRO(C)	Failure of PRZ PORV (446) to Open
9	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-201, 100% power MOL. Equipment OOS is AFW Pump 'A' and SI Pump 'A'. RM-31B is also OOS. Insert a 0.02 gpm tube leak on SG 'A'. SI Pump 'B' is aligned to Train 'A'. Event 7 inserted prior to start of scenario.	
1	NA	Plant Power Reduction and Control of Reactivity - **NO MALFUNCTIONS REQUIRED**
2	ICOR PT:446 0 90 Asls	Selected First Stage Pressure Transmitter (446) Failure Low
3	IMF CFW12A	Heater Drain Pump 'A' Trip Requiring Power Reduction to <85% and Control of Reactivity
4	ICOR PT:444 2500 180 Asls	Controlling Channel of Pressurizer Pressure (444) Failure High
5	IMF CVC05A	Charging Pump 'A' Trip
6	IMF CFW24 6e+06 5:00 Asls	Loss of Main Feedwater due to Feed Header Break
	IMF EPS05B IMF EDG03B	Fault on 480V Bus E2 with Lockout of EDG Resulting in Loss of MDAFW Pump 'B' - **INSERT UPON ACTUATION OF AFW DUE TO LOW SG LEVEL**
	IMF CFW01C	Overspeed Trip of SDAFW Pump - **INSERT UPON ACTUATION OF AFW DUE TO LOW SG LEVEL**
7	IMF RPS01A 2 3 IMF RPS01B 2 3	Failure of Reactor to Trip from Control Room - **INSERTED PRIOR TO START OF SCENARIO**
8	IMF PRS03C	Failure of PRZ PORV (446) to Open - **INSERT UPON REACTOR TRIP BREAKERS OPENED LOCALLY**
9	NA	Classify the Event - **NO MALFUNCTIONS REQUIRED**

SHIFT TURNOVER SCENARIO # 1

Power is 100% at MOL. Severe thunderstorms have been reported in the area. A 0.02 gpm tube leak exists in SG 'A'. AOP-035 has been completed.

AFW Pump 'A' has been out of service for 4 hours to allow maintenance to perform stator insulation checks. Technical Specification 3.7.4 has been entered and 164 hours remain before a shutdown to Mode 3 would be required.

SI Pump 'A' has been out of service for 26 hours for bearing inspections. SI Pump 'B' is aligned to Train 'A' in accordance with OP-202.

RM-31B is out of service.

Boron concentration is 791 ppm. Bank D rods are at 218 steps.

Shift orders are to commence a power power reduction to 75% for condenser air leakage troubleshooting. Other night orders as currently published are in effect.

Op-Test Number: _____ Scenario Number: 1 Event Number: 1

Event Description: ***Power Reduction with Reactivity Control***

Time	Position	Applicant's Actions or Behaviors
	SRO	Directs the actions of OP-105, "Maneuvering the Plant When Greater Than 25% Power"
	RO	If additional letdown flow is desired, THEN perform the following: - Start additional charging pumps as necessary IAW OP-301 - Place additional letdown orifice in service IAW OP-301
	BOP	Reduce turbine load as follows: 1) Place the EH Turbine Control in the desired position: - IMP IN (preferred) - IMP OUT (if required for plant conditions) - Set the desired load in the SETTER - Select the desired Load Rate - Depress the GO pushbutton
	RO	Verify proper programming of the following: - Tavg tracks within 5 °F of Tref - PZR level tracks within 5% of reference level
	RO	Maintain the control rods above the minimum allowable rod height borating the RCS IAW OP-301, "Chemical and Volume Control System"

Op-Test Number: _____ Scenario Number: 1 Event Number: 1

Event Description: ***Power Reduction with Reactivity Control (BORATION)***

Time	Position	Applicant's Actions or Behaviors
	RO	Place the RCS MAKEUP MODE selector switch in BORATE.
	RO	IF desired, THEN, place controller FCV-113A, BORIC ACID FLOW, in MAN AND adjust the Controller by using the UP/DOWN arrow pushbuttons to adjust FCV-113A Controller output to 30-50%.
	RO	Set the BORIC ACID TOTALIZER, YIC-113, to the desired quantity as follows: 1) Depress BUTTON "A". 2) Depress "CLR" BUTTON. 3) Key in the desired quantity AND depress the "ENT" BUTTON.
	RO	***NOTE: The following step will open FCV-113A, BA TO BLENDER, and FCV-113B, BLENDED MU TO CHG SUCT, and will start a Boric Acid Pump.*** Place the RCS MAKEUP SYSTEM switch in START.
	RO	IF desired, THEN manually adjust controller FCV-113A, BORIC ACID FLOW, using the UP and DOWN arrow pushbuttons to establish the desired Boric Acid flow rate.

Op-Test Number: _____ Scenario Number: 1 Event Number: 1

Event Description: ***Power Reduction with Reactivity Control (BORATION)***

Time	Position	Applicant's Actions or Behaviors
	RO	WHEN the desired amount of Boric Acid has been added to the RCS, THEN verify the following: - FCV-113A, BA TO BLENDER, closes - FCV-113B, BLENDED MU TO CHG SUCT, closes - The BORIC ACID PUMP stops - The RCS MAKEUP SYSTEM is off
	RO	IF desired, THEN flush the Boric Acid flow path
	RO	Return the RCS Makeup System to automatic operation by performing the following: 1) Verify controller FCV-113A, BORIC ACID FLOW, in AUTO. 2) Place RCS MAKEUP MODE selector switch in AUTO. 3) Place RCS MAKEUP SYSTEM switch in START.
	RO	Record, in AUTO LOG, the total amount of Boric Acid added during the boration operation as indicated by BORIC ACID TOTALIZER, YIC-113. ***NOTE: AUTO LOG is not functional in simulator.***

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

Event Description: ***First Stage Pressure Transmitter (446) Failure Low***
(NOTE: EVENT MAY BE DELETED FROM SCENARIO WHEN SURROGATE FULFILLING ROLE OF BOP OPERATOR)

Time	Position	Applicant's Actions or Behaviors
	BOP / RO	Diagnoses low failure of First Stage Pressure Transmitter PT-446 - Rods stepping inward - PI-446 indication failing low - TR-408 green pen lowering - APP-006-D4/E4/F4, SG A/B/C STM LINE HI FLOW, illuminated - APP-006-F5, STEAM DUMP ARMED, illuminated - APP-005-F5, AMSAC TROUB/BYPD, illuminated - APP-003-D4, TAVG/TREF DEV, illuminated
	SRO	Enters and directs the actions of AOP-025, "RTGB Instrument Failure," Section H, for "Turbine First Stage Pressure Transmitter Failure" ***NOTE: Should also direct placing turbine control in HOLD.***
	BOP	***IMMEDIATE ACTION*** Check SG level trend controlling in AUTO to 39% or place affected FRV controllers in MAN and restore SG level to between 39% and 52%
	RO	***IMMEDIATE ACTION*** Manually control Reactor Power and Tavg as follows: - Place the Rod Control Selector Switch in Manual - Operate rods to maintain Reactor Power less than 100%.
	BOP	If not previously performed, place all FRV Controllers in MAN

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

Event Description: ***First Stage Pressure Transmitter (446) Failure Low***
(NOTE: EVENT MAY BE DELETED FROM SCENARIO WHEN SURROGATE FULFILLING ROLE OF BOP OPERATOR)

Time	Position	Applicant's Actions or Behaviors
	BOP	Place the 1ST STAGE PRESSURE Selector Switch to the Alternate channel by placing it in the PT-447 position
	BOP	Restore each SG level to program level
	BOP	***CONTINUOUS ACTION*** When SG level is within 1% of programmed level, then place the FRV Controllers back in AUTO
	RO	***CONTINUOUS ACTION*** When Tavg is within +0.5 to -2.5 °F of Tref and Axial Offset is within the Target Band, then place the Rod Control Selector Switch back to AUTO
	SRO	Direct the actions of OWP-033, FSP-1, "First Stage Pressure Transmitter PT-446," to remove 446 from service

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

Event Description: ***First Stage Pressure Transmitter (446) Failure Low***
(NOTE: EVENT MAY BE DELETED FROM SCENARIO WHEN SURROGATE FULFILLING ROLE OF BOP OPERATOR)

Time	Position	Applicant's Actions or Behaviors
	SRO	***SELECTED PRECAUTIONS*** 1) Refer to ITS Table 3.3.1-1 Item 17e and Table 3.3.2-1 Items 1f, 1g, 4d, and 4e for applicability and operability requirements. 5) Ensure that either all safeguards bistables for Lo Tavg and Lo Steam Pressure are clear OR the Hi Steam Flow SI signal is blocked (IF plant conditions permit). 8) PT-446 input to AMSAC Processor Channels "A" AND "B" should be BYPASSED using the POWER 1 BYPASS switches located on the AMSAC cabinet.
	BOP	Perform the following RTGB switch alignment: - STEAM DUMP CONTROL MODE SELECTOR SWITCH in STEAM PRESS MODE - 1ST STAGE PRESSURE SELECTOR SWITCH 446/447 in SELECTED TO 447
	BOP	Verify APP-006-F5, STEAM DUMP ARMED, is illuminated
	SRO	Direct the tripping of the following bistables in the Hagan Racks - 70% Turbine Load Limit - Permissive P7 - Loop 1 High Steam Flow - Loop 2 High Steam Flow - Loop 3 High Steam Flow
		SIMULATOR OPERATOR INSTRUCTIONS: Bistables to be tripped by inserting MRF BST101 D_OPEN (door open), MRF BST099 TRIP (turbine load limit), MRF BST09 TRIP (P-7), MRF BST016 TRIP (loop 1 high steam flow), MRF BST018 TRIP (loop 2 high steam flow), MRF BST020 TRIP (loop 3 high steam flow), and MRF BST101 D_CLOSED (door closed).

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

Event Description: ***First Stage Pressure Transmitter (446) Failure Low***
(NOTE: EVENT MAY BE DELETED FROM SCENARIO WHEN SURROGATE FULFILLING ROLE OF BOP OPERATOR)

Time	Position	Applicant's Actions or Behaviors
	SRO	Direct bypassing the AMSAC input from PT-466 by the following switch alignment: - AMSAC Bypass Switch POWER 1, PROCESSOR 'A' to BYPASSED - AMSAC Bypass Switch POWER 1, PROCESSOR 'B' to BYPASSED
		SIMULATOR OPERATOR INSTRUCTIONS: Actions to insert are MRF RPS001 BYPASS (processor 1 bypass) and MRF RPS005 RESET (AMSAC reset).
	SRO	Return to Main Body of procedure (AOP-025)
	SRO	Implement the EALs
	SRO	Refer to Technical Specifications - TS Table 3.3.1-1 Item 17e, RPS Instrumentation (1 hour to verify interlock is in required state) - TS Table 3.3.2-1 Items 1f, 1g, 4d, and 4e, ESFAS Instrumentation (6 hours to trip bistables)
	SRO	Contact Work Control SRO to initiate repairs

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

Event Description: ***Heater Drain Pump 'A' Trip with Automatic Failure of FRV 'C'***

Time	Position	Applicant's Actions or Behaviors
	BOP	Diagnoses trip of Heater Drain Pump 'A' - Heater Drain Pump 'A' control switch green light illuminated - APP-007-A5, HDT PMP A MOTOR OVLD/TRIP, illuminated - APP-007-B6, HDT HI/LO LVL
	SRO	Enters and directs the actions of AOP-010, "Main Feedwater / Condensate Malfunction"
	BOP	***IMMEDIATE ACTION*** Check FRVs controlling properly in AUTO or take manual control of affected FRV(s) and control level by matching feed flow and steam flow
	SRO	If a reactor trip point is being approached, then direct a reactor trip and transition to PATH-1
	SRO	Determines appropriate step to perform for HDP trip
	BOP	Based on combination of running pumps, reduce turbine load at 1%/min to 5%/min to achieve reactor power less than the Target Power of 85%
	BOP	Determines FRV 'C' NOT responding in AUTO and controls SG 'C' level using MAN control of FRV 'C'

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

Event Description: ***Heater Drain Pump 'A' Trip with Automatic Failure of FRV 'C'***

Time	Position	Applicant's Actions or Behaviors
	BOP	Check Main FW Pumps - TWO PUMPS RUNNING
	BOP	***CONTINUOUS ACTION*** Monitor Condensate Pump header pressure on PI-1458 and if pressure decreases to less than 300 psig, then verifiy open HCV-1459
	BOP	***CONTINUOUS ACTION*** Check APP-007-B6, HDT HI/LO LVL, extinguished
	BOP	Check HCV-1459, LP HEATERS BYP, closed
	BOP	If SG level is NOT at or trending to program level, then take manual control of the FRVs, restore level, match feed and steam flows, and then place FRVs back in AUTO
	RO	If Tavg is NOT at or trending to Tref, then place Rod Control Selector switch in manual, restore Tavg to within +0.5 to -2.5 °F of Tref, then place switch back in AUTO

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

Event Description: ***Heater Drain Pump 'A' Trip with Automatic Failure of FRV 'C'***

Time	Position	Applicant's Actions or Behaviors
	SRO	Contact Maintenance to troubleshoot and correct the feedwater problem
	SRO	Implement the EALs
	SRO	If power change greater than 15% in one hour, then implement TS SR 3.4.16.2 for Iodine sampling requirements
	RO	***CONTINUOUS ACTION*** Check APP-005-B5, ROD BANKS A/B/C/D LO LIMIT, extinguished
	RO	Monitor AFD to ensure compliance with TS 3.2.3
	SRO	Notify Load Dispatcher of the Unit's load capability

Op-Test Number: _____ Scenario Number: 1 Event Number: 4

Event Description: ***Pressurizer Pressure Transmitter (444) Failure High***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnoses high failure of Pressurizer Pressure Transmitter PT-444 - PI-444 indication increases - Spray valves open - PC-444J demand increases - PI-458 (demand meter) increases - PR-444 red pen increases - PORV PCV-455C opens - APP-003-D8, PZR CONTROL HI/LO PRESS, illuminated - APP-003-C7, PZR PRESS CONTROLLER HI OUTPUT, illuminated - APP-003-C3, PRT HI PRESS, illuminated - APP-003-D6, PZR PORV/SAFETY VLV OPEN, illuminated - APP-003-E6, PZR PORV LN HI TEMP, illuminated - APP-003-F6, PZR SAFETY VLV LINE HI TEMP, illuminated
	SRO	Enters and directs the actions of AOP-025, "RTGB Instrument Failure," Section C, for "Pressurizer Pressure Transmitter Failure"
	RO	***IMMEDIATE ACTION*** Check either PZR PORV open
	RO	***IMMEDIATE ACTION*** Close the open PORV

Op-Test Number: _____ Scenario Number: 1 Event Number: 4

Event Description: ***Pressurizer Pressure Transmitter (444) Failure High***

Time	Position	Applicant's Actions or Behaviors
	RO	***IMMEDIATE ACTION*** Check PT-444 is failed transmitter
	RO	***IMMEDIATE ACTION*** Control PZR Pressure Controller PC-444J as follows: - Place PC-444J in MAN - Verify PZR Spray Valves and Heaters in AUTO - Restore PZR pressure to the desired control band
	RO	Verify PCV-455C in AUTO
	RO	Verify Selector Switch PM-444 selected to operable channel - REC 445
	SRO	Return to Main Body of procedure (AOP-025)
	SRO	Implement the EALs

Op-Test Number: _____ Scenario Number: 1 Event Number: 4

Event Description: ***Pressurizer Pressure Transmitter (444) Failure High***

Time	Position	Applicant's Actions or Behaviors
	SRO	Refer to Technical Specifications - TS 3.4.1, DNB Parameters (2 hours to restore pressure above 2205 psig)
	SRO	Contacts Work Control SRO to initiate repairs

Op-Test Number: _____ Scenario Number: 1 Event Number: 5

Event Description: ***Charging Pump 'A' Trip***

Time	Position	Applicant's Actions or Behaviors
	RO	Diagnoses trip of Charging Pump 'A' - Charging Pump 'A' control switch green light illuminated - APP-003-F5, CHG PMP MOTOR OVLD/TRIP, illuminated
	SRO	Enters and directs the actions of APP-003-F5, CHG PMP MOTOR OVLD/TRIP
	RO	Start standby Charging Pump 'B' and adjusts speed as necessary to maintain PZR level
	SRO	Dispatch Operator to check the Charging Pump 'A' breaker at 480V Bus DS
	SRO	Dispatch Operator to check the Charging Pump(s) and Contact Work Control SRO to initiate repairs
	SRO	Refers to Technical Specifications - TS 3.4.17, Chemical and Volume Control System (still have 2 operable pumps)

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (AOP-010 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	CREW	Diagnoses Main Feedwater Header Break - SG levels decreasing - Main Feed FCVs opening - Rods stepping inward (may occur) - Tavg increasing - PI-1420 (FW header pressure) decreasing - LI-1417A (hotwell level) decreasing - APP-007-D5, FW HDR LO PRESS, illuminated - APP-006-A3/B3/C3, SG A/B/C LVL DEV, illuminated - APP-007-A7, HOTWELL LO LVL, illuminated
	SRO	Enters and directs the actions of AOP-010, "Main Feedwater / Condensate Malfunction"
	BOP	***IMMEDIATE ACTION*** Check FRVs controlling properly in AUTO or take manual control of affected FRV(s) and control level by matching feed flow and steam flow
	SRO	If a reactor trip point is being approached, then direct a reactor trip and transition to PATH-1
	SRO	Determines appropriate step to perform for pipe break

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (AOP-010 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	***CONTINUOUS ACTION*** Attempt to match steam flow with feed flow as follows: - Reduce turbine load at 1%/min to 5%/min to match steam to feed flow
	SRO	Dispatch an operator to locate and attempt to isolate the break
	SRO	Based on plant conditions, direct a manual Reactor Trip if an automatic trip has not yet occurred
	RO	Attempts manual Reactor Trip and informs SRO that reactor will NOT trip
	SRO	Enters PATH-1 and immediately transitions to and directs the actions of FRP-S.1, "Response to Nuclear Power Generation / ATWS"

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-S.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	***IMMEDIATE ACTION*** - Depress both Reactor Trip pushbuttons - Insert Control Rods - Dispatch an operator to the MG Set Room to trip the following breakers: REACTOR TRIP BREAKER 'A' REACTOR TRIP BREAKER 'B' GENERATOR 'A' CIRCUIT BREAKER GENERATOR 'B' CIRCUIT BREAKER - Dispatch an operator to 480V Buses 2B and 3 to trip the following breakers: ROD DRIVE MOTOR GENERATOR SET 'A' ROD DRIVE MOTOR GENERATOR SET 'B' **CRITICAL TASK TO ASSURE REACTOR SHUTDOWN TO PREVENT POTENTIAL CORE DAMAGE.**
		SIMULATOR OPERATOR INSTRUCTIONS: Approximately 1 minute after being dispatched, insert DMF RPS01A (removes malfunction), DMF RPS01B (removes malfunction), MRF EPS097 RACK_OUT (open MG set breaker) and MRF EPS104 RACK_OUT (open MG set breaker).
	BOP	***IMMEDIATE ACTION*** Check Turbine Trip as follows: - BOTH Turbine Stop Valves CLOSED, or - All Governor Valves CLOSED
	BOP	While verifying all AFW Pumps running, determines that NO AFW Pumps are running ***- AFW Pump 'A' under clearance*** ***- AFW Pump 'B' no power to E-2*** ***- SDAFW Pump trip*** ***NOTE: SRO may contact Maintenance for assistance or to determine status of AFW Pump 'A' work.***

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-S.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Initiate Emergency Boration as follows: - Verify Charging flowpath established CVC-310B, LOOP 2 COLD LEG CHG, is open HIC-121, CHARGING FLOW Controller, demand signal at 0% - Verify 2 Charging Pumps running (only 1 running) ***- Charging Pump 'A' previously tripped*** ***- Charging Pump 'C' no power to E-2*** - Verify Boric Acid Pump aligned for blend is RUNNING - Verify MOV-350, BA TO CHARGING PMP SUCT, is OPEN - Check flow indicated on FI-110, BORIC ACID BYPASS FLOW - Check Charging flow to RCS on FI-122A
	RO	Verify CONTAINMENT VENTILATION ISOLATION is INITIATED
	BOP	***CONTINUOUS ACTION*** If an SI Signal occurs, then verify auto start of all SI equipment using Supplement 'L'
		NOTE: NEXT 4 PAGES OF SCENARIO ADDRESS SUPPLEMENT 'L' ACTIONS FOR SI ACTUATION (PAGE HEADER IDENTIFIES THESE PAGES). CONTINUATION OF FRP-S.1 ACTIONS ARE LOCATED IMMEDIATELY FOLLOWING SUPPLEMENT 'L' ACTIONS.

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (ACTIONS TAKEN FOR SI DURING THE PERFORMANCE OF FRP-S.1 PER SUPPLEMENT 'L')***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify CONTAINMENT ISOLATION PHASE A valves CLOSED
	BOP	Verify FW Isolation Valves CLOSED - FRVs - FRV Bypass Valves - V2-6A, FW HDR SECTION - V2-6B, FW HDR SECTION - V2-6C, FW HDR SECTION ***V2-6B and V2-6C no power to E-2 (MCC power).***
	BOP	Verify both FW Pumps TRIPPED
	BOP	While verifying AFW Pumps running, determines that NO AFW Pumps are running ***- AFW Pump 'A' under clearance*** ***- AFW Pump 'B' no power to E-2*** ***- SDAFW Pump trip***

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (ACTIONS TAKEN FOR SI DURING THE PERFORMANCE OF FRP-S.1 PER SUPPLEMENT 'L')***

Time	Position	Applicant's Actions or Behaviors
	BOP	While verifying two SI pumps running, determines that only ONE SI Pump is running ***- SI Pump 'A' under clearance*** ***- SI Pump 'C' no power to E-2***
	BOP	While verifying two RHR pumps running, determines that only ONE RHR Pump is running ***- RHR Pump 'B' no power to E-2***
	BOP	While verifying proper SI alignment, determines only Train 'A' aligned ***- Train 'B' Valves no power to E-2 (MCC-6)***
	BOP	Check CCW Pumps at least one running
	BOP	Check SW header pressure being maintained between 40 and 50 psig

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (ACTIONS TAKEN FOR SI DURING THE PERFORMANCE OF FRP-S.1 PER SUPPLEMENT 'L')***

Time	Position	Applicant's Actions or Behaviors
	BOP	While verifying two SWBPs running, determines that only ONE SWBP is running ***- SWBP 'B' no power to E-2 (MCC-18)***
	BOP	While verifying CV RECIRC FANS running, determines that only TWO CV RECIRC FANS running ***- HVH-3 no power to E-2*** ***- HVH-4 no power to E-2***
	BOP	Verify IVSW system INITIATED - IVSWS VA PCV-1922A - IVSWS VA PCV-1922B
	BOP	Verify CONTAINMENT VENTILATION ISOLATION is INITIATED
	BOP	Verify Control Room Ventilation shifted to Emergency Pressurization Mode - CONT RM AIR EXHAUST fan HVE-16 is STOPPED - CLEANING fan HVE-19A or B is RUNNING - CONTROL ROOM AIR EXHAUST FAN DISCHARGE DAMPER, CF-D1A-SA is CLOSED - CONTROL ROOM AIR EXHAUST FAN DISCHARGE DAMPER, CF-D1B-SB is CLOSED

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (ACTIONS TAKEN FOR SI DURING THE PERFORMANCE OF FRP-S.1 PER SUPPLEMENT 'L')***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify both EDGs RUNNING ***NOTE: May note also that EDG 'B' is running without cooling flow and may inform SRO.***
	BOP	Check CV pressure has remained below 10 psig
	BOP	If Main Steam Line Isolation required, then verify all MSIVs and MSIV BYPs are CLOSED
	BOP	Direct operator to locally open breaker for AUX BUILDING SUPPLY FAN, HVS-1, at MCC-5 (7J)
		SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF EPS214 RACK_OUT.
	BOP	Inform SRO that Supplement 'L' completed with noted discrepancies due to clearances, loss of Bus E-2, and equipment failures

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-S.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Check if the following trips have occurred: - Reactor Trip - Turbine Trip
	BOP	***CONTINUOUS ACTION*** If CST level decreases to less than 10%, then align SW to AFW Pump suction IAW OP-402, "Auxiliary Feedwater System"
	SRO	Determine that Main FW cannot be used to establish SG level due to break in FW Header in response to RNO for low SG level
	RO	Isolate Primary Water Dilution path as follows: - Verify both Primary Water Pumps STOPPED - Verify FCV-114A, PW TO BLENDER, is CLOSED
	BOP	Determine NO UNCONTROLLED RCS Cooldown in progress: - RCS temperatures are NOT decreasing in an uncontrolled manner - SG pressures are NOT decreasing in an uncontrolled manner
	BOP	Stop any CONTROLLED RCS Cooldown

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-S.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Verify Battery Charger Alarms NOT illuminated - APP-036-D1, BATT CHARGER A/A1 TROUBLE - APP-036-D2, BATT CHARGER B/B1 TROUBLE
	RO	Check Core Exit T/Cs less than 1200 °F
	RO	Check Reactor subcritical as follows: - Power Range channels LESS THAN 5% - Intermediate Range channels - NEGATIVE STARTUP RATE
	RO	Check Emergency Boration performed or being performed using MOV-350 flowpath
	SRO	Notify Engineering to evaluate the following to determine if RCP Seal inspection is required: - RCP Bearing temperatures - No. 1 Seal Leakoff temperatures - No. 1 Seal Leakoff flowrates

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-S.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	***CONTINUOUS ACTION*** Check ARPI - LESS THAN TWO RODS STUCK OUT
	RO	Stop the boration - Close MOV-350 - Stop the running Boric Acid Transfer Pump
	RO	Reset SPDS
	SRO	Initiate monitoring of Critical Safety Function Status Trees
	SRO	Determine RED path for Secondary Heat Sink is highest priority CSFST

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-H.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	SRO	Enters and directs the actions of FRP-H.1, "Response to Loss of Secondary Heat Sink"
	SRO	Determines that total feed flow LESS THAN 300 gpm is NOT due to operator action
	RO	***CONTINUOUS ACTION*** Determines a Secondary Heat Sink is required - RCS pressure GREATER THAN any non-faulted SG pressure - RCS temperature GREATER THAN 350 °F
	BOP	***CONTINUOUS ACTION*** If two S/G wide range levels have decreased to less than 27%, then STOP all RCPs, and go to steps in FRP-H.1 for RCS feed and bleed **NOTE: REMAINING ACTIONS TO ESTABLISH AFW OR FEED FLOW ARE NOT INCLUDED IN SCENARIO SINCE CONDITIONS MAY BE ESTABLISHED AT THIS TIME TO INITIATE FEED AND BLEED. ADDITIONALLY, IT IS THE INTENT OF THE SCENARIO TO NOT ESTABLISH AFW FLOW.**

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-H.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Initiate Safety Injection as follows: - Depress the INITIATE SAFETY INJECTION pushbutton - Note time initiated ***NOTE: Safety Injection will have automatically actuated earlier.***
	RO	Verify RCS Injection Path as follows: - Verify at least one SI Pump RUNNING - Verify SI valves for at least one flowpath aligned for Cold Leg Injection
	RO	***CONTINUOUS ACTION*** When 2 minutes have elapsed since SI initiated, then RESET: - Safety Injection - Containment Spray
	RO	Reset the following Containment Isolations: - Phase A - Phase B
	RO	Establish Instrument Air to CV as follows: - Verify APP-002-F7, INSTR AIR HDR LO PRESS, extinguished - Place IA PCV-1716, INSTRUMENT AIR ISO TO CV, to the OVERRIDE position

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-H.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	RO	Establish RCS Bleed Path as follows: - Verify power to PZR PORV Block Valves only available to PCV-455C block ***- Both Blocks have no power to E-2 (MCC-6)*** - Place all PZR Heater Control switches to OFF position - Verify PZR PORV Block Valves both OPEN ***NOTE: No indication to either Block. Last known position was open.*** - Open both PORVs ***NOTE: May elect to NOT open PORVs due to no power to blocks. This is acceptable, particularly since scenario is designed to not allow PCV-456 to open anyway and requirement is to open vents.***
	RO	Determines an adequate RCS bleed path does NOT exist due to either choosing to NOT open PORVs OR due to the failure of PCV-456 to open
	RO	Places the Key Switches for the following Vent Valves to the OPEN position: - RC-568, HEAD VENT - RC-570, PZR VENT - RC-572, CV ATMOS - RC-567, HEAD VENT - RC-569, PZR VENT - RC-571, PRT ISO **CRITICAL TASK TO ESTABLISH FLOW THROUGH VENT VALVES TO ENSURE ADEQUATE RCS BLEED PATH.**

Op-Test Number: _____ Scenario Number: 1 Event Number: 6

Event Description: ***Loss of Secondary Heat Sink Concurrent With ATWS (FRP-H.1 ACTIONS)***

Time	Position	Applicant's Actions or Behaviors
	BOP	Depressurize at least one intact S/G to atmospheric pressure using steam line PORVs
		TERMINATE THE SCENARIO WHEN AN RCS FEED AND BLEED HAS BEEN ESTABLISHED VIA THE HEAD VENTS AND AT LEAST ONE SG IS BEING DEPRESSURIZED TO ATMOSPHERIC PRESSURE.
		NOTE: SI FLOW INDICATION (FI-943) IS NOT AVAILABLE DUE TO THE LOSS OF IB-9 (RESULT OF LOSS OF E-2). FOLLOWUP QUESTION SHOULD ADDRESS HOW IT IS DETERMINED THAT SI FLOW IS OCCURRING. ***- CETs decreasing*** ***- SI Pump pressure below shutoff head*** ***- RWST level lowering***

Op-Test Number: _____ Scenario Number: 1 Event Number: 7

Event Description: ***Failure of Reactor to Trip from the Control Room (ATWS)***

Time	Position	Applicant's Actions or Behaviors
		ACTIONS FOR THIS EVENT ARE INCLUDED IN THE ACTIONS FOR EVENT 6.

Op-Test Number: _____ Scenario Number: 1 Event Number: 8

Event Description: ***Failure of PZR PORV (456) to Open During RCS Feed and Bleed***

Time	Position	Applicant's Actions or Behaviors
		ACTIONS FOR THIS EVENT ARE INCLUDED IN THE ACTIONS FOR EVENT 6.

Op-Test Number: _____ Scenario Number: 1 Event Number: 9

Event Description: ***Event Classification***

Time	Position	Applicant's Actions or Behaviors
	SRO	Classifies the event as a Site Area Emergency
		NOTES: ***1) Based on ATWS with failure of Reactor to trip from the Control Room OR a complete loss of FW capability for both Hot Shutdown and Cold Shutdown conditions.*** ***2) Classification of the event following the scenario is considered 20% of the Performance Rating for JPM SRO-A.4.***

FINAL SUBMITTAL

ROBINSON EXAM 2001-301

MARCH 26 - APRIL 2, 2001

FINAL AS-GIVEN JPMs FOR EACH

WALK-THROUGH TEST

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.a

Depressurize the RCS Following a SGTR (PATH-2)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Depressurize the RCS Following a SGTR (PATH-2)

Alternate Path: PORV fails to close following depressurization, requiring block valve to be closed

Facility JPM #: CR082 (Modified)

K/A Rating: 027AA1.01 Importance: SRO 4.0 RO 3.9

K/A Statement: Ability to operate and / or monitor the following as they apply to the Pressurizer Pressure Control Malfunctions: PZR heaters, sprays, and PORVs

Task Standard: Failed open PZR PORV has been isolated by closed PORV Block Valve.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: PATH-2

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:

PATH-2

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset to any 100% power IC.
2) Insert MFI SGN02B at 400 gpm
3) Carry out actions of PATH-1 and PATH-2 until step D-9 is reached.
4) Ensure ALL RCPs are secured.
5) FREEZE the simulator.
6) WHEN DIRECTED by JPM instructions, insert overrides to cause PZR PORV 456(455C) to fail open when placed in OPEN position.
7) Setup printer to plot PZR Level.

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 SGTR has occurred in SG 'B'.

Following a reactor trip and safety injection, actions have been taken in accordance with PATH-1 and PATH-2. RCS Subcooling has just been determined to be > 55 °F following the RCS cooldown to the required temperature.

INITIATING CUES:

You are directed to depressurize the RCS to less than SG pressure commencing with Step D-9 (NORMAL SPRAY AVAILABLE) in PATH-2.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates current copy of PATH-2	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Normal Spray Available?	
STANDARD:	**<NO>** - Determines Normal Spray is NOT available by checking RCPs all stopped	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	NOTE: Rapid PZR level increase will occur due to voiding during depressurization if RCPs not running	
STANDARD:	Acknowledges NOTE	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 4:	At least one PZR PORV available?	
STANDARD:	**<YES>** - Determines both PORVs are available by indicating lights and block valve available / open	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	PZR level greater than 71%?	
STANDARD:	**<NO>** - Determines PZR level is less than 71% by level indications	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Ruptured SG press greater than RCS pressure?	
STANDARD:	**<NO>** - Determines SG 'B' pressure is less than RCS pressure by comparision of pressure indications	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	WHEN PZR level greater than 10%, THEN reduce charging flow to minimum.	
STANDARD:	Reduces charging flow to minimum by securing all but one charging pump and placing charging pump controller in MANUAL and lowering pump speed to maintain seal injection flow	
NOTES:	***NOTE: This is a CONTINUOUS action step.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 8:	RCS Subcooling greater than 35 °F?	
STANDARD:	**<YES>** Determines RCS subcooling is greater than 35 °F by subcooling monitor indications	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 9: STANDARD: NOTES: COMMENTS:	Minimize cycling of PZR PORVs to prevent adverse CV conditions due to PRT ruptures Recognizes that cycling of PZR PORVs should be minimized ***NOTE: The PORV will fail open when control switch placed in OPEN, so this step is NA.***	____ SAT ____ UNSAT
STEP 10: STANDARD: NOTES: COMMENTS:	Open one PZR PORV to depressure RCS Places PZR PORV PCV-456(455C) in OPEN position and verifies valve opens by position indication **CRITICAL TO OPEN VALVE TO DEPRESSURIZE THE RCS BELOW SG PRESSURE.** **SIMULATOR OPERATOR INSTRUCTIONS:** **Insert overrides, as applicable, when PZR PORV 456(455C) placed in OPEN position.**	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 11:	Attempts to close the previously opened PORV when criteria met	
STANDARD:	Places PZR PORV PCV-456(455C) in CLOSE position when either PZR level greater than 71% **OR** Ruptured S/G pressure greater than RCS pressure with PZR level greater than 10% **OR** RCS subcooling less than 35 °F	
NOTES:	***NOTE: The PORV is failed open and will NOT close.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Verify PZR PORV closed	
STANDARD:	Determines previously opened PZR PORV is still open by position indication	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 13:	RCS pressure increasing?	
STANDARD:	**<NO>** - Determines RCS pressure still decreasing by pressure indication	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Close PORV Blocks	**CRITICAL STEP**
STANDARD:	Places control switch for applicable PORV Block, RC-535(536) in CLOSE position and verifies valve closed by position indication	
NOTES:	**CRITICAL TO STOP DEPRESSURIZATION OF RCS PRIOR TO REACHING 95% PZR LEVEL.**	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	RCS pressure increasing?	
STANDARD:	**<YES>** - Determines RCS pressure increasing by pressure indication	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

A SGTR has occurred in SG 'B'.

Following a reactor trip and safety injection, actions have been taken in accordance with PATH-1 and PATH-2. RCS Subcooling has just been determined to be > 55 °F following the RCS cooldown to the required temperature.

INITIATING CUES:

You are directed to depressurize the RCS to less than SG pressure commencing with Step D-9 (NORMAL SPRAY AVAILABLE) in PATH-2.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.b

Shift Operating CCW Pumps (OP-306)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Shift Operating CCW Pumps (OP-306)

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 008A4.01 Importance: SRO 3.3 RO 3.1

K/A Statement: Ability to manually operate and/or monitor in the control room: CCW indications and controls

Task Standard: CCW Pump 'B' has been started and CCW Pump 'A' has been stopped.

Preferred Evaluation Location: Simulator _____ In Plant X

Preferred Evaluation Method: Perform _____ Simulate X

References: OP-306, Component Cooling Water 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-306

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.

CCW Pump 'A' is in service. CCW Pump 'B' has NOT been operated within the last 24 hours.

OP-306, "Component Cooling Water System," Attachment 10.4, "CCW Pump B Prestart Checklist," has been completed.

INITIATING CUES:

You are to perform OP-306, Section 8.2.1, in its entirety, placing CCW Pump 'B' in service and securing CCW Pump 'A'.

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates OP-306, Section 8.2.1	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	IF a CCW Pump is to be started, THEN perform the following to start the selected CCW Pump: b. IF CCW PUMP 'B' is to be started, THEN verify Attachment 10.4 is complete (**Step 8.2.1.2.b**)	
STANDARD:	Verifies Attachment 10.4 complete	
NOTES:	***NOTE: Initial conditions provide information that Attachment is complete.***	
	NO CUE REQUIRED.	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Start the selected CCW Pump (**Step 8.2.1.2.d**)	**CRITICAL STEP**
STANDARD:	Places switch for CCW Pump 'B' in START position and verifies pump starts by breaker indication and flow indication on FI-613	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'B' HAS BEEN PLACED IN "START" POSITION, RED BREAKER LIGHT IS ILLUMINATED AND GREEN BREAKER LIGHT IS EXTINGUISHED, AND FLOW INDICATED ON FI-613 HAS INCREASED.*** **CRITICAL TO ALLOW STARTING CCW PUMP 'B'.**	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	IF a CCW Pump is to be stopped, THEN perform the following to stop the selected CCW Pump: a. Place AND hold the handswitch for any non-operating pump(s) to the STOP position (**Step 8.2.1.3.a**)	**CRITICAL STEP**
STANDARD:	Places and holds switch for CCW Pump 'C' in STOP position	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'C' IS BEING HELD IN "STOP" POSITION.*** **CRITICAL TO PREVENT STARTING CCW PUMP 'C' ON LOW DISCHARGE PRESSURE WHEN CCW PUMP 'A' IS STOPPED.**	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Stop the selected CCW Pump (**Step 8.2.1.3.b**)	**CRITICAL STEP**
STANDARD:	Places switch for CCW Pump 'A' in STOP position and verifies pump stops by breaker and flow indication	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'A' HAS BEEN PLACED IN "STOP" POSITION, RED BREAKER INDICATION IS EXTINGUISHED AND GREEN BREAKER INDICATION IS ILLUMINATED, AND FLOW INDICATION HAS DECREASED.*** **CRITICAL TO STOP CCW PUMP 'A' TO PROVIDE REQUIRED ALIGNMENT.**	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Verify APP-001-F5, CCW PMP LO PRESS alarm EXTINGUISHED (**Step 8.2.1.3.c**)	
STANDARD:	Determines APP-001-F5 extinguished after alarming	
NOTES:	***CUE: APP-001-F5 ILLUMINATED AND HORN SOUNDED AND APP-001-F5 IS NOW EXTINGUISHED.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	NOTE: Receiving APP-001-F5 at any time when the handswitch for a non-operating CCW Pump was being held in the STOP position will require resetting the applicable CCW Pump(s) lockout to allow for auto start on low CCW pressure (**Note before Step 8.2.1.3.d**)	
STANDARD:	Acknowledges note	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	IF APP-001-F5 is extinguished, THEN release the handswitch for any non-operating pump(s) to the AUTO position (**Step 8.2.1.3.d**)	
STANDARD:	Releases handswitch for CCW Pump 'C' to AUTO position	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'C' HAS BEEN RELEASED TO CENTER POSITION.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	NOTE: In MODES 1, 2, 3, and 4, two CCW trains powered from emergency power supplies shall be OPERABLE as identified in ITS LCO 3.7.6. In MODES 5 or 6, the OPERABILITY requirements of the CCW System are determined by the systems it supports. (**Note before Step 8.2.1.3.e**)	
STANDARD:	Acknowledges note	
NOTES:	***NO CUE REQUIRED.***	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	IF APP-001-F5 will not reset, THEN perform the following: (**Step 8.2.1.3.e**) 1) Restart the CCW pump stopped in Step 8.2.1.3.b. 2) IF a CCW Pump had just been started in Step 8.2.1.2.d, THEN perform the following: a) Stop the CCW pump started in Step 8.2.1.2.d b) Declare CCW pump just stopped out of service c) IF Tech. Spec. Required Action Statement has been entered, THEN inform SSO/CRSS AND record time 3) Investigate pumps for source of problem	
STANDARD:	Determines alarm reset following receipt of alarm and N/As step	
NOTES:	***NO CUE REQUIRED.***	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	NOTE: The CCW Pump auto start on low pressure will be locked in if a low pressure alarm is received while the handswitch is held in the STOP position. Pump lockout will not reset if the CCW low pressure alarm is present. (**Note before Step 8.2.1.3.f**)	
STANDARD:	Acknowledges note	
NOTES:	***NO CUE REQUIRED.***	____ SAT
COMMENTS:		____ UNSAT

EXAMINER NOTE: ONCE JPM STEPS 13 THROUGH 18 OR JPM STEPS 20 THROUGH 25 HAVE BEEN COMPLETED FOR ONE PUMP, AND THE CANDIDATE HAS INDICATED THAT THE SAME ACTIONS ARE REQUIRED FOR THE OTHER NON-RUNNING PUMP, IT IS ACCEPTABLE TO INFORM THE CANDIDATE THAT THE ACTIONS FOR THE SECOND PUMP HAVE BEEN ASSUMED TO HAVE BEEN COMPLETED AND TO CONTINUE ON IN THE PROCEDURE.

STEP 12:	If APP-001-F5, CCW PMP LO PRESS, alarm is received while a CCW Pump handswitch is held in the STOP position AND the CCW Pump is to remain in standby, THEN perform the following to reset the low pressure auto start lockout for the applicable pump(s): 1) IF Tech. Spec. Required Action Statement will be entered when the CCW Pump(s) control power fuses are removed, THEN inform SSO/CRSS AND record time (**Step 8.2.1.3.f.1**)	
STANDARD:	Informs SSO/CRSS of Tech Spec	
NOTES:	***CUE: SSO/CRSS ACKNOWLEDGES REPORT.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Remove the control power fuse(s) (**Step 8.2.1.3.f.2**)	**CRITICAL STEP**
STANDARD:	Directs local operator to remove control power fuses for CCW Pump 'A'	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS FUSES ARE REMOVED (GREEN BREAKER INDICATION ON SWITCH IS ALSO EXTINGUISHED).*** **CRITICAL TO ALLOW REINSTATEMENT OF ABILITY TO START ON LOW SUCTION PRESSURE.** ***NOTE: Step Sequence 13 through 18 or Step Sequence 20 through 25 may be performed in either order.***	____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Place AND hold the handswitch in the STOP position (**Step 8.2.1.3.f.3**)	
STANDARD:	Places and holds control switch for CCW Pump 'A' to STOP position	
NOTES:	***NOTE: This is to prevent start of the CCW pump in the event of a low pressure condition upon reinserting fuses.*** ***CUE: SWITCH FOR CCW PUMP 'A' IS BEING HELD IN "STOP" POSITION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Install the control power fuse(s) (**Step 8.2.1.3.f.4**)	**CRITICAL STEP**
STANDARD:	Directs local operator to install control power fuses for CCW Pump 'A'	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS FUSES ARE INSTALLED (GREEN BREAKER INDICATION ON SWITCH IS ALSO ILLUMINATED).*** **CRITICAL TO ALLOW REINSTATEMENT OF ABILITY TO START ON LOW SUCTION PRESSURE.**	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Release the handswitch (**Step 8.2.1.3.f.5**)	
STANDARD:	Releases control switch for CCW Pump 'A' to AUTO position	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'A' HAS BEEN RELEASED TO "AUTO" POSITION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	NOTE: There is no need to start the pump to ensure proper operation if indication is correct on the RTGB. (**Note before Step 8.2.1.3.f.6**)	
STANDARD:	Acknowledges note	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Verify proper CCW Pump indication on the RTGB to ensure control power fuse(s) are installed properly (**Step 8.2.1.3.f.6**)	
STANDARD:	Verifies proper indication for CCW Pump 'A' (green light illuminated)	
NOTES:	***CUE: GREEN BREAKER INDICATION IS ILLUMINATED.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Repeat steps 8.2.1.3.f.2 through 8.2.1.3.f.6 for affected pumps (N/A steps for unaffected pumps) (**Step 8.2.1.3.f.7**)	
STANDARD:	Determines BOTH CCW Pumps 'A' and 'C' affected and N/As steps for CCW Pump 'B'	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 20:	Remove the control power fuse(s) (**Step 8.2.1.3.f.2**)	**CRITICAL STEP**
STANDARD:	Directs local operator to remove control power fuses for CCW Pump 'C'	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS FUSES ARE REMOVED (GREEN BREAKER INDICATION ON SWITCH IS ALSO EXTINGUISHED).*** **CRITICAL TO ALLOW REINSTATEMENT OF ABILITY TO START ON LOW SUCTION PRESSURE.** ***NOTE: Step Sequence 13 through 18 or Step Sequence 20 through 25 may be performed in either order.***	____ SAT
COMMENTS:		____ UNSAT

STEP 21:	Place AND hold the handswitch in the STOP position (**Step 8.2.1.3.f.3**)	
STANDARD:	Places and holds control switch for CCW Pump 'C' to STOP position	
NOTES:	***NOTE: This is to prevent start of the CCW pump in the event of a low pressure condition upon reinserting fuses.*** ***CUE: SWITCH FOR CCW PUMP 'C' IS BEING HELD IN "STOP" POSITION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 22:	Install the control power fuse(s) (**Step 8.2.1.3.f.4**)	**CRITICAL STEP**
STANDARD:	Directs local operator to install control power fuses for CCW Pump 'C'	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS FUSES ARE INSTALLED (GREEN BREAKER INDICATION ON SWITCH IS ALSO ILLUMINATED).*** **CRITICAL TO ALLOW REINSTATEMENT OF ABILITY TO START ON LOW SUCTION PRESSURE.**	____ SAT
COMMENTS:		____ UNSAT

STEP 23:	Release the handswitch (**Step 8.2.1.3.f.5**)	
STANDARD:	Releases control switch for CCW Pump 'C' to AUTO position	
NOTES:	***CUE: SWITCH FOR CCW PUMP 'C' HAS BEEN RELEASED TO "AUTO" POSITION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 24:	NOTE: There is no need to start the pump to ensure proper operation if indication is correct on the RTGB. (**Note before Step 8.2.1.3.f.6**)	
STANDARD:	Acknowledges note	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 25:	Verify proper CCW Pump indication on the RTGB to ensure control power fuse(s) are installed properly (**Step 8.2.1.3.f.6**)	
STANDARD:	Verifies proper indication for CCW Pump 'C' (green light illuminated)	
NOTES:	***CUE: GREEN BREAKER INDICATION IS ILLUMINATED.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 26:	IF Tech. Spec. Required Action Statement has been exited, THEN inform SSO/CRSS AND record time (**Step 8.2.1.3.f.8**)	
STANDARD:	Informs SSO/CRSS and records time	
NOTES:	***CUE: SSO/CRSS ACKNOWLEDGES INFORMATION.***	____ 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.

CCW Pump 'A' is in service. CCW Pump 'B' has NOT been operated within the last 24 hours.

OP-306, "Component Cooling Water System," Attachment 10.4, "CCW Pump B Prestart Checklist," has been completed.

INITIATING CUES:

You are to perform OP-306, Section 8.2.1, in its entirety, placing CCW Pump 'B' in service and securing CCW Pump 'A'.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.e

Manually Initiate Containment Spray (PATH-1)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Manually Initiate Containment Spray (PATH-1)

Alternate Path: Automatic valves fail to open and spray add valve mispositioned, requiring manual postioning.

Facility JPM #: CR-003

K/A Rating: 011EA1.04 Importance: SRO 4.4 RO 4.4

K/A Statement: Ability to operate and monitor the following as they apply to a Large Break LOCA: ESF actuation system in manual

Task Standard: Containment spray injecting with SI-845C throttled to obtain approximately 12 gpm spray additive flow.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: PATH-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:

PATH-1

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset simulator to IC-205.
2) Set remote functions CNS006 thru CNS011 to NO-AUTO (prevents 880s and 845s from opening).
3) Activate malfunction RCS01A at 100%.
4) Ensure Containment Pressure indicators are reading greater than 10 psig.
5) Stop the RCPs.
6) Close the MSR Purge Valves.
7) Verify MSIVs are closed.
8) Reposition SI-845C so approximately 30 gpm flow will occur when placed in service.
8) FREEZE the 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 rapid RCS depressurization occurred, resulting in an automatic trip and safety injection.

Path-1 has been implemented and Step B-7, "CV Press Remained Below 10 psig," has been answered "NO".

INITIATING CUES:

You are to respond to the high containment pressure per PATH-1.

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates PATH-1, Step B-7	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Verify CV Spray Initiated	
STANDARD:	Verifies CV Spray initiated by determining Spray Pumps running and APP-002-D1, SPRAY ACTUATION, alarming	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Verify all CV Spray Pumps running with valves properly aligned	
STANDARD:	Verifies Spray Pumps running by breaker indication and determines valves are NOT properly aligned by position indication and flow indication	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Aligns Spray Pump discharge valves	***CRITICAL STEP**
STANDARD:	Places switches for following valves to OPEN position and verifies valves open by position indication and flow indication (FI-958A & B) - SI-880A, CV Spray Pump 'A' Discharge - SI-880B, CV Spray Pump 'A' Discharge - SI-880C, CV Spray Pump 'B' Discharge - SI-880D, CV Spray Pump 'B' Discharge	
NOTES:	**CRITICAL TO PROVIDE SPRAY FLOW.** ****NOTE: Any of the above valves being opened will provide sufficient flow. Opening any of these valves meets the critical step.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Aligns Spray Additive Tank isolation valves	***CRITICAL STEP**
STANDARD:	Places switches for following valves to OPEN position and verifies valves open by position indication and flow indication (FI-949) - SI-845A, SAT Discharge - SI-845B, SAT Discharge	
NOTES:	**CRITICAL TO PROVIDE SPRAY ADDITIVE TANK FLOW.** ****NOTE: Either of the above valves being opened will provide sufficient flow. Opening either of these valves meets the critical step.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Verify approximately 12 gpm Spray Additive Tank flow	**CRITICAL STEP**
STANDARD:	Determines Spray Additive Tank flow is approximately 30 gpm AND throttles SI-845C, SAT THROTTLE VALVE, in CLOSE direction to establish approximately 12 gpm per flow indication (FI-949)	
NOTES:	**CRITICAL TO PROVIDE SPRAY ADDITIVE TANK FLOW AT PROPER INJECTION RATE.**	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

A rapid RCS depressurization occurred, resulting in an automatic trip and safety injection.

Path-1 has been implemented and Step B-7, "CV Press Remained Below 10 psig," has been answered "NO".

INITIATING CUES:

You are to respond to the high containment pressure per PATH-1.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.f

Perform NIS Comparator Channel Surveillance (OST-007)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform NIS Comparator Channel Surveillance (OST-007)

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 015A4.02 Importance: SRO 3.9 RO 3.9

K/A Statement: Ability to manually operate and/or monitor in the control room: NIS indicators

Task Standard: OST-007 has been completed for NIS channel N-41.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: OST-007, Nuclear Instrument Comparator Channel

Validation Time: 30 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-007

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset simulator to IC-5.
2) FREEZE the simulator.
3) WHEN DIRECTED by JPM instructions, insert / remove MRF BST046 and MRF BST049 to trip and/or reset bistables for OPΔT and OTΔT (BS-412C-1 and BS-412B-1).
4) Ensure ERFIS emulator on using EMUON.

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 is operating at 100% power.

All Power Range NIS channels are operable.

OST-007, "Nuclear Instrument Comparator Channel," is scheduled to be performed for NIS channel N-41.

All prerequisites have been completed and the SSO has given permission to perform the test.

INITIATING CUES:

You are to perform OST-007 for NIS channel N-41.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OST-007, Section 7.1	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Position NIS CHANNEL SELECTOR NR 45 switch to a Power Range not being tested (**Step 7.1.1**)	
STANDARD:	Places switch to N-42, N-43, or N-44 position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	IF the ERFIS computer is in service, THEN perform the following: Use the "DR" turn-on code to delete ERFIS point NIN0041A from scan (**Step 7.1.2.1**)	
STANDARD:	Deletes ERFIS point from scan using "DR" turn-on code	
NOTES:	***NOTE: Performed by entering "DR, NIN0041A, and F3".***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Check RTGB annunciator APP-005-D6, ΔFLUX WARNING/STATUS, ILLUMINATES within 5 minutes (**Step 7.1.2.2**)	
STANDARD:	Verifies APP-005-D6 alarms within 5 minutes	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	WHEN APP-005-D6 illuminates, THEN check ERFIS printout indicates channel #1 is no longer in service (**Step 7.1.2.3**)	
STANDARD:	Checks ERFIS printout to determine that N-41 no longer in service	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 6:	NOTE: An out-of-service Source Range(SR) or Intermediate Range(IR) will cause APP-005-D4, NIS TRIP/DROP ROD BYPASS, annunciator light to be ILLUMINATED (**Note before Step 7.1.3**)	
STANDARD:	Acknowledges note	
NOTES:	***NOTE: All IR channels are in service. SR channels are de-energized.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	IF RTGB annunciator APP-005-D4, NIS TRIP/DROP ROD BYPASS, is ILLUMINATED, THEN N/A Step 7.1.6 (**Step 7.1.3**)	
STANDARD:	Determines APP-005-D4 is EXTINGUISED and does NOT "N/A" Step 7.1.6	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Place the DROPPED ROD MODE switch, on NI-41A Power Range "A" drawer, in the BYPASS position (**Step 7.1.4**)	**CRITICAL STEP**
STANDARD:	Places DROPPED ROD MODE switch in the BYPASS position on NI-41A	
NOTES:	**CRITICAL TO PREVENT A TURBINE RUNBACK FROM OCCURRING.**	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Check the DROPPED ROD BYPASS indicator, on NI-41A Power Range "A" drawer, ILLUMINATED (**Step 7.1.5**)	
STANDARD:	Determines DROPPED ROD BYPASS indicator on NI-41A illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Check RTGB annunciator APP-005-D4, NIS TRIP/DROP ROD BYPASS, ILLUMINATED (**Step 7.1.6**)	
STANDARD:	Determines APP-005-D4 illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Check NIS ROD DROP BYPASS NI-41 status light, on the RTGB, ILLUMINATED (**Step 7.1.7**)	
STANDARD:	Determines ROD DROP BYPASS NI-41 status light illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 12:	CAUTION: Access to the Overpower ΔT and Overtemperature ΔT bistable switches for the Power Range channel being tested requires entry into ONLY ONE Hagan Rack cabinet. Entry into more than one Hagan Rack cabinet while repositioning bistable switches for a Power Range channel may result in a reactor trip (**Caution before Step 7.1.8**)	
STANDARD:	Acknowledges caution	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 13:	NOTE: Entry into the Hagan Rack cabinets will cause annunciator APP-036-L1, PROT RACK DOOR OPEN, to illuminate (**Note before Step 7.1.8**)	
STANDARD:	Acknowledges note and anticipates alarm	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Place the OVERPOWER ΔT and the OVERTEMPERATURE ΔT Reactor Trip Bistable switches for N-41, located in RACK NO. 1 PROTECTION CH. SET I panel, in the TRIPPED position. - BS-412C-1 - BS-412B-1 (**Step 7.1.8**)	
STANDARD:	Informs CRSS that bistables need to be placed in tripped condition	
NOTES:	***NOTE: Not considered critical since another operator is performing actions.*** ***CUE: A SPARE OPERATOR WILL PLACE BISTABLES IN TRIPPED CONDITION.***	____ SAT
COMMENTS:		____ UNSAT
	SIMULATOR OPERATOR INSTRUCTIONS: Place bistables BS-412C-1 and BS-412B-1 in TRIPPED condition by inserting MRF BST046 and MRF BST049 to TRIP.	

STEP 15: STANDARD: NOTES: COMMENTS:	Check N-41 bistable status lights on Bistable Status Panel 'B' AND associated RTGB alarms, ILLUMINATED. - OTΔT Loop 1 TC412C1 - OPΔT Loop 1 TC412B1 - APP-003-B6, OVERPOWER ΔT - APP-003-C6, OVERTEMPERATURE ΔT (**Step 7.1.9**) Verifies bistable status lights and alarms illuminated	____ SAT ____ UNSAT
STEP 16: STANDARD: NOTES: COMMENTS:	Place the ROD STOP BYPASS switch, on the NIS Miscellaneous Control and Indication Panel, in the BYPASS PR 41 position (**Step 7.1.10**) Places the ROD STOP BYPASS switch in BYPASS PR 41 position **CRITICAL TO ALLOW ROD MOVEMENT DURING TESTING OF NI-41.**	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 17:	Turn the DETECTOR "A" TEST SIGNAL potentiometer, on NI-41B Power Range "B" drawer, full counter-clockwise (CCW) (**Step 7.1.11**)	
STANDARD:	Verifies potentiometer for Detector "A' test rotated to full CCW position	
NOTES:	***NOTE: Should have been left in this position upon completion of last test using potentiometer.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Turn the DETECTOR "B" TEST SIGNAL potentiometer, on NI-41B Power Range "B" drawer, full counter-clockwise (CCW) (**Step 7.1.12**)	
STANDARD:	Verifies potentiometer for Detector "B' test rotated to full CCW position	
NOTES:	***NOTE: Should have been left in this position upon completion of last test using potentiometer.***	____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Place the DETECTOR "A" RANGE MILLI-AMPS switch, on NI-41B Power Range "B" drawer, in the 0.5 position (**Step 7.1.13**)	
STANDARD:	Places switch to read Detector "A" current to the 0.5 position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 20:	Place the DETECTOR "B" RANGE MILLI-AMPS switch, on NI-41B Power Range "B" drawer, in the 0.5 position (**Step 7.1.14**)	
STANDARD:	Places switch to read Detector "B" current to the 0.5 position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 21:	Place the OPERATION SELECTOR switch, on NI-41B Power Range "B" drawer, in the DET "A" & "B" position (**Step 7.1.15**)	**CRITICAL STEP**
STANDARD:	Places the OPERATION SELECTOR switch in the DET A & B position	
NOTES:	**CRITICAL TO ALLOW POTENTIOMETER OPERATIONS TO FUNCTION DURING TESTING.** ***NOTE: Expected alarm to be received is APP-005-D3, NIS CHANNEL TEST.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 22:	Check the CHANNEL ON TEST indicator, on NI-41B Power Range "B" drawer, ILLUMINATED (**Step 7.1.16**)	
STANDARD:	Determines CHANNEL ON TEST on NI-41B is illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 23:	Check RTGB annunciator APP-005-D3, NIS CHANNEL TEST, ILLUMINATED (**Step 7.1.17**)	
STANDARD:	Determines APP-005-D3 is illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 24:	NOTE: APP-005-F3, PR UPPER CH HI FLUX DEV/AUTO DEFEAT, and/or APP-005-F4, PR LOWER CH HI FLUX DEV/AUTO DEFEAT, may alarm when the potentiometers are adjusted (**Note before Step 7.1.18**)	
STANDARD:	Acknowledges note and anticipates alarms	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 25:	Turn the DETECTOR "A" AND/OR DETECTOR "B" TEST SIGNAL potentiometer(s), on NI-41B Power Range "B" drawer, clockwise (CW) until the CHANNEL DEVIATION indicator, on Comparator and Rate drawer, ILLUMINATES (**Step 7.1.18**)	**CRITICAL STEP**
STANDARD:	Rotates potentiometer(s) slowly in CW direction until CHANNEL DEVIATION illuminates	
NOTES:	**CRITICAL TO ALLOW DETERMINING SETPOINT FOR ALARM.** ***NOTE: Expected alarms are:*** ***APP-005-F3/F4, PR UPPER/LOWER CH HI FLUX DEV/AUTO DEFEAT*** ***APP-005-C3, PR CHANNEL DEV***	____ SAT
COMMENTS:		____ UNSAT

STEP 26:	Record the deviation between N-41 and the lowest Power Range Channel not being tested (2.5% - 3.5%) (**Step 7.1.19**)	**CRITICAL STEP**
STANDARD:	Determines deviation between N-41 and lowest other Power Range channel to be between 2.5% and 3.5%	
NOTES:	**CRITICAL TO DETERMINE PROPER OPERATION OF COMPARATOR.** ***NOTE: May be outside acceptable range if potentiometer rotated too quickly in previous step.***	____ SAT
COMMENTS:		____ UNSAT

STEP 27:	Check RTGB annunciator APP-005-C3, PR CHANNEL DEV, ILLUMINATED (**Step 7.1.20**)	
STANDARD:	Determines APP-005-C3 is illuminated	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 28:	Turn the DETECTOR "A" AND DETECTOR "B" TEST SIGNAL potentiometer(s), on NI-41B Power Range "B" drawer, full counter-clockwise (CCW) (**Step 7.1.21**)	
STANDARD:	Rotates both Detector "A" and Detector "B" test potentiometers full CCW	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 29:	Check RTGB annunciator APP-005-C3, PR CHANNEL DEV, EXTINGUISHED (**Step 7.1.22**)	
STANDARD:	Determines APP-005-C3 is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 30:	Check the CHANNEL DEVIATION indicator, on Comparator and Rate drawer, EXTINGUISHED (**Step 7.1.23**)	
STANDARD:	Determines CHANNEL DEVIATION is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 31:	Place the OPERATION SELECTOR switch, on NI-41B Power Range "B" drawer, in the NORMAL position (**Step 7.1.24**)	**CRITICAL STEP**
STANDARD:	Places OPERATION SELECTOR switch on NI-41B in NORMAL position	
NOTES:	**CRITICAL TO RESTORE CHANNEL TO OPERABLE STATUS.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 32:	Check the CHANNEL ON TEST indicator, on NI-41B Power Range "B" drawer, EXTINGUISHED (**Step 7.1.25**)	
STANDARD:	Determines CHANNEL ON TEST is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 33: STANDARD: NOTES: COMMENTS:	Check RTGB annunciator APP-005-D3, NIS CHANNEL TEST, EXTINGUISHED (**Step 7.1.26**) Determines APP-005-D3 is extinguished	____ SAT ____ UNSAT
STEP 34: STANDARD: NOTES: COMMENTS:	Place the ROD STOP BYPASS switch, on the Miscellaneous Control and Indication Panel, in the OPERATE position (**Step 7.1.27**) Places ROD STOP BYPASS switch in the OPERATE position **CRITICAL TO RESTORE CHANNEL TO OPERABLE STATUS.**	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 35:	NOTE: Entry into the Hagan Rack cabinets will cause annunciator APP-036-L1, PROT RACK DOOR OPEN, to illuminate (**NOTE before Step 7.1.28**)	
STANDARD:	Acknowledges note and anticipates alarm	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 36:	Place the OVERPOWER ΔT and the OVERTEMPERATURE ΔT Reactor Trip Bistable switches for N-41, located in RACK NO. 1 PROTECTION CH. SET I panel, in the NORMAL position. - BS-412C-1 - BS-412B-1 (**Step 7.1.28**)	
STANDARD:	Informs CRSS that bistables need to be placed in normal condition	
NOTES:	***NOTE: Not considered critical since another operator is performing actions.*** ***CUE: A SPARE OPERATOR WILL PLACE BISTABLES IN NORMAL CONDITION.***	____ SAT
COMMENTS:		____ UNSAT
	SIMULATOR OPERATOR INSTRUCTIONS: Place bistables BS-412C-1 and BS-412B-1 in NORMAL condition by removing MRF BST046 and BST049.	

STEP 37:	Check N-41 bistable status lights on Bistable Status Panel 'B' AND associated RTGB alarms, EXTINGUISHED. - OTΔT Loop 1 TC412C1 - OPΔT Loop 1 TC412B1 - APP-003-B6, OVERPOWER ΔT - APP-003-C6, OVERTEMPERATURE ΔT (**Step 7.1.29**)	
STANDARD:	Verifies bistable status lights and alarms extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 38:	Place the DROPPED ROD MODE switch, on NI-41A Power Range "A" drawer, in the NORMAL position (**Step 7.1.30**)	**CRITICAL STEP**
STANDARD:	Places DROPPED ROD MODE switch in the NORMAL position	
NOTES:	**CRITICAL TO RESTORE CHANNEL TO OPERABLE STATUS.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 39:	Check the DROPPED ROD BYPASS indicator, on NI-41A Power Range "A" drawer, EXTINGUISHED (**Step 7.1.31**)	
STANDARD:	Determines DROPPED ROD BYPASS is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 40:	Check NIS ROD DROP BYPASS NI-41 status light, on the RTGB, EXTINGUISHED (**Step 7.1.32**)	
STANDARD:	Determines status light is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 41:	Check RTGB annunciator APP-005-D4, NIS TRIP/DROP ROD BYPASS, EXTINGUISHED (**Step 7.1.33**)	
STANDARD:	Determines APP-005-D4 is extinguished	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 42:	IF ERFIS point NIN0041A was removed from scan, THEN perform the following: - Use the "DR" turn-on code to return ERFIS point NIN0041A to scan (**Step 7.1.34.1**)	
STANDARD:	Restores ERFIS point from scan using "DR" turn-on code	
NOTES:	***NOTE: Performed by entering "DR, NIN0041A, and F2".***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 43:	Check RTGB annunciator APP-005-D6, ΔFLUX WARNING/STATUS, ILLUMINATES within 5 minutes (**Step 7.1.34.2**)	
STANDARD:	Verifies APP-005-D6 alarms within 5 minutes	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 44:	WHEN APP-005-D6 illuminates, THEN check ERFIS printout indicates channel #1 is returned to service (**Step 7.1.34.3**)	
STANDARD:	Checks ERFIS printout to determine that N-41 is returned to service	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

The unit is operating at 100% power.

All Power Range NIS channels are operable.

OST-007, "Nuclear Instrument Comparator Channel," is scheduled to be performed for NIS channel N-41.

All prerequisites have been completed and the SSO has given permission to perform the test.

INITIATING CUES:

You are to perform OST-007 for NIS channel N-41.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.1.g

Transfer to Long Term Recirculation (EPP-10)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Transfer to Long Term Recirculation (EPP-10)

Alternate Path: Hot Leg Injection valve SI-866A fails to open, requiring alternate injection path.

Facility JPM #: CR-081

K/A Rating: 006A4.05 Importance: SRO 3.9 RO 3.8

K/A Statement: Ability to manually operate and/or monitor in the control room: Transfer of ECCS flowpaths prior to recirculation

Task Standard: Long term recirculation mode has been established per EPP-010.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: EPP-010, Transfer to Long Term Recirculation

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:

EPP-010
Keys for SI-866A & B

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset simulator to IC-28.
2) Enter OVR SIS for SI-866A, Close to ON and open to OFF.
3) FREEZE the simulator.
4) WHEN DIRECTED by JPM instructions, open breaker for RHR-759A and open breaker for RHR-759B by inserting MRF EPS195 and MRF EPS243 to RACK_OUT, respectively.

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:

An RCS large break LOCA occurred 11 hours ago.

Cold leg recirculation has been established per EPP-009, "Transfer to Cold Leg Recirculation."

EPP-Foldout B is in effect.

INITIATING CUES:

You are to place the unit in long term recirculation in accordance with EPP-010, "Transfer to Long Term Recirculation."

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates EPP-010	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Open Foldout B (**Step 1**)	
STANDARD:	Opens Foldout B, reviews, and determines no actions required	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Determine the Needed RHR Alignment As Follows: a. Check RHR System Alignment - IN PIGGY-BACK MODE (**Step 2.a**)	
STANDARD:	Determines RHR NOT aligned for Piggy-Back Mode due to SI-863A & B being closed and goes to RNO for Step 2.a	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Observe the CAUTION prior to Step 4 and Go To Step 4 (**Step 2.a RNO**)	
STANDARD:	Goes to caution before Step 4	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 5: STANDARD: NOTES: COMMENTS:	CAUTION: Steps 4 through 7 must be performed without delay to minimize the time without flow through the core (**Caution before Step 4**) Acknowledges caution	____ SAT ____ UNSAT
STEP 6: STANDARD: NOTES: COMMENTS:	Perform The Following: a. Verify the RHR PUMPs - ALL STOPPED (**Step 4.a**) Determines RHR pumps NOT stopped and stops running RHR pump by placing switch in STOP position and verifies pump stopped by breaker indication and flow indication **CRITICAL TO STOP PUMP TO ALLOW ALIGNING FOR LONG TERM RECIRCULATION.**	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 7:	Verify RHR HX DISCH Valves - CLOSED - RHR-759A - RHR-759B (**Step 4.b**)	**CRITICAL STEP**
STANDARD:	Determines RHR HX discharge valves both open, places switches for RHR-759A & B to CLOSE, and verifies valves close by postion indication	
NOTES:	**CRITICAL TO ENSURE ADEQUATE SUCTION SOURCE TO SI PUMPS.**	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Verify RHR LOOP RECIRC Valves - OPEN - SI-863A - SI-863B (**Step 4.c**)	**CRITICAL STEP**
STANDARD:	Determines SI-863A & B closed, places switches for SI-863A & B to OPEN and verifies valves open by position indication	
NOTES:	**CRITICAL TO PROVIDE SUCTION SOURCE FOR SI PUMPS.**	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	CAUTION: Opening SI-866A AND SI-866B, HOT LEG INJs, with only one SI Pump running will cause pump runout (**Caution before Step 5**)	
STANDARD:	Acknowledges caution	
NOTES:		____ SAT
		____ UNSAT
COMMENTS:		
STEP 10:	Verify The Following Valves Aligned For Hot Leg Recirculation: a. SI-866A, LOOP 3 HOT LEG INJ - OPEN (**Step 5.a**)	
STANDARD:	Determines SI-866A is closed, places switch for SI-866A in OPEN position, BUT determines valve does NOT open and goes to Step 5.a.RNO	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Open SI-866B, LOOP 2 HOT LEG INJ (**Step 5.a RNO**)	**CRITICAL STEP**
STANDARD:	Places switch for SI-866B in OPEN position and verifies valve opens by position indication	
NOTES:	**CRITICAL TO PROVIDE FLOW PATH FOR HOT LEG RECIRCULATION.**	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	BIT OUTLET Valves - CLOSED - SI-870A - SI-870B (**Step 5.b**)	**CRITICAL STEP**
STANDARD:	Places switches for SI-870A & B to CLOSED position and verifies valves close by position indication	
NOTES:	**CRITICAL TO PROVIDE FLOW PATH FOR HOT LEG RECIRCULATION.**	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	CAUTION: Valves RHR-759A and RHR-759B, RHR HX DISCHs, are closed. The RHR Pumps will run dead-headed and are subject to damage until the SI Pumps are started (**Caution before Step 6**)	
STANDARD:	Acknowledges caution	
NOTES:		____ SAT ____ UNSAT
COMMENTS:		
STEP 14:	Establish Hot Leg Recirculation Flow As Follows: a. Check RHR-759A - CLOSED (**Step 6.a**)	
STANDARD:	Verifies RHR-759A is closed by position indication	
NOTES:		____ SAT ____ UNSAT
COMMENTS:		

STEP 15:	Open SI-863A, RHR LOOP RECIRC (**Step 6.b**)	
STANDARD:	Verifies SI-863A is open by position indication	
NOTES:	***NOTE: SI-863A & B were opened in Step 4.c.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Start RHR PUMP A (**Step 6.c**)	**CRITICAL STEP**
STANDARD:	Places switch for RHR Pump 'A' in START position and verifies pump starts by breaker indication and flow indication	
NOTES:	**CRITICAL TO PROVIDE SUCTION SOURCE FOR SI PUMPS.**	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Start One SI Pump On Each Available Emergency Bus (**Step 7**)	**CRITICAL STEP**
STANDARD:	Determines both emergency buses are available, places switches for both SI pumps to start, and verifies pump starts by breaker indication and flow indication	
NOTES:	**CRITICAL TO START AT LEAST ONE PUMP TO PROVIDE FLOW.**	____ SAT
		____ UNSAT
COMMENTS:		
STEP 18:	Check Indicated Flow On The Appropriate Flow Meters: - FI-940, SI HOT LEG HEADER FLOW - FI-933, SI LOOP 2 HOT LEG FLOW (**Step 8**)	
STANDARD:	Determines SI-866B is open and verifies flow indication on FI-940 and FI-933	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Determine If Flow Should Be Established To Cold Legs As Follows: a. Check RCS pressure - LESS THAN 125 PSIG (**Step 9.a**)	
STANDARD:	Determines RCS pressure is less than 125 psig and that cold leg recirculation flow should be established	
NOTES:		____ SAT ____ UNSAT
COMMENTS:		
STEP 20:	Check ALL of the below components - OPERABLE - FI-605, RHR TOTAL FLOW - RHR-759A & B, RHR HEAT EXCHANGER OUTLETs - SI-863A & B, RHR LOOP RECIRCs - RHR Pumps A & B (**Step 9.b**)	
STANDARD:	Determines all components operable by light indications and no known deficiencies	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 21:	Align For Cold Leg Injection As Follows: a. Establish communications with operators stationed at the breakers for RHR HEAT EXCHANGER OUTLETs: - RHR-759A (MCC-5, CMPT 14C) - RHR-759B (MCC-6, CMPT 13C) (**Step 10.a**)	
STANDARD:	Directs two operators to go to breakers and contact Control Room	
NOTES:	***CUE: OPERATORS ARE STANDING BY BREAKERS.***	____ SAT ____ UNSAT
COMMENTS:		

STEP 22:	Start the second RHR PUMP (**Step 10.b**)	**CRITICAL STEP**
STANDARD:	Places switch for RHR pump 'B' to START and verifies pump starts by breaker indication	
NOTES:	**CRITICAL TO ESTABLISH ADEQUATE FLOW FOR BOTH HOT LEG AND COLD LEG RECIRCULATION.**	____ SAT
COMMENTS:		____ UNSAT

STEP 23:	Verify BOTH RHR LOOP RECIRC Valves - OPEN - SI-863A - SI-863B (**Step 10.c**)	
STANDARD:	Verifies SI-863A & B are open by position indication	
NOTES:	***NOTE: Both valves were opened previously.***	____ SAT ____ UNSAT
COMMENTS:		
STEP 24:	Open RHR-759A, RHR HX A DISCH AND locally open RHR-759A Breaker when RHR flow on FI-605 indicates 1200 gpm (**Step 10.d**)	**CRITICAL STEP**
STANDARD:	Places switch for RHR-759A in OPEN position, verifies valve begins stroking open, and directs local operator to open RHR-759A breaker when FI-605 indicates 1200 gpm	
NOTES:	**CRITICAL TO OPEN VALVE TO ESTABLISH COLD LEG FLOW AND CRITICAL TO DIRECT BREAKER OPENING TO PREVENT RHR PUMP RUNOUT.**	____ SAT
COMMENTS:		____ UNSAT
	SIMULATOR OPERATOR INSTRUCTIONS: Open breaker for RHR-759A when directed by candidate by inserting MRF EPS195 to RACK_OUT.	

STEP 25:	Open RHR-759B, RHR HX B DISCH AND locally open RHR-759B breaker when RHR flow on FI-605 indicates 2300 (**Step 10.e**)	**CRITICAL STEP**
STANDARD:	Places switch for RHR-759B in OPEN position, verifies valve begins stroking open, and directs local operator to open RHR-759B breaker when FI-605 indicates 2300 gpm	
NOTES:	**CRITICAL TO OPEN VALVE TO ESTABLISH COLD LEG FLOW AND CRITICAL TO DIRECT BREAKER OPENING TO PREVENT RHR PUMP RUNOUT.**	____ SAT ____ UNSAT
COMMENTS:		
	SIMULATOR OPERATOR INSTRUCTIONS: Open breaker for RHR-759B when directed by candidate by inserting MRF EPS243 to RACK_OUT.	
STEP 26:	Go To Step 15 (**Step 10.f**)	
STANDARD:	Goes to Step 15	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 27:	Contact Plant Operations Staff To Evaluate Long Term Plant Status (**Step 15**)	
STANDARD:	Informs CRSS that Long Term Recirculation is established and an evaluation of Long Term Plant Status should be performed	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

An RCS large break LOCA occurred 11 hours ago.

Cold leg recirculation has been established per EPP-009, "Transfer to Cold Leg Recirculation."

EPP-Foldout B is in effect.

INITIATING CUES:

You are to place the unit in long term recirculation in accordance with EPP-010, "Transfer to Long Term Recirculation."

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.2.a

Perform Emergency Refill of IVSW Tank Using Service Water (OP-911)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform Emergency Refill of IVSW Tank Using Service Water (OP-911)

Alternate Path: NONE

Facility JPM #: IP-036

K/A Rating: 069AA1.03 Importance: SRO 2.8 RO 3.0

K/A Statement: Ability to operate and / or monitor the following as they apply to the Loss of Containment Integrity: Fluid systems penetrating containment

Task Standard: The IVSW Tank has been filled to approximately 75% using SW and the lineup has been restored.

Preferred Evaluation Location: Simulator _____ In Plant X

Preferred Evaluation Method: Perform _____ Simulate X

References: OP-911, Isolation Valve Seal Water System

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-911
Locked Valve Key
Pipe Wrench

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.

INITIAL CONDITIONS:

The unit is operating at 70% power.

IVSW Tank level is 68% with NO Primary Makeup Water Pumps available to makeup to the tank.

The prequisites for emergency filling the IVSW tank from the Service Water system have been completed.

Both SW Booster Pumps are secured. SW header pressure is 47 psig.

INITIATING CUES:

You have been directed to fill the IVSW tank to 75% level from the Service Water system in accordance with OP-911, "Isolation Valve Seal Water System."

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OP-911, Section 8.3, determines Step 8.3.2.2 is to be performed	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	IF a Service Water Booster Pump IS NOT operating, THEN perform the following: Close SW-502, SW PUMP SUPPLY TO PENETRATION COOLERS (**Step 8.3.2.2.a**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for SW-502 in CW direction until movement stops	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN A CW DIRECTION AND WILL NOT MOVE ANY FURTHER.*** **CRITICAL TO ENSURE ADEQUATE SW PRESSURE TO FILL ISVW TANK.**	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Remove the cap at IVSW-9, IVSW TANK SAMPLE (**Step 8.3.2.2.b**)	**CRITICAL STEP**
STANDARD:	Uses pipe wrench to rotate cap in CCW direction until removed from end of pipe	
NOTES:	***CUE: CAP HAS ROTATED IN CCW DIRECTION AND HAS COME OFF PIPE.***	
	CRITICAL TO ALLOW VENTING OF TANK TO ALLOW SW TO FILL TANK.	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	NOTE: To ensure the IVSW system operates as designed, if an automatic actuation occurs or if a manual initiation is required while this section is in progress, actions shall be taken to restore normal Nitrogen pressure to the IVSW tank (**First Note before Step 8.3.2.2.c**)	
STANDARD:	Acknowledges note	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	NOTE: The following step isolates an essential feature of IVSW AND requires entry into the REQUIRED ACTIONS OF ITS LCO 3.6.8 during Modes 1, 2, 3, and 4 (**Second Note before Step 8.3.2.2.c**)	
STANDARD:	Acknowledges note and informs CRSS of entry into Tech Specs	
NOTES:	***CUE: CRSS ACKNOWLEDGES ENTRY INTO TECH SPEC.***	
	NOTE: This report may actually be made during the performance of JPM Step 7. It is acceptable to make the report at this time, however.	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Close the following valves to isolate Nitrogen to the IVSW tank: - IVSW-44A, PRV-1715C OUTLET - IVSW-44B, PRV-1715D OUTLET (**Step 8.3.2.2.c**)	**CRITICAL STEP**
STANDARD:	Rotates handwheels for ISVW-44A & B in CW direction until movement stops	
NOTES:	***CUE: HANDWHEELS HAVE BEEN ROTATED IN A CW DIRECTION AND WILL NOT MOVE ANY FURTHER.***	
	CRITICAL TO ENSURE ISVW TANK PRESSURE CAN BE LOWERED.	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	IF the plant is in Modes 1, 2, 3, OR 4, THEN notify the CRSS/SSO of Action Statement entry AND record time / date (**Step 8.3.2.2.d**)	
STANDARD:	Determines plant is in Mode 1 and notifies the CRSS of Action Statement entry and records time and date	
NOTES:	***CUE: CRSS ACKNOWLEDGES REPORT.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	NOTE: IVSW tank pressure AND level may be read locally at PI-1910 AND LIT-1912, respectively. LG-1913 may also be used for level indication. Due to the height difference between the sensing points for Service Water Header pressure and IVSW Tank pressure, the IVSW Tank pressure may have to be decreased greater than 13 psig below the indicated Service Water header pressure before flow into the tank will occur. The following step for operating IVSW-9 is CONTINUOUS ACTION STEP AND should be used anytime necessary during water addition to control IVSW tank pressure (**Note before Step 8.3.2.2.e**)	
STANDARD:	Acknowledges note	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Throttle open AND close IVSW-9, IVSW TANK SAMPLE, to vent IVSW tank pressure to less than Service Water Header pressure as necessary to allow makeup (**Step 8.3.2.2.e**)	
STANDARD:	Rotates handwheel for IVSW-9 in the CW direction to throttle open and fully CCW to throttle closed	
NOTES:	***CUE: WHEN VALVE IS BEING THROTTLED OPEN, PROVIDE CUE THAT HANDWHEEL HAS ROTATED IN CCW DIRECTION AND NOISE DUE TO PRESSURE BLEEDING OFF FROM TANK IS BEING HEARD.*** ***WHEN VALVE IS BEING CLOSED FOLLOWING PRESSURE DROP, PROVIDE CUE THAT HANDWHEEL HAS ROTATED IN CW DIRECTION AND WILL NOT MOVE ANY FURTHER.*** ***NOTE: Critical when performed later to lower tank pressure to allow SW to fill IVSW Tank.*** ***Pressure must be reduced sufficiently to allow SW flow.***	____ SAT ____ UNSAT
COMMENTS:		

STEP 10:	Unlock AND open SW-200, IVSW TANK SUPPLY (**Step 8.3.2.2.f**)	**CRITICAL STEP**
STANDARD:	Unlocks SW-200 locking device and rotates handwheel in CCW until handwheel will not move any further, then rotates slightly back in CW direction	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN A CCW DIRECTION, WOULD NOT MOVE ANY FURTHER, AND HAS BEEN ROTATED SLIGHTLY IN CW DIRECTION.*** **CRITICAL TO PROVIDE MAKEUP FLOWPATH.**	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Throttle open SW-202, IVSW TANK SUPPLY, to fill the IVSW tank to within the normal range of 70 to 90% (**Step 8.3.2.2.g**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for SW-202 in CCW direction and monitors LIT-1912 and / or LG-1913 for level increase	
NOTES:	***CUE: HANDWHEEL HAS ROTATED IN CCW DIRECTION. NO LEVEL CHANGE IS NOTED.*** **CRITICAL TO PROVIDE MAKEUP FLOWPATH.**	____ SAT
COMMENTS:		____ UNSAT

STEP 12:	Monitor ISVW Tank and SW header pressures (**Actually performance of previous note and step**)	
STANDARD:	Monitors IVSW Tank (PI-1910) and SW header pressures	
NOTES:	***CUE: IVSW TANK PRESSURE INDICATES PRESSURE IDENTIFIED BY CANDIDATE AS TARGET AND SW HEADER PRESSURE IS 47 PSIG.***	____ SAT
COMMENTS:		____ UNSAT
STEP 13:	Throttle open AND close IVSW-9, IVSW TANK SAMPLE, to vent IVSW tank pressure to less than Service Water Header pressure as necessary to allow makeup (**Actual performance of Step 8.3.2.2.e**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for IVSW-9 in the CW direction to throttle open until level starts to rise in tank and fully CCW to throttle closed	
NOTES:	***CUE: WHEN VALVE IS BEING THROTTLED OPEN, PROVIDE CUE THAT HANDWHEEL HAS ROTATED IN CCW DIRECTION.*** ***LEVEL IN TANK IS BEGINNING TO RISE.*** ***WHEN VALVE IS BEING CLOSED FOLLOWING PRESSURE DROP, PROVIDE CUE THAT HANDWHEEL HAS ROTATED IN CW DIRECTION AND WILL NOT MOVE ANY FURTHER.*** **CRITICAL TO LOWER TANK PRESSURE TO ALLOW SW TO FILL TANK.**	____ SAT
COMMENTS:		____ UNSAT

STEP 14:	WHEN desired IVSW tank level is obtained, THEN close SW-202, IVSW TANK SUPPLY (**Step 8.3.2.2.h**)	***CRITICAL STEP**
STANDARD:	When IVSW Tank level is at or near 75%, rotates handwheel for SW-202 in CW direction until movement stops and verifies level in tank stops rising	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION AND WILL NOT MOVE ANY FURTHER.*** ***LEVEL IS 76% AND STABLE.*** **CRITICAL TO ISOLATE TANK FROM SW TO PREVENT OVERFILL.** ***NOTE: Either JPM Step 14 OR 15 is critical, but NOT both.***	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Lock closed SW-200, IVSW TANK SUPPLY (**Step 8.3.2.2.i**)	***CRITICAL STEP**
STANDARD:	Rotates handwheel for SW-200 in CW direction until movement stops and reinstalls locking device	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION AND WILL NOT MOVE ANY FURTHER.*** ***LOCKING DEVICE IS INSTALLED.*** **CRITICAL TO ISOLATE SW FROM TANK TO PREVENT OVERFILL.** ***NOTE: Either JPM Step 14 OR 15 is critical, but NOT both.***	____ SAT
COMMENTS:		____ UNSAT

STEP 16:	Verify CLOSED IVSW-9, IVSW TANK SAMPLE (**Step 8.3.2.2.j**)	
STANDARD:	Verifies IVSW-9 is closed by attempting to rotate handwheel in CW direction without movement	
NOTES:	***CUE: HANDWHEEL WILL NOT MOVE IN CW DIRECTION.***	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Open the following valves to restore Nitrogen to the IVSW tank: - IVSW-44A, PRV-1715C OUTLET - IVSW-44B, PRV-1715D OUTLET (**Step 8.3.3.2.k**)	**CRITICAL STEP**
STANDARD:	Rotates handwheels for ISVW-44A & B in CCW direction until movement stops, then rotates back slightly in CW direction	
NOTES:	***CUE: HANDWHEELS HAVE BEEN ROTATED IN A CCW DIRECTION, WOULD NOT MOVE ANY FURTHER, AND HAVE BEEN ROTATED SLIGHTLY IN CW DIRECTION.*** **CRITICAL TO RESTORE ISVW TANK TO OPERABLE CONDITION.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 18:	IF an Action Statement entry is in effect for the IVSW Tank AND no other conditions exist which requires the IVSW Tank to be inoperable, THEN notify the CRSS/SSO of exiting the Action Statement AND record time / date (**Step 8.3.2.2.l**)	
STANDARD:	Notifies CRSS that tank has been restored to operable status and records time / date	
NOTES:	***CUE: CRSS ACKNOWLEDGES REPORT.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Install the cap at IVSW-9 (**Step 8.3.2.2.m**)	
STANDARD:	Places cap on end of pipe and uses pipe wrench to rotate in CW direction until movement stops	
NOTES:	***CUE: CAP HAS BEEN PLACED ON END OF CAP AND ROTATED IN CW DIRECTION UNTIL IT CAN NOT BE MOVED ANY FURTHER.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 20:	Verify open SW-502, SW PUMP SUPPLY TO PENETRATION COOLERS (**Step 8.3.2.2.n**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for SW-502 in CCW direction until movement stops and then rotates slightly in CW direction	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN A CCW DIRECTION, WOULD NOT MOVE ANY FURTHER, AND HAS BEEN ROTATED SLIGHTLY IN A CW DIRECTION.***	
	CRITICAL TO ENSURE SW AVAILABLE TO CONTAINMENT VENT UNITS.	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

The unit is operating at 70% power.

IVSW Tank level is 68% with NO Primary Makeup Water Pumps available to makeup to the tank.

The prequisites for emergency filling the IVSW tank from the Service Water system have been completed.

Both SW Booster Pumps are secured. SW header pressure is 47 psig.

INITIATING CUES:

You have been directed to fill the IVSW tank to 75% level from the Service Water system in accordance with OP-911, "Isolation Valve Seal Water System."

DO NOT operate actual plant equipment unless specifically authorized to do so.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.2.b

Lineup the Deepwell Pumps as Backup to AFW System (OP-402)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Lineup the Deepwell Pumps as Backup to AFW System (OP-402)

Alternate Path: NONE

Facility JPM #: IP-055

K/A Rating: 061A1.04 Importance: SRO 3.9 RO 3.9

K/A Statement: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the AFW controls including: AFW source tank level

Task Standard: Deepwell Pumps are aligned as a backup to the AFW system.

Preferred Evaluation Location: Simulator _____ In Plant X

Preferred Evaluation Method: Perform _____ Simulate X

References: OP-402, 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-402
Locked Valve Key
Pipe Wrench

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.

INITIAL CONDITIONS:

The plant is in hot shutdown due to ruptured Condensate Storage Tank. Condensate Storage Tank level is 9% and decreasing.

All (3) AFW pumps have been stopped. Two (2) Deepwell Pumps are operating.

INITIATING CUES:

You are to perform the necessary actions in the Turbine Building to align the Deepwater Well Pumps to the suction of the SDAFW Pump in accordance with OP-402, "Auxiliary Feedwater System." SG 'A' is to be used as the steam source to the SDAFW Pump.

Prerequisites have been completed.

START TIME: _____

STEP 1:	Locates proper procedure and required materials	
STANDARD:	Locates OP-402, Section 8.4.2. Locked Valve Key, and Pipe Wrench	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	CAUTION: A minimum of TWO Deepwell Pumps shall be in operation to provide enough flow to use the Steam Driven AFW Pump. (**Caution before Step 8.4.2.2.a**)	
STANDARD:	Acknowledges caution and determines 2 Deepwell Pumps operating	
NOTES:	***NOTE: Initial conditions indicated 2 Deepwell Pumps running.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Instructions For Aligning Service Water VERIFY the AFW Pumps are STOPPED. - SDAFW - MDAFW Pump "A" - MDAFW Pump "B" (**Step 8.4.2.2.a**)	
STANDARD:	Determines all AFW Pumps are stopped	
NOTES:	***NOTE: Initial conditions indicated all AFW Pumps stopped.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	NOTE: Closing AFW-1, AFW PUMPS SUCTION FROM CST OR AFW-104, AFW PUMPS SUCTION FROM CST in the next step renders the AFW pumps inoperable (ITS LCO 3.7.4 and ITS SR 3.7.4.1) (**Note before Step 8.4.2.2.b**)	
STANDARD:	Acknowledges note	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	NOTIFY the CRSS/SSO that an Action Statement will be entered AND RECORD the time (**Step 8.4.2.2.b**)	
STANDARD:	CRSS notified and time recorded	
NOTES:	***CUE: CRSS ACKNOWLEDGES REPORT.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 6:	PERFORM the following valve lineup: UNLOCK AND CLOSE AFW-1, AFW PUMPS SUCTION FROM CST (**Step 8.4.2.2.c.1**)	***CRITICAL STEP**
STANDARD:	Unlocks locking device and rotates handwheel for AFW-1 in CW direction until movement stops	
NOTES:	***CUE: LOCKING DEVICE HAS BEEN REMOVED AND HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT.*** **CRITICAL TO ISOLATE CST FROM DEEPWELL.** *** *NOTE: Either JPM Step 6 OR 7 is critical, but NOT both. AFW-1 and AFW-104 share a common chain for locking.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	UNLOCK AND CLOSE AFW-104, AFW PUMPS SUCTION FROM CST (**Step 8.4.2.2.c.2**)	***CRITICAL STEP**
STANDARD:	Unlocks locking device and rotates handwheel for AFW-104 in CW direction until movement stops	
NOTES:	***CUE: LOCKING DEVICE HAS BEEN REMOVED AND HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT.***	
	CRITICAL TO ISOLATE CST FROM DEEPWELL.	
	**** NOTE: Either JPM Step 6 OR 7 is critical, but NOT both. AFW-1 and AFW-104 share a common chain for locking.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	CLOSE DW-20, AFW SUCTION FROM DEEPWELL BACKUP TELL-TALE DRAIN. (**Step 8.4.2.2.c.3**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for DW-20 in CW direction until movement stops	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT.***	
	CRITICAL TO PROVIDE MAXIMUM DEEPWELL FLOW AVAILABLE TO AFW.	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	UNLOCK AND OPEN DW-19, DEEPWELL EMERGENCY BACKUP TO AFW SUCTION. (**Step 8.4.2.2.c.4**)	**CRITICAL STEP**
STANDARD:	Unlocks locking device and rotates handwheel for DW-19 in CCW direction until movement stops and then rotates slightly in CW direction	
NOTES:	***CUE: LOCKING DEVICE HAS BEEN REMOVED, HANDWHEEL HAS BEEN ROTATED IN CCW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT, AND HAS BEEN ROTATED SLIGHTLY CW.***	
	CRITICAL TO PROVIDE DEEPWELL WATER TO AFW.	____ SAT
COMMENTS:		____ UNSAT

STEP 10:	UNLOCK AND OPEN DW-21, AFW SUCTION FROM DEEPWELL EMERGENCY BACKUP. (**Step 8.4.2.2.c.5**)	**CRITICAL STEP**
STANDARD:	Unlocks locking device and rotates handwheel for DW-21 in CCW direction until movement stops and then rotates slightly in CW direction	
NOTES:	***CUE: LOCKING DEVICE HAS BEEN REMOVED, HANDWHEEL HAS BEEN ROTATED IN CCW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT, AND HAS BEEN ROTATED SLIGHTLY CW.***	
	CRITICAL TO PROVIDE DEEPWELL WATER TO AFW.	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	CLOSE DW-22, WELL WATER HOSE CONNECTION TREE INLET (**Step 8.4.2.2.c.6**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for DW-22 in CW direction until movement stops	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT.***	
	CRITICAL TO ENSURE ADEQUATE SUPPLY TO AFW PUMP.	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	CLOSE DW-27, WELL WATER HOSE CONNECTION TREE BYPASS (**Step 8.4.2.2.c.7**)	**CRITICAL STEP**
STANDARD:	Rotates handwheel for DW-27 in CW direction until movement stops	
NOTES:	***CUE: HANDWHEEL HAS BEEN ROTATED IN CW DIRECTION UNTIL THERE IS NO FURTHER MOVEMENT.***	
	CRITICAL TO ENSURE ADEQUATE SUPPLY TO AFW PUMP.	____ 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 hot shutdown due to ruptured Condensate Storage Tank. Condensate Storage Tank level is 9% and decreasing.

All (3) AFW pumps have been stopped. Two (2) Deepwell Pumps are operating.

INITIATING CUES:

You are to perform the necessary actions in the Turbine Building to align the Deepwater Well Pumps to the suction of the SDAFW Pump in accordance with OP-402, "Auxiliary Feedwater System." SG 'A' is to be used as the steam source to the SDAFW Pump.

Prerequisites have been completed.

DO NOT operate actual plant equipment unless specifically authorized to do so.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-B.2.c

Actuate the Halon Suppression System (OP-804)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Actuate the Halon Suppression System (OP-804)

Alternate Path: NONE

Facility JPM #: IP-104

K/A Rating: 086A4.06 Importance: SRO 3.2 RO 3.2

K/A Statement: Ability to manually operate and/or monitor in the control room: Halon system

Task Standard: Manual actuation of the Halon System for Zone 20 (E1/E2 Room) has occurred.

Preferred Evaluation Location: Simulator _____ In Plant X

Preferred Evaluation Method: Perform _____ Simulate X

References: OP-804, Halon Suppression 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-804

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.

INITIAL CONDITIONS:

A Fire Alarm has been received on both trains in Zone 20, E1/E2 Room, but there has been NO response of the system actuating by the FDAPs.

It has been verified that there is a fire in the E1/E2 Room.

INITIATING CUES:

You are to manually actuate the Main Bank of the Halon Suppression System for the E1/E2 Room at the Halon Storage Area in accordance with OP-804, "Halon Suppression System."

START TIME: _____

STEP 1:	Locates proper procedure or instructional aid	
STANDARD:	Locates OP-804, Section 8.4.2, or uses Instructional Aid 96-OP-07, located at Main Banks	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	IF Zone 20 (E-1/E-2 Room) will be actuated, THEN perform the following: a. Remove the safety pins and rotate the pilot control valves FPHS-2 AND FPHS-5 fully counterclockwise. - FPHS-2 - FPHS-5 (**Step 8.4.2.2.a**)	**CRITICAL STEP**
STANDARD:	Removes safety pins from BOTH FPHS-2 and FPHS-5, and rotates the pilot control valves fully counterclockwise	
NOTES:	***CUE: BOTH PINS HAVE BEEN REMOVED AND BOTH VALVES HAVE BEEN ROTATED FULLY COUNTERCLOCKWISE.*** **CRITICAL TO ALLOW MANUAL ACTUATION.**	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Remove the safety pin and pull the lever down on the Manual Pneumatic Actuator Valves FPHS-14 OR FPHS-16 at cylinder slots A-1 or A-2 - FPHS-14 (Cylinder Slot A-1) - FPHS-16 (Cylinder Slot A-2) (**Step 8.4.2.2.b**)	**CRITICAL STEP**
STANDARD:	Removes the safety pin and pulls the lever down on the Manual Pneumatic Actuator Valve FPHS-14 OR FPHS-16	
NOTES:	***CUE: PIN HAS BEEN REMOVED FROM LEVER AND LEVER HAS BEEN PULLED DOWN.*** **CRITICAL TO PROVIDE MANUAL ACTUATION.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Verify Halon discharges immediately into the E-1/E-2 Room (**Step 8.4.2.2.c**)	
STANDARD:	Verifies flow of Halon into E-1/E-2 room using pressure decreasing on the bank tanks, flow noise, frosting of the piping, and / or frost band forming on the tanks	
NOTES:	***CUE: PROVIDE INDICATION THAT HALON DISCHARGE HAS OCCURRED BY INDICATING THE FOLLOWING, AS CHECKED BY THE CANDIDATE:*** ***1) PRESSURE INDICATION IS DECREASING*** ***2) FLOW CAN BE HEARD*** ***3) FROSTING OF THE PIPING IS OCCURRING*** ***4) FROST LINE IS FORMING ON THE TANKS***	
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

A Fire Alarm has been received on both trains in Zone 20, E1/E2 Room, but there has been NO response of the system actuating by the FDAPs.

It has been verified that there is a fire in the E1/E2 Room.

INITIATING CUES:

You are to manually actuate the Main Bank of the Halon Suppression System for the E1/E2 Room at the Halon Storage Area in accordance with OP-804, "Halon Suppression System."

DO NOT operate actual plant equipment unless specifically authorized to do so.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-B.1.c

Restore Normal Power Following a Loss of Off-Site Power (OP-603)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Restore Normal Power Following a Loss of Off-Site Power (OP-603)

Alternate Path: NONE

Facility JPM #: CR-028

K/A Rating: 062A4.07 Importance: SRO 3.1 RO NA

K/A Statement: Ability to manually operate and/or monitor in the control room: Synchronizing and paralleling of different AC supplies

Task Standard: Startup transformer is supplying power to on-site distribution system with EDGs still supplying E-1 and E-2 buses.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: OP-603, Electrical Distribution

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-603

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:

A fault occurred on the line to the Startup Transformer, causing a Loss Of Off-Site Power. Subsequently, the reactor tripped.

'A' and 'B' EDGs started and have operated as required.

PATH-1 and EPP-4, "Reactor Trip Response," actions are complete, with the plant in a stable condition.

The line to the Startup Transformer has been repaired and the initial conditions of OP-603, "Electrical Distribution," Section 8.1.1 (steps 8.1.1.1 thru 8.1.10) have been completed.

INITIATING CUES:

You are to perform OP-603, Section 8.1.2, steps 8.1.2.1 through 8.1.2.25.

SIMULATOR SETUP INSTRUCTIONS

1) Reset simulator to IC-5.

2) Trip the Reactor.

3) Trip the turbine.

4) Insert MFI EPS-13 (None 0 0) Loss of Startup Transformer.

5) Perform actions required in PATH-1, and EPP-4.

6) Delete malfunction EPS-13.

7) Insert RFI EPS035(None 0 0) CLOSED to set "Auto Closure to 115KV SWYD BKRS.

8) RFI EPS038(None 0 0) CLOSED to set "Auto Closure to 115KV SWYD BKRS.

9) Verify all actions of OP-603, Section 8.1.1, have been completed.

10) FREEZE the simulator.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OP-603, Section 8.1.2	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	CAUTION: All breakers shall be set up in normal operating position except breakers that tripped on low voltage, or are racked out per 8.1.1.7 (**Caution before Step 8.1.2.1**)	
STANDARD:	Acknowledges caution	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Verify the following relays are RESET, on the Generator Protection Relay Panel in the Control Room: a. Generator Lockout Relay 86P b. Generator Back-up Lockout Relay 86BU (**Step 8.1.2.1**)	***CRITICAL STEP**
STANDARD:	Places 86P in RESET position and ensures both relays are reset by switch being in vertical position and orange light energized	
NOTES:	**CRITICAL TO ENSURE 4 KV BREAKER OPERATION DOES NOT OCCUR INADVERTANTLY.** ***NOTE: Only critical to place 86P in RESET.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	CAUTION: The length of time the Startup Transformer is energized without cooling fans running shall be minimized to prevent overheating and possible damage to the transformer. Without cooling fans the transformer can be maintained at rated voltage for 6 hours at no load without causing any damage (**Caution before Step 8.1.2.2**)	
STANDARD:	Acknowledges caution	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Close the LINE DISCONNECT SWITCH (Motor Operated Disconnect) AND verify the START UP TRANSF ENERGIZED white light ILLUMINATED (**Step 8.1.2.2**)	**CRITICAL STEP**
STANDARD:	Places switch for disconnect in CLOSE position and verifies closed by white light energized	
NOTES:	**CRITICAL TO PROVIDE POWER TO BUSES.**	
		____ SAT
COMMENTS:		____ UNSAT
STEP 6:	NOTE: When energizing a dead bus, the synchroscope will not come to the 12 o'clock position until after the breaker is closed and the dead bus is energized (**Note before Step 8.1.2.3**)	
STANDARD:	Acknowledges note	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Insert key into STARTUP TRANSF synchroscope switch AND turn switch to STARTUP BUS 2 position (**Step 8.1.2.3**)	**CRITICAL STEP**
STANDARD:	Inserts key and rotates switch to STARTUP BUS 2 position	
NOTES:	**CRITICAL TO ALLOW CLOSURE OF BREAKER.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 8:	Close START-UP TO 4KV BUS 2 BKR 52/12 (**Step 8.1.2.4**)	**CRITICAL STEP**
STANDARD:	Places breaker to CLOSE position and verifies closed by breaker indication	
NOTES:	**CRITICAL TO PROVIDE POWER TO BUS.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Turn synchroscope key switch to the MID-POSITION (**Step 8.1.2.5**)	
STANDARD:	Key switch for synchroscope rotated to MID position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 10:	Insert key into 4KV TIES synchroscope switch AND turn switch to BUS 1 & 2 position (**Step 8.1.2.6**)	
STANDARD:	Inserts key and rotates switch to BUS 1 & 2 position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Verify CLOSED 4KV BUS 1-2 TIE BKR 52/10 (**Step 8.1.2.7**)	
STANDARD:	Verifies breaker closed by breaker indication	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 12:	Turn synchroscope key switch to MID-POSITION (**Step 8.1.2.8**)	
STANDARD:	Key switch for synchroscope rotated to MID position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Locally verify STATION SERVICE TRANSFORMER 2B BKR 52/4 CLOSED (**Step 8.1.2.9**)	
STANDARD:	Directs local operator to verify breaker closed	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS BREAKER 52/4 IS CLOSED.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Close 480V BUS 2B MAIN BKR 52/9B (**Step 8.1.2.10**)	**CRITICAL STEP**
STANDARD:	Places switch for breaker 52/9B to CLOSE position and verifies breaker closes by breaker indication	
NOTES:	**CRITICAL TO RESTORE POWER TO BUS.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Verify Startup Transformer cooling fans and oil pumps OPERATING (**Step 8.1.2.11**)	
STANDARD:	Directs local operator to verify cooling fans and oil pump operating	
	SIMULATOR OPERATOR INSTRUCTIONS: When contacted to verify Startup Transformer cooling fans and oil pumps operating, enter RFI EPS331 to RESET the STARTUP TRANSFORMER TROUBLE ANNUNCIATOR (APP-009-C7) and report that fans and pumps are now running.	
NOTES:	***CUE: WHEN ACTIONS TAKEN, INFORM CANDIDATE THAT FANS AND OIL PUMPS ARE RUNNING.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Verify APP-009-C7, SU TRANSF TROUBLE, EXTINGUISHED (**Step 8.1.2.12**)	
STANDARD:	Verifies annunciator APP-009-C7 is extinguished.	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 17: STANDARD: NOTES: COMMENTS:	Close 480V BUS 2A MAIN BKR 52/8B (**Step 8.1.2.13**) Places breaker in CLOSE position and verifies closed by breaker indication **CRITICAL TO PROVIDE POWER TO BUS.**	**CRITICAL STEP** ____ SAT ____ UNSAT
STEP 18: STANDARD: NOTES: COMMENTS:	Insert key into STARTUP TRANSF synchroscope switch AND turn switch to STARTUP BUS 3 position (**Step 8.1.2.14**) Inserts key and rotates switch to STARTUP BUS 3 position **CRITICAL TO ALLOW BREAKER OPERATION.**	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 19:	Close START-UP TRANSFORMER TO 4KV BUS 3 BKR 52/17 (**Step 8.1.2.15**)	**CRITICAL STEP**
STANDARD:	Places switch for breaker 52/17 to CLOSE position and verifies breaker closes by breaker indication	
NOTES:	**CRITICAL TO RESTORE POWER TO BUS.**	
COMMENTS:		____ SAT ____ UNSAT
STEP 20:	Turn synchroscope key switch to MID-POSITION (**Step 8.1.2.16**)	
STANDARD:	Key switch for synchroscope rotated to MID position	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 21:	Insert key into 4KV TIES synchroscope switch AND turn switch to BUS 3 & 4 position (**Step 8.1.2.17**)	
STANDARD:	Inserts key and rotates switch to BUS 3 & 4 position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 22:	Verify 4KV BUS 3-4 TIE BKR 52/19 CLOSED (**Step 8.1.2.18**)	
STANDARD:	Verifies breaker closed by breaker indication	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 23:	Turn synchroscope key switch to MID-POSITION **(Step 8.1.2.19)**	
STANDARD:	Key switch for synchroscope rotated to MID position	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 24:	Locally verify STATION SERVICE TRANSFORMER 2A & 2F BKR 52/13 CLOSED **(Step 8.1.2.20)**	
STANDARD:	Directs local operator to verify breaker closed	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS BREAKER 52/13 IS CLOSED.***	____ SAT
COMMENTS:		____ UNSAT

STEP 25: STANDARD: NOTES: COMMENTS:	Verify STA SERV TRANSF 2A TO 480V SYSTEM BKR 52/1B and 480V BUS 1 MAIN BKR 52/2B CLOSED (**Step 8.1.2.21**) Verifies breaker 52/1B is closed by breaker indication AND places switch for breaker 52/2B to CLOSE position and verifies breaker closes by breaker indication **CRITICAL TO RESTORE POWER TO BUS.** **** NOTE: Only critical to close 52/2B breaker since 52/1B breaker is already closed.***	***CRITICAL STEP** ____ SAT ____ UNSAT
STEP 26: STANDARD: NOTES: COMMENTS:	NOTE: Use either local voltage indication at the 480V Busses or observe the RTGB indication and alarms for electrical components powered from the respective bus for verification that the bus is energized (**Note before Step 8.1.2.22**) Acknowledges note	____ SAT ____ UNSAT

STEP 27:	Verify 480V Bus 1 is ENERGIZED (**Step 8.1.2.22**)	
STANDARD:	Verifies operation of any component powered from the bus **OR** checks for proper indication (red/green light) for components powered from MCC-1 **OR** directs local operator to verify voltage	
NOTES:	***CONDITIONAL CUE (IF LOCAL OPERATOR CONTACTED): AUXILIARY OPERATOR REPORTS VOLTAGE ON BUS 1 IS 482 VOLTS.***	____ SAT
COMMENTS:		____ UNSAT
STEP 28:	Locally verify STATION SERVICE TRANSFORMER 2C & 2G BKR 52/15 CLOSED (**Step 8.1.2.23**)	
STANDARD:	Directs local operator to verify breaker closed	
NOTES:	***CUE: AUXILIARY OPERATOR REPORTS BREAKER 52/15 IS CLOSED.***	____ SAT
COMMENTS:		____ UNSAT

STEP 29:	Verify STA SERV TRANSF 2C TO 480V SYSTEM BKR 52/16B AND 480V BUS 3 MAIN BKR 52/15B CLOSED (**Step 8.1.2.24**)	***CRITICAL STEP**
STANDARD:	Verifies breaker 52/16B is closed by breaker indication AND places switch for breaker 52/15B to CLOSE position and verifies breaker closes by breaker indication	
NOTES:	**CRITICAL TO RESTORE POWER TO BUS.** **** NOTE: Only critical to close 52/15B breaker since 52/16B breaker is already closed.***	____ SAT
COMMENTS:		____ UNSAT
STEP 30:	Verify 480V Bus 3 ENERGIZED (**Step 8.1.2.25**)	
STANDARD:	Verifies operation of any component powered from the bus **OR** checks for proper indication (red/green light) for components powered from MCC-4 **OR** directs local operator to verify voltage	
NOTES:	***CONDITIONAL CUE (IF LOCAL OPERATOR CONTACTED): AUXILIARY OPERATOR REPORTS VOLTAGE ON BUS 4 IS 481 VOLTS.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

A fault occurred on the line to the Startup Transformer, causing a Loss Of Off-Site Power. Subsequently, the reactor tripped.

'A' and 'B' EDGs started and have operated as required.

PATH-1 and EPP-4, "Reactor Trip Response," actions are complete, with the plant in a stable condition.

The line to the Startup Transformer has been repaired and the initial conditions of OP-603, "Electrical Distribution," Section 8.1.1 (steps 8.1.1.1 thru 8.1.10) have been completed.

INITIATING CUES:

You are to perform OP-603, Section 8.1.2, steps 8.1.2.1 through 8.1.2.25.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-B.1.d

Perform Emergency Boration (EPP-4)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform Emergency Boration (EPP-4)

Alternate Path: Several failures cause Emergency Boration flowpath to be only available path.

Facility JPM #: CR-076

K/A Rating: 004A4.18 Importance: SRO 3.8 RO NA

K/A Statement: Ability to manually operate and/or monitor in the control room: Emergency borate valve

Task Standard: Emergency boration flow has been established from the boric acid tank to the RCS.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: EPP-004, Reactor Trip Response

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:

EPP-004

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:

During a plant startup, the reactor tripped on an Intermediate Range channel failure.

PATH-1 and EPP-4, "Reactor Trip Response," actions are being taken.

FOLDOUT-A is in effect.

Two (2) rods have NOT fully inserted on the trip.

INITIATING CUES:

You are to perform the actions of EPP-4, "Reactor Trip Response," Step 12.

SIMULATOR SETUP INSTRUCTIONS

1) Reset simulator to IC-211 (3% power).

2) Insert MFI CRF04A, L11, shutdown bank rod L11 untrippable.

3) Insert MFI CRF04B, E7, Control bank A rod E7 untrippable.

4) Insert MFI NIS05A, -3, intermediate range instrument failed high.

5) Insert MFI CVC21 0 to cause LCV-115B to fail closed.

6) Insert OVD XAAI166 to cause FCV-113A to fail closed.

7) RUN simulator until the reactor trips and related annunciators are in ALARM.

8) Reset SPDS.

9) FREEZE the simulator.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates EPP-004, Step 12	
NOTES:	***NOTE: The only flowpath that will function is the Emergency Boration path. Candidate is NOT required to attempt any other flowpaths, but is likely to based on listed order in procedure. HOWEVER, if candidate bypasses any of the other listed flowpaths without attempting to perform them, this is acceptable. JPM steps which address the bypassed flowpaths should then be marked "N/A."***	____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Check ALL Control Rods - FULLY INSERTED	
STANDARD:	Determines rods E7 and L11 did NOT fully insert by rod position indication on RTGB or ERFIS	
NOTES:	***NOTE: Also gave as part of initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	IF only one Control Rod is stuck out, THEN Go To Step 13	
STANDARD:	Determines more than one rod stuck out and continues with RNO	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 4:	IF two or more Control Rods are stuck out, THEN perform the following: Verify at least one Charging Pump is RUNNING	
STANDARD:	Verifies two Charging Pump running by breaker indication	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 5:	Borate to cold shutdown boron concentration using one of the following: - Blender to Charging Pump suction: Open FCV-113A, BA TO BLENDER	
STANDARD:	Attempts to open FCV-113A by placing switch in OPEN position, but determines valve fails to open by position indication	
NOTES:	***NOTE: If this flowpath is NOT attempted, mark this JPM Step as "N/A."***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	RWST to Charging Pump suction: Open LCV-115B, EMERG MU TO CHG SUCT, OR locally open CVC-358, RWST TO CHARGING PUMP SUCTION	
STANDARD:	Attempts to open LCV-115B by placing switch in OPEN position, but determines valve fails to open by position indication **- OR -** Directs AO to locally open CVC-358	
NOTES:	***CONDITIONAL CUE (IF AO DIRECTED TO OPEN CVC-358): AUXILIARY OPERATOR REPORTS CVC-358 WILL NOT COME OFF THE CLOSED SEAT.*** ***NOTE: If this flowpath is NOT attempted, mark this JPM Step as "N/A."***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Blender to VCT: Open FCV-113A, BA TO BLENDER	
STANDARD:	Determines unable to open FCV-113A on previous attempt	
NOTES:	***NOTE: If this flowpath is NOT attempted, mark this JPM Step as "N/A."***	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Emergency boration: Open MOV-350, BA TO CHARGING PMP SUCT	**CRITICAL STEP**
STANDARD:	Places switch for MOV-350 to OPEN position and verifies valve opens by position indication	
NOTES:	**CRITICAL TO ESTABLISH SOURCE OF BORIC ACID TO CHARGING PUMP.**	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Start Boric Acid Pump aligned for blend	**CRITICAL STEP**
STANDARD:	Places switch for Boric Acid Pump to START and verifies pump starts by breaker indication and flow indication	
NOTES:	**CRITICAL TO PROVIDE ADEQUATE PRESSURE TO CAUSE BORIC ACID FLOW TO CHARGING PUMP.**	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Verify boric acid flow on FI-110	
STANDARD:	Verifies flow indication on FI-110	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Open CVC-310B, LOOP 2 COLD LEG CHG	
STANDARD:	Verifies CVC-310B is OPEN by position indication and flow indication	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Verify charging flow on FI-122A	
STANDARD:	Verifies flow indication on FI-122A	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

During a plant startup, the reactor tripped on an Intermediate Range channel failure.

PATH-1 and EPP-4, "Reactor Trip Response," actions are being taken.

FOLDOUT-A is in effect.

Two (2) rods have NOT fully inserted on the trip.

INITIATING CUES:

You are to perform the actions of EPP-4, "Reactor Trip Response," Step 12.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.c

Depressurize the RHR System in Preparation for SI Alignment (GP-002)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Depressurize the RHR System in Preparation for SI Alignment (GP-002)

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 005A4.01 Importance: SRO NA RO 3.6

K/A Statement: Ability to manually operate and/or monitor in the control room: Controls and indication for RHR pumps

Task Standard: GP-002, Step 8.4.7, is complete with CCW isolated to the RHR HXs.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: GP-002, Cold Shutdown to Hot Subcritical at No Load T_{avg}

Validation Time: 30 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-002.

SIMULATOR OPERATOR INSTRUCTIONS: See next page for 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 is being heated up from Mode 5 to Mode 3 in accordance with GP-002, "Cold Shutdown to Hot Subcritical at No Load Tavg."

Actions are being taken to cool down and depressurize the RHR system per Step 8.4.7.

RHR Pump Discharge Temperatures, as read on TR-604, Pens 1 and 3, are both < 100 °F. ERFIS is NOT available.

INITIATING CUES:

You are to complete the depressurization of the RHR system in preparation for SI alignment by completing the performance of Step 8.4.7, commencing with Step 8.4.7.4.

SIMULATOR SETUP INSTRUCTIONS

1) Reset simulator to IC-208.

2) Verify GP-002, Step 8.4.5 conditions are met.

3) Perform GP-002, Step 8.4.6, to transfer letdown from RHR to normal letdown.

4) Place FC-605, RHR HX BYPASS FLOW, in manual and close FCV-605.

5) Adjust HIC-758, RHR HX DISCH FLOW to between 20% and 25% demand.

6) Insert OVR XAOD083C to 95 °F to cause TR-604, Pens 1 and 3, to indicate < 100 °F.

7) Ensure RHR Pump 'A' is operating.

8) Ensure Audio Count Rate is audible.

9) FREEZE the simulator.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates GP-002, Section 8.4.7, Step 8.4.7.4	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Stop the RHR Pumps AND verify both RHR pump room ventilation units are STOPPED (**Step 8.4.7.4**)	**CRITICAL STEP**
STANDARD:	Stops RHR Pump 'A' by placing the switch to STOP and verify pump stops by breaker, pressure, and flow indication Verifies RHR pump room ventilation units are stopped by breaker indication	
NOTES:	**CRITICAL STEP TO ALLOW RHR SYSTEM DEPRESSURIZATION.** ***NOTE: Only critical to stop RHR pump. Verification of fans are not considered critical.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Close RHR-750, LOOP 2 HOT LEG TO RHR SYSTEM (**Step 8.4.7.5.a**)	***CRITICAL STEP**
STANDARD:	Places switch for RHR-750 to CLOSE position and verifies valve closes by position indication	
NOTES:	**CRITICAL TO ISOLATE RHR FROM RCS TO ALLOW DEPRESSURIZATION.** ***NOTE: Either Step 3 or 4 is critical, but not both.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Close RHR-751, LOOP 2 HOT LEG TO RHR SYSTEM (**Step 8.4.7.5.b**)	***CRITICAL STEP**
STANDARD:	Places switch for RHR-751 to CLOSE position and verifies valve closes by position indication	
NOTES:	**CRITICAL TO ISOLATE RHR FROM RCS TO ALLOW DEPRESSURIZATION.** ***NOTE: Either Step 3 or 4 is critical, but not both.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Open the breaker for RHR-751, LOOP 2 HOT LEG TO RHR SYSTEM, on MCC-6 in CMPT NO. 8M (**Step 8.4.7.5.c**)	
STANDARD:	Directs an operator to open breaker	
	SIMULATOR OPERATOR INSTRUCTIONS: Remove power from RHR-751 by inserting MRF EPS235 to RACK_OUT.	
NOTES:	***CUE: WHEN ACTIONS ARE COMPLETE, INFORM CANDIDATE THAT BREAKER IS RACKED OUT.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Adjust PC-145, PRESSURE, to increase Letdown pressure to within 25 psig of current RCS Pressure (**Step 8.4.7.6**)	**CRITICAL STEP**
STANDARD:	Adjusts PC-145 in closed direction to control letdown pressure within 25 psig of RCS pressure	
NOTES:	**CRITICAL TO ALLOW CONTROLLING RCS PRESSURE AT CURRENT VALUE.**	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Adjust HIC-142, PURIFICATION FLOW, to open HCV-142, RHR TO LETDOWN LINE (**Step 8.4.7.7**)	**CRITICAL STEP**
STANDARD:	Opens HCV-142 by adjusting HIC-142 and verifies HCV-142 open	
NOTES:	**CRITICAL TO ALLOW ESTABLISHING LETDOWN FLOW FROM RHR.**	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Adjust PC-145 to decrease letdown pressure to greater than 140 psig and less than 210 psig (**Step 8.4.7.8**)	**CRITICAL STEP**
STANDARD:	Adjusts letdown pressure to between 140 psig and 210 psig using PC-145	
NOTES:	**CRITICAL TO ALLOW PRESSURE DECREASE TO OPEN RWST SUCTION VALVES.**	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	As Letdown increases, adjust PC-145 setting OR isolate letdown orifices to maintain Letdown flow below 120 gpm (**Step 8.4.7.9**)	
STANDARD:	Either adjusts PC-145 or closes letdown orifices by placing switches to CLOSE postion and maintains flow below 120 gpm	
NOTES:	***NOTE: Either method is acceptable provided letdown flow is maintained within limits.***	____ SAT
COMMENTS:		____ UNSAT

STEP 10:	Control Charging pump speed, letdown flow and excess letdown flow to maintain PZR level between 30% and 40% (**Step 8.4.7.10**)	
STANDARD:	Maintains PZR level between 30% and 40% by controlling pump speed using controller, letdown flow using PC-145 or orifice valves, or excess letdown using flow controller	
NOTES:	***NOTES:*** ***1) Any of these methods is acceptable provided PZR level is maintained between 30% and 40%.*** ***2) Not considered critical since high or low pressurizer level will not affect ability to complete RHR alignment.***	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	NOTE: Leaving HCV-142, RHR TO LETDOWN LINE, open until the RHR System is less than 210 psig will allow SI-862A and SI-862B, RWST TO RHR valves, to open (**Note before Step 8.4.7.11**)	
STANDARD:	Acknowledges note	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 12:	WHEN RHR System pressure is less than 210 psig as indicated on PI-602A and PI-602B, THEN adjust HIC-142, PURIFICATION FLOW, to close HCV-142 (**Step 8.4.7.11**)	
STANDARD:	Closes HCV-142 by adjusting HIC-142 and verifies HCV-142 closed	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Close RHR-760, RHR SYSTEM TO LETDOWN LINE (**Step 8.4.7.12**)	
STANDARD:	Directs Inside AO to CLOSE RHR-760 in CLOSE position	
	SIMULATOR OPERATOR INSTRUCTIONS: Insert MRF RHR008 0 0.	
NOTES:	***CUE: AFTER ACTIONS TAKEN, INFORM CANDIDATE THAT RHR-760 IS CLOSED.***	____ SAT
COMMENTS:		____ UNSAT
STEP 14:	Adjust HIC-758, RHR HX DISCH FLOW to 0% demand (**Step 8.4.7.13**)	**CRITICAL STEP**
STANDARD:	Adjusts HIC-758 to 0% demand	
NOTES:	**CRITICAL TO ESTABLISH PROPER SI ALIGNMENT.**	____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Open the RWST to RHR Pump Suction Valves AND record time. - SI-862A, RWST TO RHR - SI-862B, RWST TO RHR (**Step 8.4.7.14**)	**CRITICAL STEP**
STANDARD:	Places switches for SI-862A and SI-862B to OPEN position and verifies valves open by position indication.	
NOTES:	**CRITICAL TO ESTABLISH PROPER SI ALIGNMENT.**	
		____ SAT
COMMENTS:		____ UNSAT
STEP 16:	NOTE: When CCW flow to the RHR Heat Exchangers is isolated, CCW System flow may need to be adjusted to reduce CCW System pressure. (**Note before Step 8.4.7.15**)	
STANDARD:	Acknowledges note	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Close the Component Cooling Water valves from the RHR Heat Exchanger. - CC-749A, CCW FROM RHR HX - CC-749B, CCW FROM RHR HX (**Step 8.4.7.15**)	**CRITICAL STEP**
STANDARD:	Places switches for CC-749A and CC-749B to CLOSE position and verifies valves closed by position indication.	
NOTES:	**CRITICAL TO ESTABLISH PROPER SI ALIGNMENT.**	____ 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 being heated up from Mode 5 to Mode 3 in accordance with GP-002, "Cold Shutdown to Hot Subcritical at No Load Tavg."

Actions are being taken to cool down and depressurize the RHR system per Step 8.4.7.

RHR Pump Discharge Temperatures, as read on TR-604, Pens 1 and 3, are both < 100 °F. ERFIS is NOT available.

INITIATING CUES:

You are to complete the depressurization of the RHR system in preparation for SI alignment by completing the performance of Step 8.4.7, commencing with Step 8.4.7.4.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-B.1.d

Perform Rod Control Exercise and Rod Position Indication Surveillance (OST-011)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform Rod Control Exercise and Rod Position Indication Surveillance (OST-011)

Alternate Path: Rod drops during withdrawal, requiring reactor trip.

Facility JPM #: NEW

K/A Rating: 001A2.11 Importance: SRO NA RO 4.1

K/A Statement: Ability to (a) predict the impacts of the following malfunction or operations on the CRDS, and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Situations requiring reactor trip

Task Standard: Reactor has been manually tripped in response to a dropped rod.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: OST-011, Rod Cluster Control Exercise & Rod Position Indication Monthly

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-011

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset to IC-20.
2) Insert remote function CRF008 to DEFEAT.
3) FREEZE the simulator.
4) When directed by JPM instructions, insert MFI CRF004 for Rod N-7 to cause the rod to drop.

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 50% power

OST-011, "Rod Cluster Control Exercise & Rod Position Indication Monthly." is being performed.

INITIATING CUES:

You are to perform OST-011 commencing with Section 7.1 for Shutdown Bank 'A' rods.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OST-011, Section 7.1	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Record Initial Rod Heights RTGB (Inches), Initial Rod Heights ERFIS (Inches), and Group Counter Initial Height (Steps) on ATTACHMENT 8.1 (**Step 7.1.1**)	
STANDARD:	Records initial rod heights from RTGB, initial rod heights from ERFIS, and group counter initial height on Attachment 8.1	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Position the ROD BANK SELECTOR switch to the SBA position for Shutdown Bank 'A' (**Step 7.1.2**)	**CRITICAL STEP**
STANDARD:	Rotates switch to the SBA position	
NOTES:	**CRITICAL TO ALLOW MOVEMENT OF SHUTDOWN BANK 'A' RODS ONLY.**	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Using the IN-HOLD-OUT lever, position Shutdown Bank 'A' rods, using step counter indication, to the required number of steps as dictated by plant conditions stated in the Precautions (**Step 7.1.3**)	**CRITICAL STEP**
STANDARD:	Places IN-HOLD-OUT lever to IN position and inserts Shutdown Bank 'A' rods 19 steps	
NOTES:	**CRITICAL TO INSERT RODS REQUIRED AMOUNT TO DEMONSTRATE ACCEPTABLE OPERATION.**	____ SAT
COMMENTS:		____ UNSAT

STEP 5: STANDARD: NOTES: COMMENTS:	Record Tested Rod Heights RTGB (Inches), Tested Rod Heights ERFIS (Inches), AND Group Counter Tested Height (Steps) on ATTACHMENT 8.1 (**Step 7.1.4**) Records Shutdown Bank 'A' Rod Heights RTGB (Inches), Tested Rod Heights ERFIS (Inches), AND Group Counter Tested Height (Steps) on ATTACHMENT 8.1.	____ SAT ____ UNSAT
STEP 6: STANDARD: NOTES: COMMENTS:	Using the IN-HOLD-OUT lever, return rods to the Initial Height (Steps) as indicated by the step counters (**Step 7.1.5**) Places IN-HOLD-OUT lever to OUT position and begins withdrawing Shutdown Bank 'A' rods ***SIMULATOR OPERATOR INSTRUCTIONS: Insert MFI CRF004 for Rod N-7 to cause the rod to drop into the core AFTER the rods are withdrawn above 216 steps.*** **CRITICAL TO WITHDRAW RODS TO FULLY WITHDRAWN POSITION TO RESTORE REQUIRED ALIGNMENT FOR OPERATIONS.** ***NOTE: Withdrawal shall NOT be the continuous 19 steps per Precaution 4.4.5.***	**CRITICAL STEP** ____ SAT ____ UNSAT

STEP 7:	Diagnoses a dropped rod in Shutdown Bank 'A'	
STANDARD:	Determines a dropped rod has occurred in Shutdown Bank 'A' by: - Rod height indication on RTGB - Rod height indication on ERFIS - APP-005-E2, ROD CONT SYSTEM URGENT FAILURE, illuminated - APP-005-E3, ROD CONT SYSTEM NON-URGENT FAILURE, illuminated - APP-005-F2, ROD BOTTOM ROD DROP, illuminated	
NOTES:		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Stop withdrawing Shutdown Bank 'A' rods	
STANDARD:	Releases IN-HOLD-OUT lever to HOLD position	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Informs CRSS of need to trip reactor and initiates a manual reactor trip (**Based on Precaution 4.4.5**)	**CRITICAL STEP**
STANDARD:	Informs CRSS and places reactor trip switch to TRIP position and verifies reactor trip by trip breaker position indication, rod position indication, and plant response	
NOTES:	**CRITICAL TO INITIATE A REACTOR TRIP IN RESPONSE TO DROPPED ROD WITH RODS NOT IN NORMAL ALIGNMENT.** ***NOTE: It is NOT critical to inform CRSS 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 operating at 50% power

OST-011, "Rod Cluster Control Exercise & Rod Position Indication Monthly." is being performed.

INITIATING CUES:

You are to perform OST-011 commencing with Section 7.1 for Shutdown Bank 'A' rods.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM COM-A.1-1

Perform a Manual Shutdown Margin Calculation (FMP-012)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform a Manual Shutdown Margin Calculation (FMP-012)

Alternate Path: NONE

Facility JPM #: CR-049 (Modified)

K/A Rating: 2.1.25 Importance: SRO 3.1 RO 2.8

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

Task Standard: The available Shutdown Margin is calculated to be 3653 +/- 35 pcm.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: FMP-012, Manual Determination of Shutdown Margin Boron Concentration
Station Curve Book
FMP-001, Core Operating Limits Report

Validation Time: 30 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT _____ UNSAT _____

Comments: _____

_____

Examiner: _____ Date: _____
Signature

Tools/Equipment/Procedures Needed:

FMP-012
FMP-001
RHP Station Curve Book
Calculator

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 had been operating for approximately 5 days at 100% power following a Refueling. Core burnup is 150 MWD/MtU.

Following a turbine runback, a rod control malfunction resulted in the rods not being able to be withdrawn. Control Bank D-08 rod is misaligned from the other Control Bank 'D' rods by > 4". All rods are considered to be trippable.

Current conditions are:

TIME/DATE	1000 on March 4, 2001
POWER	68%
RCS Tavg	566 °F
BORON	1198 ppm (Last sample taken at 0055 on March 4, 2001)

Current Rod Positions are:

SD 'A', SD 'B', CB 'A', and CB 'B'	GROUP DEMAND 225 steps All IRPI at 141"
Control Bank 'C'	
GROUP DEMAND	208 steps
Rod K-04	130.0"
Rod F-04	130.0"
Rod D-06	130.0"
Rod D-10	130.0"
Rod F-12	130.0"
Rod K-12	130.0"
Rod M-10	130.0"
Rod M-06	130.0"
Control Bank 'D'	
GROUP DEMAND	80 steps
Rod H-04	50.5"
Rod D-08	46.2"
Rod H-12	50.5"
Rod M-08	50.0"
Rod H-08	50.5"

INITIATING CUES:

You have been directed to determine the available Shutdown Margin in accordance with FMP-012, "Manual Determination of Shutdown Margin Boron Concentration."

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates FMP-012, Section 6.1, and Station Curve Book	
NOTES:	***NOTE: Will also require FMP-001, Attachment 7.1, Curve 5.0 later during performance.*** ***AN ANSWER KEY IS PROVIDED FOR THE EXAMINER. REQUIRED DATA TO PERFORM THE CALCULATION WILL NOT BE SPECIFICALLY LISTED IN THE FOLLOWING JPM STEPS, BUT EXPLANATIONS ON WHERE DATA IS OBTAINED AND HOW IT IS DETERMINED WILL BE INCLUDED.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 2:	If there are only misaligned control rod(s) which are located in Control Banks D or C, then determine current reactor conditions and complete Lines 1 through 6, Section I on Attachment 7.1, otherwise N/A Sections I, II, and III in Attachment 7.1 and continue with step 6.1.4 and Section IV of Attachment 7.1 (**Step 6.1.1**)	**CRITICAL STEP**
STANDARD:	Determines Section I. of Attachment 7.1 is required to be completed and enters data based on given data AND calculates individual rod position for Bank 'C' and Bank 'D' rods - particular rod of concern is Rod D-08 in Bank 'D', calculated to be at 74 steps	
NOTES:	**CRITICAL TO CALCULATE BANK 'D' ROD POSITIONS CORRECTLY FOR COMPARISON TO RIL.** ***NOTE: Individual rod positions, in steps, determined by multiplying given rod position, in inches, by 1.6.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Using the COLR or Curve Book, Table 1.9 or Curve 1.9 and the power level recorded in Attachment 7.1, Section I, Step 2, determine the RIL for Control Banks D and C and record in Section II, Attachment 7.1 (**Step 6.1.2**)	**CRITICAL STEP**
STANDARD:	Using Curve 1.9a, for BOL, determines RIL for 68% power to be Control Bank 'D' at 77 $\pm$ 2 steps and Control Bank 'C' at 205 $\pm$ 2 steps	
NOTES:	**CRITICAL TO DETERMINE RIL CORRECTLY TO ENSURE REQUIREMENT MET TO COMPLETE ATTACHMENT FOR SDM.** ***NOTE: Determined by calculating using slope for curves. Reading curve will yield result greater than 75 steps for Bank 'D' and 205 steps for Bank 'C'.***	____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Determine if all of the control rods in Control Banks C and D are above the rod insertion limit and circle the appropriate response in Section III, Attachment 7.1. If the response is yes, then N/A Sections IV through XI of Attachment 7.1, and continue with Step 6.1.13. If the response is no then continue with Step 6.1.4 and complete the rest of Attachment 7.1 (**Step 6.1.3**)	**CRITICAL STEP**
STANDARD:	Determines rod D-08 in Bank 'D' is below the RIL, circles NO, and continues on in Section IV of Attachment 7.1	
NOTES:	**CRITICAL TO DETERMINE FURTHER VERIFICATION OF SDM IS WARRANTED.** ***NOTE: RIL for Bank 'D' previously determined to be 77 ± 2 steps. Rod D-08 previously determined to be at 74 steps, below the lower tolerance for the RIL.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Determine current reactor conditions and complete Lines 1 through 4, Section IV on Attachment 7.1 (**Step 6.1.4**)	
STANDARD:	Determines current conditions based on given data and enters data in Section IV of Attachment 7.1	
NOTES:	***NOTE: All data given in initial conditions.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Determine the Total Power Defect based on the Latest Available RCS Boron Concentration, Power Level, and exposure recorded in Section IV, Attachment 7.1, using Curve Book, Table 1.3 or Curve 1.3, and record in Section V of Attachment 7.1 (**Step 6.1.5**)	
STANDARD:	Using Curve 1.3a for BOL, determines total Power Defect to be 1125 $\pm$ 25 pcm and enters data in Section V of Attachment 7.1	
NOTES:	***NOTE: Actual value calculated assuming linear relationship from 50% to 100% power. Using curve, value obtained is slightly greater than 1100 pcm and tolerance allows some allowance for interpretation of reading.*** ***Critical step is considered to be actual determination of total reactivity.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Determine the total integral inserted/misaligned rod(s) worth by recording the inches of the lowest inserted rod in Control Banks D and C and lowest misaligned rod within the bank for each misaligned bank in Section VI, Attachment 7.1, then converting the steps of the insertion/misalignment of each bank into worths by using the Table 1 of Attachment 7.4, and record in Section VI, Attachment 7.1, then totaling up the worths and recording in Section VI, Attachment 7.1 (**Step 6.1.6**)	
STANDARD:	Using Table 1 of Attachment 7.4, determines inserted worth of Bank 'D' rods, based on lowest inserted rod (D-08), to be 597 $\pm$ 5 pcm, determines inserted worth of Bank 'C' rods, to be 144 $\pm$ 5 pcm, AND determines Total Worth of inserted rods to be 741 $\pm$ 10 pcm and enters data in Section VI of Attachment 7.1	
NOTES:	***NOTE: Worth of Bank 'D' rods determined by interpolating values between 43 and 51 inches. Worth of Bank 'C' rods determined by interpolating values between 126 and 133 inches. Assigned tolerance of $\pm$ 5 pcm to both to ensure value within next higher/lower rod position listed. Total worth determined by adding both determined values and tolerances.*** ***Critical step is considered to be actual determination of total reactivity.***	____ SAT ____ UNSAT
COMMENTS:		

STEP 8:	Determine the Total Rod Worths based on the current cycle exposure recorded in Attachment 7.1, Section IV, Step 1, using Table 2 of Attachment 7.4, and record in Section VII, Attachment 7.1 (**Step 6.1.7**)	
STANDARD:	Using Table 2 of Attachment 7.4, determines the Total Rod Worth to be 5489 pcm and enters data in Section VII of Attachment 7.1	
NOTES:	***NOTE: Determined by referencing table and recording number since core age given (150 MWD/MtU) is a value listed in table. No tolerance allowed.*** ***Critical step is considered to be actual determination of total reactivity.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Determine the number of inoperable/untrippable control rods. If there are inoperable/untrippable control rods, then calculate the worth by multiplying the number of untrippable/inoperable rods by the worth of the Most Reactive Rod, and record in Section VIII, Attachment 7.1, otherwise N/A (**Step 7.1.8**)	
STANDARD:	Determines there are NO inoperable/untrippable rods and N/As Section VIII of Attachment 7.1	
NOTES:	***NOTE: Rods will not move, but are still considered to be trippable until it is determined that will not trip.***	____ SAT
COMMENTS:		____ UNSAT

STEP 10:	Calculate the available SDM by subtracting the worths of any Inserted/Misaligned Bank(s), Power Defect, and any Inoperable/Untrippable Rod(s) from the Total Rod Worths, and record in Section IX, Attachment 7.1 (**Step 6.1.9**)	**CRITICAL STEP**
STANDARD:	Calculates the available SDM, by subtracting the inserted rod worths and the power defect from the total rod worth, to be 3653 $\pm$ 35 pcm and enters data in Section IX of Attachment 7.1	
NOTES:	**CRITICAL TO CALCULATE VALUE ACCURATELY TO DETERMINE SDM AVAILABLE.** ***NOTE: Value obtained by subtracting actual determined values and tolerance determined by adding all tolerances.***	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Determine the required SDM based on the Latest Available RCS boron concentration recorded in attachment 7.1, Section IV, Step 4, using Figure 5.0 of the COLR (FMP-001), and record in Section X, Attachment 7.1 (**Step 6.1.10**)	**CRITICAL STEP**
STANDARD:	Using given boron concentration of 1198 ppm, and Figure 5.0 of FMP-001, determines required SDM to be 1%, or 1000 pcm, and records data in Section X of Attachment 7.1	
NOTES:	**CRITICAL TO ACCURATELY DETERMINE REQUIRED SDM FOR COMPARISON TO ACTUAL SDM.** ***NOTE: Value determined using Figure 5.0. All boron concentrations above 640 ppm require a SDM of 1%.***	____ SAT
COMMENTS:		____ UNSAT

STEP 12:	Determine if adequate SDM exists by comparing the available SDM calculated in Section IX, Attachment 7.1 to the required SDM determined in Section X, Attachment 7.1. If the available SDM is greater than required SDM, then Adequate SDM exists, circle YES, N/A the rest of Section XI, Attachment 7.1 and proceed to Step 6.1.13. If not, then circle NO and perform Step 6.1.12 (**Step 6.1.11**)	**CRITICAL STEP**
STANDARD:	Determines adequate SDM exists by determining available SDM (3653 $\pm$ 35 pcm) to be greater than required SDM (1000 pcm), circles YES, N/As the remainder of Section XI of Attachment 7.1 and proceeds to Step 6.1.13	
NOTES:	**CRITICAL TO DETERMINE AVAILABLE SDM GREATER THAN REQUIRED SDM.** ***NOTE: Determined by comparing values previously determined.***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Have the SSO, or CRSS, or Supervisor - Reactor Systems review and approve ATTACHMENT 7.1 (**Step 6.1.13**)	
STANDARD:	Notifies SSO/CRSS of satisfactory results of calculation and provides copy of calculation for review/approval	
NOTES:	***CUE: SSO/CRSS ACKNOWLEDGES RESULTS.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM COM-A.1-1

ATTACHMENT 7.1
Page 1 of 3
SHUTDOWN MARGIN MODES 1, 2 DATA FORM

I. Current reactor critical conditions:

1. Date/Time conditions recorded **3/04/01 / 1000**
2. Reactor Power **68** % Full Power
3. Demand D Bank Position **80** steps
4. Demand C Bank Position **208** steps
5. Record RPI indication for Control Bank D and convert to steps below

Rod	H-04	D-08	H-12	M-08	H-08
Inches	50.5	46.2	50.5	50.0	50.5
Steps (1.6*Inches)	81	74	81	80	81

6. Record RPI indication for Control Bank C and convert to steps below

Rod	K-04	F-04	D-06	D-10	F-12	K-12	M-10	M-06
Inches	130.0	130.0	130.0	130.0	130.0	130.0	130.0	130.0
Steps (1.6*Inches)	208	208	208	208	208	208	208	208

II. Based on the Power Level and using Curve Book, Table 1.9 or Curve 1.9, the RIL for

Control Bank D is **77 ± 2** steps Control Bank C is **205 ± 2** steps

III. Are the control rods in Control Banks C and D above the RIL,

CIRCLE ONE

YES Adequate SDM exists and no further verification is warranted, and N/A Sections IV through XI, Attachment 7.1.

(NO) Further verification of SDM is warranted, complete Sections IV through XI, Attachment 7.1.

EXAMINER KEY FOR JPM COM-A.1-1

ATTACHMENT 7.1
Page 2 of 3
SHUTDOWN MARGIN MODES 1, 2 DATA FORM

IV. Record the following

1. Current Cycle exposure (from Control Room Status Board) **150** MWD/MTU
2. Reactor Power Level **68** %
3. Tave **566** degrees F
4. Latest Available RCS Boron Concentration **1198** ppm
   Sample Time **00: 55**, Date **3/ 4 / 01**

V. Based on the Latest Available RCS Boron Concentration, Power Level, and exposure and using Curve Book, Table 1.3 or Curve 1.3, the Total Power Defect is **1125 ± 25** pcm

NOTE: Data entered into the table below will be based on the lowest indicated RPI in the bank. An untrippable rod should not be counted as a misaligned rod.

VI. Determine the RPI position of the lowest rod in control banks D and C and enter into the table below. If a misaligned rod(s) is in CBB, CBA, SBB, SBA, or if the bank(s) are below RIL, then determine the RPI position of the lowest rod(s) within that bank and enter into the table below. Using Table 1, Attachment 7.4, determine the integral bank worth of the inserted/misaligned rod(s) by filling out the table below:

	CBD	CBC	CBB	CBA	SBB	SBA	Total Worth
Lowest Indicated RPI [inches]	**46.2**	**130.0**	**141**	**141**	**141**	**141**	
WORTH [pcm]	**597 ± 5**	**144 ± 5**	**0**	**0**	**0**	**0**	**741 ± 10**

VII. Based on the current cycle exposure and using the Table 2, Attachment 7.4, the Total Rod Worth is **5489** pcm

EXAMINER KEY FOR JPM COM-A.1-1

ATTACHMENT 7.1
Page 3 of 3
SHUTDOWN MARGIN MODES 1, 2 DATA FORM

VIII. Number of inoperable/untrippable control rods **0**

If there are inoperable/untrippable rods then calculate the worth by performing the following, otherwise N/A.

N/A	*	**1493 pcm**	=	**N/A** pcm
# of rods		Most Reactive Rod (BOL, Cycle 20)		Inop/Untrip Rod Worth

IX. The available SDM is calculated by:

5489	-	**741 ± 10**	-	**1125 ± 25**	-	**0**	=	**3653 ± 35** pcm
Total Rod Worth (Step VII)		Inserted/ Misaligned Worth (Step VI)		Power Defect Worth (Step V)		Inop/Untrip Rod Worth (Step VIII)		Available Shutdown Margin

X. Based on the Latest Available boron concentration and Figure 5.0, Cycle 20 COLR (FMP-001), the required SDM is **1.0** % * 1000 pcm = **1000** pcm

XI. Is the available SDM greater than the required SDM?

CIRCLE ONE

(YES) Adequate Shutdown Margin Exists

NO Adequate Shutdown Margin does not exist; perform the following:

1) Based on the current exposure, Tave, and latest available Boron Concentration, and using Curve Book, Table 1.5 or Curve 1.5, the Boron Worth is (-) **N/A** pcm/ppm

2) Borate to restore available SDM. Need to borate at least

(**N/A** pcm	-	**N/A** pcm)/ (-) **N/A** pcm/ppm	=	**N/A** ppm
Available SDM (Step IX)		Required SDM (Step X)	Boron Worth (Step XI.1)	Amount to borate

Performed By:_____ Date:_____

Approved By:_____ Date:_____
SSO or CRSS or Supervisor - Reactor Systems

CANDIDATE CUE SHEET

(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The unit had been operating for approximately 5 days at 100% power following a Refueling. Core burnup is 150 MWD/MtU.

Following a turbine runback, a rod control malfunction resulted in the rods not being able to be withdrawn. Control Bank D-08 rod is misaligned from the other Control Bank 'D' rods by > 4". All rods are considered to be trippable.

Current conditions are:

TIME/DATE	1000 on March 4, 2001
POWER	68%
RCS Tavg	566 °F
BORON	1198 ppm (Last sample taken at 0055 on March 4, 2001)

Current Rod Positions are:

SD 'A', SD 'B', CB 'A', and CB 'B'	GROUP DEMAND 225 steps All IRPI at 141"
Control Bank 'C'	
GROUP DEMAND	208 steps
Rod K-04	130.0"
Rod F-04	130.0"
Rod D-06	130.0"
Rod D-10	130.0"
Rod F-12	130.0"
Rod K-12	130.0"
Rod M-10	130.0"
Rod M-06	130.0"
Control Bank 'D'	
GROUP DEMAND	80 steps
Rod H-04	50.5"
Rod D-08	46.2"
Rod H-12	50.5"
Rod M-08	50.0"
Rod H-08	50.5"

INITIATING CUES:

You have been directed to determine the available Shutdown Margin in accordance with FMP-012, "Manual Determination of Shutdown Margin Boron Concentration."

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.1-2

Perform an RCP Seal Injection Flow Determination (OP-301-1)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform an RCP Seal Injection Flow Determination (OP-301-1)

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.1.19 Importance: SRO NA RO 3.0

K/A Statement: Ability to use plant computer to obtain and evaluate parametric information on system or component status.

Task Standard: OP-301-1 Seal Injection Flow Determination completed with seal injection flow determined to be > 8.5 gpm.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: OP-301-1, Chemical and Volume Control System (Infrequent Operation)

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-301-1

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 is operating at 100% power.

FI-127, RCP 'B' Seal Injection Flow has failed low.

The latest OST-051 leakage value is 0.7 gpm.

INITIATING CUES:

You are to calculate RCP 'B' Seal Injection flow in accordance with OP-301 1, "Chemical and Volume Control System (Infrequent Operation)," Section 8.4.22, starting with Step 8.4.22.2.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OP-301-1	
NOTES:	***NOTE: A completed copy of Attachment 10.3 is included at the end of the JPM to be used as a key.***	____ SAT
COMMENTS:		____ UNSAT

STEP 2:	Complete Seal Injection Flow Calculation Attachment as follows: a. Record the parameter values in Attachment 10.3 b. Use the Instruments designated by the attachment c. Enter "N/A" in the blank for the Seal Injection Flow for the affected instrument (**Step 8.4.22.2.a through 8.4.22.2.c**)	**CRITICAL STEP**
STANDARD:	Using RTGB and ERFIS indications, determines Charging and Seal Injection flows to be: Charging (CHF0128A) **43** gpm 'A' Seal Inj (FI-130) **8.5** gpm (LOCAL) 'B' Seal Inj (FI-127) enters "N/A" 'C' Seal Inj (FI-124) **8.5** gpm, (LOCAL) Determines Letdown and Seal Leakoff flows to be: Letdown (CHF0134A) **59** gpm 'A' Leakoff (CHF0189A) **3.5** gpm 'B' Leakoff (CHF0187A) **3.5** gpm 'C' Leakoff (CHF0185A) **3.5** gpm, Enters OST-51 latest leakage as 0.7 gpm.	
NOTES:	***CUE: WHEN AO CONTACTED TO DETERMINE SEAL INJECTION FLOWS, REPORT*** ***- FI-130 INDICATES 8.5 GPM*** ***- FI-124 INDICATES 8.5 GPM*** ***- FI-127 IS FAILED LOW*** ***WHEN ERFIS OR CONTROL BOARD READING CHECKED, REPORT*** ***- CHARGING (CHF0128A) 43 GPM*** ***- LETDOWN (CHF0134A) 59 GPM*** ***- 'A' LEAKOFF (CHF0189A) 3.5 GPM*** ***- 'B' LEAKOFF (CHF0187A) 3.5 GPM*** ***- 'C' LEAKOFF (CHF0185A) 3.5 GPM*** **CRITICAL TO DETERMINE ACCURATE FLOW RATES TO ALLOW DETERMINATION OF INJECTION FLOW.**	
COMMENTS:		____ SAT ____ UNSAT

STEP 3:	Sum the flows entered in the section title "Flow Into The RCS" (**Step 8.4.22.2.d**)	**CRITICAL STEP**
STANDARD:	Adds the flows into the RCS and determines them to be **60** gpm	
NOTES:	**CRITICAL TO ACCURATELY CALCULATE VALUE TO ALLOW DETERMINATION OF INJECTION FLOW.**	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Sum the flows entered in the section title "Flow Out of The RCS" (**Step 8.4.22.2.e**)	**CRITICAL STEP**
STANDARD:	Adds the flows out of the RCS and determines them to be **70.2** gpm	
NOTES:	**CRITICAL TO ACCURATELY CALCULATE VALUE TO ALLOW DETERMINATION OF INJECTION FLOW.**	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Subtract the Total Flow Into The RCS from the Total Flow Out of the RCS (**Step 8.4.22.2.f**)	**CRITICAL STEP**
STANDARD:	Subtracts flows out of the RCS from flows into the RCS to determine RCP 'B' seal injection to be 10.2 gpm	
NOTES:	**CRITICAL TO ACCURATELY CALCULATE VALUE TO ALLOW DETERMINATION OF INJECTION FLOW.**	
COMMENTS:		____ SAT ____ UNSAT
STEP 6:	The Calculated Seal Injection Flow for each RCP shall be ≥ 8.5 gpm (**Step 8.4.22.3**)	
STANDARD:	Determines calculated seal injection flow to be ≥ 8.5 gpm	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM RO-A.1-2

ATTACHMENT 10.3
Page 1 of 1

SEAL INJECTION FLOW CALCULATION

TIME _____

DATE _____

FLOW INTO RCS			
INSTRUMENT	**VALUE**		
CHF0128A, RCS CHARGING FLOW (ERFIS)	8.4.22.2	43	gpm
FI-130, RCP "A" SEAL WATER FLOW INDICATOR	8.4.22.2	8.5	gpm
FI-127, RCP "B" SEAL WATER FLOW INDICATOR	8.4.22.2	N/A	gpm
FI-124, RCP "C" SEAL WATER FLOW INDICATOR	8.4.22.2	8.5	gpm
TOTAL SYSTEM IN-FLOW (sum)	8.4.22.2.d	60	gpm
FLOW OUT OF RCS			
INSTRUMENT	**VALUE**		
CHF0134A, LETDOWN FLOW (ERFIS)	8.4.22.2	59	gpm
CHF0189A, RCP 'A" LEAKOFF FLOW FT-156A (ERFIS)	8.4.22.2	3.5	gpm
CHF0187A, RCP 'B" LEAKOFF FLOW FT-155A (ERFIS)	8.4.22.2	3.5	gpm
CHF0185A, RCP 'C" LEAKOFF FLOW FT-154A (ERFIS)	8.4.22.2	3.5	gpm
Last OST-051 leakage value	8.4.22.2	0.7	gpm
TOTAL SYSTEM OUT-FLOW (sum)	8.4.22.2.f	70.2	gpm

Seal Injection calculated flow = TOTAL OUTFLOW - TOTAL INFLOW

10.2 _____ gpm = 70.2 _____ - 60 _____

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

INITIAL CONDITIONS:

The unit is operating at 100% power.

FI-127, RCP 'B' Seal Injection Flow has failed low.

The latest OST-051 leakage value is 0.7 gpm.

INITIATING CUES:

You are to calculate RCP 'B' Seal Injection flow in accordance with OP-301 1, "Chemical and Volume Control System (Infrequent Operation)," Section 8.4.22, starting with Step 8.4.22.2.

CP&L

M
Multiple
Use

CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 3
PART 2

OPERATING PROCEDURE

OP-301-1

CHEMICAL AND VOLUME CONTROL SYSTEM (INFREQUENT OPERATION)

REVISION 13

SUMMARY OF CHANGES
DCF 2001P0272

SECTION / STEP	REVISION COMMENTS
8.4.7.2.j & 8.4.8.2.j	Moved step for updating the status board for which deborating demin is in service to last step. When initially placed in service, flow is put through the vessel for only several minutes.
8.4.9	Added new section for initiating and stopping flow through the in service deborating demineralizer.

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SECTION PAGE

TABLE OF CONTENTS

SECTION PAGE

1.0 PURPOSE

1.1 The purpose of this procedure is to provide instructions for the Chemical and Volume Control System Infrequent Operation.

2.0 REFERENCES

2.1 Updated FSAR - Section 9.3.4

2.2 Improved Technical Specification 3.4

2.3 PLP-100, Technical Requirements Manual

2.4 Chemical and Volume Control System Purification and Makeup Flow Diagram, 5379-685

2.5 OP-603, Electrical Distribution

2.6 OP-306, Component Cooling System

2.7 OP-907, Compressed Gas System

2.8 OP-702, Waste Disposal - Gas

2.9 OP-703, Gas Analyzer

2.10 OP-919, Primary Sampling System

2.11 ACR 91-111, Delta P for Filters

2.12 NED-R-5758, RWST High Level Limitation

2.13 ACR 93-336, No Procedural Guidance Provided for Rodding Out BAST Bubblers

2.14 ACR 92-325, Starting Duty of Major Plant Motors

2.15 ESR 96-00113, Differential Pressure Finding per CR 95-02762 C/A # 4

2.16 ESR 96-00518, Flow Transmitter FT-110 Boric Acid Solidification Problem

2.17 ESR 98-00359, BAST bubbler vent

2.18 ACR 93-436, Checking Valve Tags for Valves Operated/Position Checked from the RTGB

2.19 APP-001, Miscellaneous NSSS

2.20 ESR 94-01017, Guidance for Charging Pump Packing run in

2.21 ACR 94-01811, RCP Seal Injection flow

2.22 ACR 94-01745, Charging Pump Fluid Drive oil sight glass

2.23 CR 95-00424, Both primary and secondary Heat Trace Circuit #25 OOS

2.24 CR 95-00425, Heat Trace circuit #25 Secondary declared OOS

2.25 SOER 91-01, Conduct of Infrequently Performed Test or Evolution

2.26 SOER 94-01, Conservative Decision Making

2.27 SOER 94-02, Boron Dilution Events in Pressurized Water Reactors

2.28 SOER 96-01, Control Room Supervision, Operational Decision Making and Teamwork

2.29 PLP-075, Reactivity Management

2.30 OMM-046, Control of Key Safety Functions During Shutdown

2.31 CR 95-01752, Unusual Event Declaration for Charging Pump Relief Stuck Open

2.32 ESR 95-00919, Operating Limits for Charging Line Pressure

2.33 CR 95-02968, Charging pump Break-In procedure revised

2.34 CR 95-02836, Charging pump performance reduction due to Gas Binding

2.35 CR 95-02132, Check BAST Bubbler Flow

2.36 ACR 94-00009, Boric Acid flowpath Low Temperature Alarms

2.37 PLP-037, Conduct of Infrequently Performed Tests or Evolutions

2.38 CR 96-01110, Actuation of Heat Trace alarm on CKT# 56

2.39 CR 98-02669, Procedure Usage

2.40 ESR 96-00336, Provide input on Primary & Demin water pump starting duty

2.41 ESR 96-00149, VCT Pressure Control

2.42 ESR 99-00078, Charging Pump Valve and Packing Matl. Upgrade

2.43 SOER 97-1, Potential Loss of High Pressure Injection and Charging Capability from gas Intrusion

2.44 CR 99-01525, "C" Charging Pump Gyrol Oscillation

2.45 CP&L Tech Manual 727-677-83, "Type V2-Class 2 Gyrol Fluid Drive"

2.46 ESR 99-0220, Evaluate Alternate Method of Determining Seal Injection Flow

2.47 NCR-00019225, Primary Water addition to the RCS during performance of LP-203

2.48 NCR-00020841, YIC-113 was programmed to add 612 gallons of boric acid but 940 gallons was added

3.0 RESPONSIBILITIES

N/A

4.0 PREREQUISITES

4.1 Electrical Distribution is aligned in accordance with OP-603 to the extent necessary to support CVCS operation.

4.2 The Component Cooling Loop is in service in accordance with OP-306 to the extent necessary to support CVCS operation.

4.3 Compressed Gas System is in service in accordance with OP-907 to the extent necessary to support CVCS operation.

4.4 The Waste Disposal Gas System is in service in accordance with OP-702 to the extent necessary to support CVCS operation.

4.5 The Gas Analyzer is in service in accordance with OP-703 to the extent necessary to support CVCS operation.

4.6 The Sampling System is in service in accordance with OP-919 to the extent necessary to support CVCS operation.

4.7 The Instrument Air System is in service in accordance with OP-905 to the extent necessary to support CVCS operation.

4.8 Primary Water is available in accordance with OP-915-1 to the extent necessary to support CVCS operation.

4.9 Auxiliary Heating Steam is available in accordance with OP-401 to the extent necessary to support CVCS operation.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 The temperature of the Reactor Coolant Letdown, downstream of the Nonregenerative Heat Exchanger should be maintained at less than 127 °F and must **NOT** exceed 140 °F.

5.2 Initiate charging prior to initiating Letdown when the RCS temperature is greater than 200 °F to ensure that Letdown will be cooled in the Regenerative Heat Exchanger.

5.3 If the RCS is pressurized ensure that the Low Pressure Control Valve, PCV-145 is **NOT** selected for automatic control and is being manually controlled by an Operator prior to initiating Letdown.

5.4 Open only one Orifice Isolation Valve at a time and allow any induced pressure transients to subside before opening a parallel Orifice Isolation Valve.

5.5 The following precautions should be observed regarding operation of HCV-121, CHARGING FLOW: (CR 95-01752)

5.5.1 During normal operation, HIC-121 should remain in the full open position.

5.5.2 HIC-121 should only be throttled if acceptable Reactor Coolant Pump seal injection flows or positive RCP labyrinth seal differential pressures cannot be obtained using CVC-297A, B, or C.

5.5.3 Whenever HIC-121 is adjusted to reestablish the RCP labyrinth seal differential pressure, the local seal injection indicators should be checked to verify proper flow.

5.5.4 When throttling HIC-121 closed:

- Charging Pump discharge pressure will increase with TOTAL charging flow remaining the same and may result in lifting the Charging Pump discharge relief valve(s) which may not fully reseat.
- Flow may be diverted to the Reactor Coolant Pump seals as HIC-121 is throttled closed.
- Available redundant Charging Pump discharge pressure indication should be utilized on the RTGB, ERFIS and Local indication.

5.6 Ensure a flow path greater than the charging pump(s) capacity is maintained to prevent the discharge relief valve(s) from being challenged.

5.7 Purification of the Letdown flow with the Letdown demineralizers may be used during oxygen scavenging of the RCS with hydrazine.

5.8 Unless both Mixed Bed Demineralizers have been borated at the beginning of core life, care should be taken when placing the standby Mixed Bed Demineralizer in service to avoid an undesirable positive reactivity insertion. A new Mixed Bed Demineralizer is expected to remove approximately 110 ppm boron at the beginning and 40 ppm boron at the end of core life, as the anion resin changes from the hydroxyl form to the borate form.

5.9 The Volume Control Tank should be vented before the tank pressure approaches the high alarm point (65 psig) to avoid operation of the Volume Control Tank Relief Valve.

5.10 The optimum VCT Pressure, as read on PI-117, is 22-28 psig. This will give a Charging Pump suction pressure, as read on PI-150, 30-36 psig. (ESR96-00149, Rev 1)

5.11 A minimum of 15 psig is required in the Volume Control Tank for Reactor Coolant Pump operation.

5.12 The following limitations apply to filter operations:

- Reactor Coolant Filter maximum ΔP:20 psi.
- Seal Water Injection Filter maximum ΔP:20 psi.
- Seal Water Return Filter maximum ΔP:20 psi.
- Boric Acid Filter maximum ΔP:20 psi.
- Do **NOT** allow filters to exceed 25 psid before they are changed out. The filters should be changed when their differential pressure is between 20 and 25 psid.

5.13 The total volume of Boric Acid available in both Boric Acid Storage Tanks shall be maintained greater than or equal to 3080 gallons (TRMS 3.6). This setpoint ensures an adequate supply of boric acid is available to provide cold shutdown capability. The volume in at least one BAST should be maintained greater than or equal to 3080 gallons to allow maximum flexibility in meeting this requirement.

5.14 Upon initial startup or after maintenance operations in which air could possibly enter the Volume Control Tank, the tank must be purged with nitrogen before admitting hydrogen.

5.15 A boron chemical analysis should be performed on the Boric Acid Storage Tanks following an unexplained level change.

5.16 Notify the Superintendent Shift Operations of any unexplained tank level changes. In addition, the Plant Manager shall be notified if there is a potential safety hazard involved in the level changes.

5.17 The principles of **ALARA** shall be used in planning and performing work and operations in the Radiation Control Area.

5.18 When the heat traced piping or equipment contains 12 percent boric acid solution, the applicable heat tracing zones should be turned on, to prevent boric acid precipitation.

5.19 Before removing piping and equipment containing 12 percent boric acid solution from service, the section should first be flushed until the solution concentration is well below the solubility limit.

5.20 Before draining 12 percent boric acid from a tank, the solution must be diluted with sufficient makeup water to prevent precipitation in the drain piping.

5.21 Verify chemical composition of solution and obtain approval from the Superintendent Shift Operations before injection of chemicals.

5.22 The chemical mixing tank should be flushed with demineralized water and cleaned as necessary when changing from one chemical solution to another.

5.23 Cooling water through the Charging Pump Oil Cooler will automatically control oil inlet temperature to the cooler at 125 ° F.

5.24 Oil should be added to the Charging Pumps only after the level has been checked with the pumps stopped.

5.25 The Charging Pump suction stabilizers/separators shall be vented of any noncondensibles prior to starting any of the charging pumps. A vapor bubble should be established and maintained in the steam dome while the Charging Pump is in operation.

5.26 The Charging Pump suction stabilizer/separator heater should be energized on those units whose Charging Pump is operating. All three suction stabilizer/separator heaters may be energized during normal operations. If a Charging Pump is to be removed from service for maintenance, deenergize its suction stabilizer/separator heater prior to closing the pump suction valve.

5.27 Charging pump suction stabilizer relief setpoint (75 psig) may be exceeded when the Volume Control Tank is isolated and the source of makeup is from the boric acid transfer pumps and primary water pumps.

5.28 When more than one Charging Pump is operating, only one Charging Pump should be operated in automatic to prevent the Charging Pumps from "hunting" and causing level swings.

5.29 The following starting duty limitations apply to the Charging Pump motors: (ACR 92-325)

- Maximum number of starts per hour is 4.
- Minimum time between starts is 5 minutes.

5.30 Increasing the letdown temperature to the Mixed Bed Demineralizers can cause the demineralizers to release boron, which will add negative reactivity to the Reactor. Conversely, decreasing letdown temperature to the demineralizers can cause positive reactivity to be added to the Reactor.

5.31 Equipment failures **OR** operation of the RCS Makeup system in a manner not directed by this procedure may create a flow path which could contain water at a different boron concentration and create an observable reactivity effect". (NCR-00019225)

5.32 The following starting duty limitations apply to the Boric Acid Transfer Pump motors: (ACR 92-325)

- Maximum number of starts per hour is 13.
- Minimum time between starts is 3 minutes.

5.33 Normal Seal Injection flow should be maintained at 8 to 13 gpm, however the minimum Seal Injection flow is 6 gpm and the maximum Seal Injection flow is 20 gpm. (ACR 94-01811) ITS LCO 3.4.17 requires seal injection flow of $\geq$ 6 gpm to each RCP when in MODES 1, 2, 3, and 4.

5.34 If the starting limitations stated below are exceeded, Primary Water Pump motor damage can occur due to motor overheating:
(REF: ACR 92-325)

- Maximum number of starts per hour is 20.
- Minimum time between starts is 2 minutes.

5.35 This procedure has been screened in accordance with PLP-037 criteria and except for sections 8.4.12, 8.4.17, 8.4.18, 8.4.19 and 8.4.20 determined **NOT** applicable (N/A) to PLP-037.

5.36 If additional Charging Pump(s) are needed to combat a casualty, HCV-121 should be opened prior to starting additional Charging Pumps to ensure the Charging Pump Relief Valves will **NOT** lift.

5.37 A Charging Pump should be operated for a minimum of 5 minutes following any start. This will ensure fully developed flow through the suction stabilizer and suction line, there by reducing possible gas buildup. Pump run of less than 5 minutes should be followed by a run on recirculation prior to the pump being placed inservice. (CR 95-02836)

5.38 The Boric Acid Storage Tanks should be recirculated at least once per day **AND** anytime additions are made to the tank(s). This will help maintain equal Boric Acid solution temperature and chemistry. (ACR 94-00009)

5.39 During Emergency condition performance of the Charging Pump Break-In After Sitting Idle section is **NOT** required to place the Charging Pump in operation.

5.40 The Pressurizer shall be OPERABLE with:

- Pressurizer Water level $\leq$63.3% in MODE 1;
- Pressurizer Water level $\leq$92% in MODE 2 and 3; and
- Pressurizer Heaters OPERABLE with a capacity of $\geq$ 125KW and cable of being powered from an emergency power supply.

5.41 Normally, one Mixed Bed Demineralizer is lithiated while the other is not. Experience has shown that a non-lithiated mixed bed will absorb approximately 2 ppm of Lithium per day until fully lithiated.

5.42 The Non-Lithiated Mix Bed Demineralizer is normally placed in service during an outage, while the Lithiated mix Bed is normally used during power operations. The use of Non-Lithiated Mix Bed Demineralizer during outages helps control Radiochemistry, thus reducing back ground radiation levels.

5.43 When the potentiometer setting for FCV-113A exceeds 9.0, FR-113 should be monitored closely. Based on system design characteristics, an indicated flow of 10 gpm may be greater than 10 gpm (actual) boric acid flow. This is past the range of indication available on FR-113. (NCR 00020841)

6.0 SPECIAL TOOLS AND EQUIPMENT

N/A

7.0 ACCEPTANCE CRITERIA

N/A

8.0 INSTRUCTIONS

8.1 STARTUP

None Applicable

8.2 NORMAL OPERATION

None Applicable

8.3 SHUTDOWN

None Applicable

8.4.22 Seal Injection Flow Determination

1. Initial Conditions INIT

CAUTION

Performance of this procedure is not valid when more than one Flow Instrument (FI-124, FI-127, FI-130) is out of service.

NOTE: This section has been screened IAW PLP-037 criteria and determined to be a Case Three activity. No additional management involvement is required beyond that routinely provided by first line supervision.

a. This revision has been verified to be the latest revision available.

Art Musselwhite AM Art Musselwhite 7/25/14
Name (Print) Initial Signature Date

b. Verify the following conditions:

- RCS Temperature is stable. AM
- RCS Pressure is stable. AM
- PZR level is stable. AM
- Excess Letdown NOT in-service. AM

2. Complete Seal Injection Flow Calculation Attachment as follows:

a. Record the parameter values in Attachment 10.3. ____

b. Use the Instruments designated by the attachment. ____

c. Enter "N/A" in the blank for the Seal Injection Flow for the affected instrument. ____

8.4.22.2 (Continued) INIT

d. Sum the flows entered in the section title "Flow Into The RCS". ____

e. Sum the Flows entered in the section title "Flow Out of The RCS". ____

f. Subtract the Total Flow Into The RCS form the Total Flow Out of the RCS. ____

3. Acceptance Criteria

a. The Calculated Seal Injection Flow for each RCP shall be ≥8.5 gpm.

	Initials	Name(Print)	Date
Performed By:	_____	_____	_____
	_____	_____	_____

Approved By: _____ _____
Superintendent Shift Operations Date

SEAL INJECTION FLOW CALCULATION

TIME _____

DATE _____

FLOW INTO RCS		
INSTRUMENT	**VALUE**	
CHF0128A, RCS CHARGING FLOW (ERFIS)	8.4.21.2	gpm
FI-130, RCP "A" SEAL WATER FLOW INDICATOR	8.4.21.2	gpm
FI-127, RCP "B" SEAL WATER FLOW INDICATOR	8.4.21.2	gpm
FI-124, RCP "C" SEAL WATER FLOW INDICATOR	8.4.21.2	gpm
TOTAL SYSTEM IN-FLOW (sum)	8.4.21.2.d	gpm
FLOW OUT OF RCS		
INSTRUMENT	**VALUE**	
CHF0134A, LETDOWN FLOW (ERFIS)	8.4.21.2	gpm
CHF0189A, RCP 'A" LEAKOFF FLOW FT-156A (ERFIS)	8.4.21.2	gpm
CHF0187A, RCP 'B" LEAKOFF FLOW FT-155A (ERFIS)	8.4.21.2	gpm
CHF0185A, RCP 'C" LEAKOFF FLOW FT-154A (ERFIS)	8.4.21.2	gpm
Last OST-051 leakage value	8.4.21.2	gpm
TOTAL SYSTEM OUT-FLOW (sum)	8.4.21.2.f	gpm

Seal Injection calculated flow = TOTAL OUTFLOW - TOTAL INFLOW

_____gpm = _____ - _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.2

Review an Equipment Clearance (OPS-NGGC-1301)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Review an Equipment Clearance (OPS-NGGC-1301)

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: Clearance is disapproved with both discrepancies identified.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: 5379-685, Sheet 3, CVCS Purification & Makeup
EDP-003, MCC-Buses
OPS-NGGC-1301, Equipment Clearance

Validation Time: 30 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT _____ UNSAT _____

Comments: _____

_____

Examiner: _____ Date: _____
Signature

Tools/Equipment/Procedures Needed:

OPS-NGGC-1301
5379-685, Sheet 3
EDP-003

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 is operating at 30% power.

The internals for CVC-397B, Boric Acid Transfer Pump 'B' Discharge Check Valve, must be replaced.

Boric Acid Transfer Pump 'B' has been secured and Pump 'A' is aligned for operation.

Mechanical Maintenance has submitted a clearance request. The clearance has been manually generated.

INITIATING CUES:

You are to review the Equipment Clearance Tag Sheet for CVC-397B and identify **EVERY** discrepancy.

NOTE: Individual tags have **NOT** been generated and are **NOT** part of the review process.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OPS-NGGC-1301, EDP-003, and P&ID 5379-685, Sheet 3	
NOTES:	***NOTES:*** ***1) Provide candidate with Attachment 1, which includes the completed clearance forms.*** ***2) For clarity, the Steps in Section 9.2.1 are referenced, as applicable, in the JPM, but steps may be performed in any order provided the candidate identifies the required discrepancies.*** ***3) AN EXAMINER KEY, IDENTIFYING THE ERRORS, HAS BEEN INCLUDED WITH THE JPM.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 2:	Secure pump/fan and hang a tag on its control switch (**Step 9.2.1.9.a**)	
STANDARD:	Verifies tag to be hung on Boric Acid Transfer Pump 'B' RTGB and local control switches	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 3:	Remove the power source for the pump/fan prime mover (open breaker, remove fuse, shut steam supply valve and so forth) and place tag on the power source (**Step 9.2.1.9.b**)	**CRITICAL STEP**
STANDARD:	Determines power supply to Boric Acid Transfer Pump 'B' is incorrectly identified as MCC-5, Breaker 9C (**ITEM #1 - SHOULD BE MCC-6**)	
NOTES:	**CRITICAL TO IDENTIFY DISCREPANCIES TO AVOID APPROVAL OF IMPROPER CLEARANCE.**	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Reposition manual valves as required by the clearance and place tag on handwheels of the valves covered by the clearance. For pumps, shut the discharge valve before shutting the suction valve (**Step 9.2.1.9.e**)	
STANDARD:	Verifies discharge isolation valves properly identified and are SHUT before shutting the suction isolation valves - CVC-379, Boric Acid Transfer Pump 'B' Discharge - CVC-341, Boric Acid Transfer Pump 'B' Discharge to Filter - CVC-284B, Boric Acid Transfer Pump 'B' Discharge to BIT - CVC-349F, BA Pump "B" Disch Press PI-110 Root Isolation	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Reposition manual valves as required by the clearance and place tag on handwheels of the valves covered by the clearance. For pumps, shut the discharge valve before shutting the suction valve (**Step 9.2.1.9.e**)	**CRITICAL STEP**
STANDARD:	Verifies suction isolation valve CVC-334, Boric Acid Transfer Pump 'B' Suction, properly identified and SHUT after shutting the discharge isolation valves, but determines CVC-336, Primary Water to Boric Acid Transfer Pump 'B' Suction NOT included on clearance (**ITEM #2 - SHOULD BE ALSO TAGGED**)	
NOTES:	**CRITICAL TO IDENTIFY DISCREPANCIES TO AVOID APPROVAL OF IMPROPER CLEARANCE.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Systems, or portions of systems, and components that normally operate at temperatures and pressures above ambient should be vented and drained as necessary for the performance of work (**Step 9.2.1.24**)	
STANDARD:	Verifies drain path inside isolation boundaries to be CVC-379A, Boric Acid Transfer Pump 'B' Discharge Line Drain	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Systems, or portions of systems, and components that normally operate at temperatures and pressures above ambient should be vented and drained as necessary for the performance of work (**Step 9.2.1.24**)	
STANDARD:	Verifies vent path inside isolation boundaries to be CVC-334A, Boric Acid Transfer Pump 'B' Suction Line Vent	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Informs preparer of discrepancies	
STANDARD:	Informs preparer of 2 items: 1) Incorrect power supply listed for pump 2) Suction isolation valve missing from clearance	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM RO-A.2

ATTACHMENT 4
Sheet 1 of 1
Operations Clearance Tag Sheet

Clearance No. 01-99004

Page 1 of 1

INT	NAME (PRINT)	INT	NAME (PRINT)

* Independent Verification Required? YES (NO) If NO, N/A the Blocks
** N/A if Order is not Important

TAG TYPE AND #	** ORDER TO BE HUNG	COMPONENT ID/ LOCATION	CLR POSITION	ATTACHED BY (INITIAL)	IND VER *	RESTORED POSITION	** ORDER TO BE RESTORED	REMOVED BY (INITIALS)*	IND VER *
1	1	'B' Boric Acid Transfer Pump / RTGB Cont Sw	Stop						
2	1	'B' Boric Acid Transfer Pump / Local Cont Sw	Stop						
3	2	52/MCC-5(9C) / E-1 Room	Off		1) POWER SUPPLY SHOULD BE MCC-6				
4	3	CVC-379 / BAT Room	Shut						
5	3	CVC-341 / BAT Room	Shut						
6	3	CVC-284B / BAT Room	Shut						
7	3	CVC-349F / BAT Room	Shut						
8	4	CVC-334 / BAT Room	Shut						
9	5	CVC-334A / BAT Room	Open						
10	5	CVC-379A / BAT Room	Cap Rem / Open						
		CVC-336 / BAT Room	Shut		2) PUMP SUCTION MISSING				

Continued Y (N)

ATTACHMENT 1 FOR JPM RO-A.2

ATTACHMENT 4
Sheet 1 of 1
Operations Clearance Tag Sheet

Clearance No. 01-99004

Page 1 of 1

INT	NAME (PRINT)	INT	NAME (PRINT)
____	_____	____	_____
____	_____	____	_____
____	_____	____	_____

* Independent Verification Required? (YES) NO If NO, N/A the Blocks
** N/A if Order is not Important

TAG TYPE AND #	** ORDER TO BE HUNG	COMPONENT ID/ LOCATION	CLR POSITION	ATTACHED BY (INITIAL)	IND VER	RESTORED POSITION	** ORDER TO BE RESTORED	REMOVED BY (INITIALS)*	IND VER *
1	1	'B' Boric Acid Transfer Pump / RTGB Cont Sw	Stop						
2	1	'B' Boric Acid Transfer Pump / Local Cont Sw	Stop						
3	2	52/MCC-5(9C) / E-1 Room	Off						
4	3	CVC-379 / BAT Room	Shut						
5	3	CVC-341 / BAT Room	Shut						
6	3	CVC-284B / BAT Room	Shut						
7	3	CVC-349F / BAT Room	Shut						
8	4	CVC-334 / BAT Room	Shut						
9	5	CVC-334A / BAT Room	Open						
10	5	CVC-379A / BAT Room	Cap Rem / Open						
11	6	Heat Trace Ckt E-2 Prim	Fuses Rem						
12	6	Heat Trace Ckt E-2 Sec	Fuses Rem						

Continued Y (N)

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

INITIAL CONDITIONS:

The unit is operating at 30% power.

The internals for CVC-397B, Boric Acid Transfer Pump 'B' Discharge Check Valve, must be replaced.

Boric Acid Transfer Pump 'B' has been secured and Pump 'A' is aligned for operation.

Mechanical Maintenance has submitted a clearance request. The clearance has been manually generated.

INITIATING CUES:

You are to review the Equipment Clearance Tag Sheet for CVC-397B and identify **EVERY** discrepancy.

NOTE: Individual tags have **NOT** been generated and are **NOT** part of the review process.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.3

Take Actions to Limit Radiation Exposure in Response to Radiation Alarm (AOP-005)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Take Actions to Limit Radiation Exposure in Response to Radiation Alarm (AOP-005)

Alternate Path: NONE

Facility JPM #: CR-068 (Modified)

K/A Rating: 2.3.10 Importance: SRO NA RO 2.9

K/A Statement: Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Task Standard: Action of AOP-005, Attachment 12, have been completed satisfactorily.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: AOP-005, Radiation Monitoring System
APP-036, Auxiliary Annunciator

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:

APP-036
AOP-005

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 is operating at 100% power.

AOP-016, "Excessive Primary Plant Leakage," is being performed.

An emergency containment entry has just been made to determine the plausibility of isolating the leak.

APP-036-D8, PROCESS MONITOR HI RAD, has just alarmed.

INITIATING CUES:

You are to respond to the Process Monitor radiation alarm.

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates APP-036	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Determine which process channel is in alarm condition	
STANDARD:	Reviews Process Alarms to determine which one is alarming	
NOTES:	***CUES:*** ***- R-12, PROCESS MONITOR R-11/R-12 CV AIR AND PLANT VENT, Alarm/Reset light is RED.*** ***- Point 11 on RR-1 (corresponds to R-12) is illuminated.*** ***- Both R-12 and RR-1 indicate 1.3 K cpm and are stable.***	
		____ SAT
COMMENTS:		____ UNSAT

START TIME: _____

STEP 3:	Perform the following to determine if the alarm is valid: 1) Momentarily depress the ALARM/RESET pushbutton (**Step 3.1**)	
STANDARD:	Depresses ALARM/RESET pushbutton	
NOTES:	***CUE: ALARM/RESET PUSHBUTTON HAS BEEN DEPRESSED.*** ***- APP-003-D8 is extinguished.*** ***- R-12 Alarm/Reset is extinguished.*** ***- Value on RR-1 and R-12 remains at 1.3K cpm.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	If the alarm returns, THEN refers to AOP-005 (**Step 3.2**)	
STANDARD:	Determines alarm returns and goes to AOP-005, Attachment 12	
NOTES:	***CUE: ALARM/RESET PUSHBUTTON HAS BEEN RELEASED.*** ***- APP-003-D8 is illuminated.*** ***- R-12 Alarm/Reset is illuminated.*** ***- Value on RR-1 and R-12 remains at 1.3K cpm.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Check R-11/R-12 Selector Switch - SELECTED TO CV (**Attachment 12, Step 1**)	
STANDARD:	Determines R-11/R-12 selector to be selected to CV position	
NOTES:	***CUE: R-11/R-12 SELECTOR IS POINTING AT "CV" POSITION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 6:	Check Personnel - IN CV (**Step 2**)	
STANDARD:	Determines personnel in CV	
NOTES:	***NOTE: Initial conditions indicated emergency entry in progress.*** ***CUE: IF ASKED, RESPOND THAT AN EMERGENCY ENTRY IS IN PROGRESS.***	____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Place VLC Switch To EMERG Position (**Step 3**)	**CRITICAL STEP**
STANDARD:	VLC switch placed in EMERG position	
NOTES:	***CUE: VLC SWITCH HAS BEEN ROTATED TO "EMERG" POSITION.***	
	CRITICAL TO ALLOW SOUNDING EVACUATION ALARM.	____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Depress And Hold CV EVACUATION HORN Pushbutton For 15 SECONDS (**Step 4**)	**CRITICAL STEP**
STANDARD:	Depresses and holds CV evacuation horn pushbutton for 15 seconds	
NOTES:	***CUE: CV EVACUATION HORN PUSHBUTTON HAS BEEN DEPRESSED FOR 15 SECONDS.***	
	CRITICAL TO ALERT PERSONNEL IN CONTAINMENT.	____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Announce The Following Over Plant PA System: "ATTENTION ALL PERSONNEL. ATTENTION ALL PERSONNEL. A HIGH RADIATION ALARM HAS BEEN RECEIVED ON CV VENT PROCESS MONITOR, R-11 (R-12). ALL NON-ESSENTIAL PERSONNEL EVACUATE CV UNTIL FURTHER NOTICE" (**Step 5**)	**CRITICAL STEP**
STANDARD:	Announces condition requiring evacuation, stating alarm is on R-12	
NOTES:	***NO CUE REQUIRED.***	
	CRITICAL TO ALERT PERSONNEL TO HIGH RADIATION CONDITION.	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Repeat CV Evacuation Announcement Over PA System (**Step 6**)	
STANDARD:	Repeats announcement	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Place VLC Switch To NORM Position (**Step 7**)	
STANDARD:	Returns VLC switch to NORM position	
NOTES:	***CUE: VLC SWITCH HAS BEEN ROTATED TO "NORM" POSITION.***	____ SAT
COMMENTS:		____ UNSAT
STEP 12:	Check CONTAINMENT VENTILATION ISOLATION Valves - CLOSED (**Step 8**)	
STANDARD:	Determines containment ventilation isolation valves (8 valves, V12-6 through V12-13) closed by position indication or status lights	
NOTES:	***CUE: AS EACH CONTAINMENT VENTILATION ISOLATION VALVE IS CHECKED, RESPOND THAT THE "RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS EXTINGUISHED" (IF POSITION INDICATION USED) OR THE "STATUS LIGHT IS ILLUMINATED" (IF STATUS LIGHTS ARE USED).***	____ SAT
COMMENTS:		____ UNSAT

STEP 13:	Place The Following CV IODINE REMOVAL FAN Control Switches To PREPURGE Position: - HVE-3 - HVE-4 (**Step 9**)	**CRITICAL STEP**
STANDARD:	Places switches for HVE-3 and HVE-4 to PREPURGE position and verifies proper operation by fan and damper indication	
NOTES:	***CUE: AS EACH FAN IS STARTED, RESPOND THAT THE "SWITCH HAS BEEN ROTATED TO THE PREPURGE POSITION, THE FAN INDICATES RED LIGHT ILLUMINATED AND GREEN LIGHT EXTINGUISHED, AND THE DAMPERS INDICATE PREPURGE WHITE LIGHT ILLUMINATED AND DOME VENT LIGHT EXTINGUISHED".*** **CRITICAL TO ESTABLISH OPERATION OF SYSTEM.**	____ SAT ____ UNSAT
COMMENTS:		

STEP 14:	Check RCS Temperature - GREATER THAN 200°F (**Step 10**)	
STANDARD:	Determines RCS temperature to be normal operating temperature for 100% power	
NOTES:	***NOTE: May check RTGB indications or recognize that unit is operating at 100% power conditions.*** ***CONDITIONAL CUE: IF ASKED, RCS T-AVG IS 573 ° F.***	____ SAT ____ UNSAT
COMMENTS:		

STEP 15:	Request RC To Perform A Background Radiation Check At Radiation Monitors R-11 AND R-12 (**Step 11**)	
STANDARD:	Contacts RC personnel to perform background check	
NOTES:	***CUE: RC PERSONNEL WILL PERFORM BACKGROUND CHECKS AT R-11 AND R-12.***	____ SAT
COMMENTS:		____ UNSAT
STEP 16:	Determine If Primary System Leakage Is Occurring (**Step 12**)	
STANDARD:	Determines leakage is occurring (may recommend to CRSS the performance of AOP-016)	
NOTES:	***NOTE: Initial conditions stated entry made to determine location of leakage.***	
	NO CUE REQUIRED.	____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Go To The Main Body, Step 1, Of This Procedure (**Step 14**)	
STANDARD:	Goes to main body, Step 1, of AOP-005	
NOTES:	***NO CUE REQUIRED.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Implement The EALs (**Main Body, Step 2**)	
STANDARD:	Informs SSO of need to implement the EALs	
NOTES:	***CUE: SSO ACKNOWLEDGES INFORMATION.***	
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

The unit is operating at 100% power.

AOP-016, "Excessive Primary Plant Leakage," is being performed.

An emergency containment entry has just been made to determine the plausibility of isolating the leak.

APP-036-D8, PROCESS MONITOR HI RAD, has just alarmed.

INITIATING CUES:

You are to respond to the Process Monitor radiation alarm.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM RO-A.4

Activate the Emergency Response Data System from the Control Room (EPCLA-01)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Activate the Emergency Response Data System from the Control Room (EPCLA-01)

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: ERDS has been connected to NRC Operations Center.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: EPCLA-01, Emergency Control

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:

EPCLA-01

SIMULATOR OPERATOR INSTRUCTIONS:
1) Reset simulator to IC-5.
2) Ensure ERDS is NOT operational (ERDS = NORMAL is NOT displayed at the bottom of the ERFIS terminal to be used).
3) Ensure ERFIS terminal is selected to a screen other than the ERDS activation screen.

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 has been declared.

INITIATING CUES:

You are to verify that the Emergency Response Data System (ERDS) is providing data to the NRC Operations Center in accordance with EPCLA-01, "Emergency Control."

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates EPCLA-01, Step 8.1.3.14	
NOTES:	***NOTE: Procedure steps are not included in this JPM since required actions fall under 2 procedure steps containing bullets.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Display the ERDS activation screen by: - Depressing the ERDS key on the ERFIS keyboard, or - Typing the Turn-On-Code "ERDS" at the input field, or - Selecting ERDS from the EP Menu	**CRITICAL STEP**
STANDARD:	Displays the ERDS activation screen by any acceptable method	
NOTES:	**CRITICAL TO ALLOW MAKING ERDS OPERATIONAL.** ***NOTE: ERDS key on ERFIS keyboard is "Shift-F9".***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	When the ERDS Control and Status Display window appears, click on the green "Start ERDS" button	**CRITICAL STEP**
STANDARD:	Clicks on green START ERDS button when ERDS Control and Status Display screen appears	
NOTES:	**CRITICAL TO ALLOW MAKING ERDS OPERATIONAL.**	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	An "Are You Sure" message is displayed. Click yes to initiate ERDS, click no to cancel.	**CRITICAL STEP**
STANDARD:	Clicks on YES to initiate ERDS	
NOTES:	**CRITICAL TO ALLOW MAKING ERDS OPERATIONAL.**	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Observe the "Start ERDS" button changes to a yellow "Starting..." button.	
STANDARD:	Verifies that START ERDS button changes from green to yellow button which states STARTING	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	When ERDS connects to the NRC Operations Center the yellow "Starting..." button will change to a red "Stop ERDS" button.	
STANDARD:	Verifies that STARTING button changes from yellow to red button which states STOP ERDS	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Within five minutes after activation, the ERDS function should become operational. This is determined by ERDS = NORMAL message displayed at the bottom of an ERFIS terminal.	
STANDARD:	Verifies ERDS operational by display at bottom of ERFIS terminal stating ERDS = NORMAL	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

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

INITIAL CONDITIONS:

A Site Area Emergency has been declared.

INITIATING CUES:

You are to verify that the Emergency Response Data System (ERDS) is providing data to the NRC Operations Center in accordance with EPCLA-01, "Emergency Control."

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.1-2

Determine Work Time Limits for Heat Stress Conditions (AP-020)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Determine Work Time Limits for Heat Stress Conditions (AP-020)

Alternate Path: NONE

Facility JPM #: CR-058

K/A Rating: 2.1.26 Importance: SRO 2.6 RO NA

K/A Statement: Knowledge of non-nuclear safety procedures (e.g. rotating equipment, electrical, high temperature, high pressure, caustic, chlorine, oxygen and hydrogen).

Task Standard: Determines the maximum time that an auxiliary operator can work inside containment is 30 minutes and that a 40 minute recovery period is required.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: AP-020, Heat Stress Program

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:

AP-020

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 is in Hot Standby.

An auxiliary operator and an HP technician will be entering containment to perform PLP-006, "Containment Vessel Inspection/Closeout". It is expected that it will take 20 minutes to complete the required tasks. Tasks include moving several step ladders to their proper location and removal of several 50 foot length extension cords.

The auxiliary operator will be wearing single cloth coveralls over scrub suit and is in good health with no known medical problems or illness.

The following readings have been determined:

- Dry bulb temperature is 94 °F
- Wet bulb temperature is 95 °F
- Globe temperature is 98 °F
- Relative humidity inside containment is 90%

INITIATING CUES:

Determine the maximum time that the auxiliary operator can work inside containment AND the amount of time that must be alloted for recovery following performance of the task.

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates AP-020, Attachment 6.3	
NOTES:	***NOTES:*** ***1) The steps in AP-020 have been condensed in this JPM for easier understanding. It may be helpful for the evaluator to have a copy of the procedure to follow along. JPM is written to follow format of Attachment 6.3.*** ***2) A completed copy of Attachment 6.3, "Heat Stress Evaluation Form," is attached for comparison as an Answer Key.***	____ SAT
COMMENTS:		____ UNSAT
STEP 2:	Enter data on Attachment 6.3 for Job Date, Job Location, Task, Supervisor, Estimated Job Duration, Number of Workers, Plant Status, and Clothing Type	
STANDARD:	Enters the following data: Job Date - TODAY'S DATE Job Location - CV Task - PERFORM CV INSPECTION Supervisor - CANDIDATE'S NAME Estimated Job Duration - 0.33 HOURS Number of Workers - 2 Plant Status - HOT STANDBY Clothing Type - SINGLE CLOTH COVERALLS OVER SCRUB SUIT	
NOTES:	***NOTE: Data provided in initial conditions.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Determine Metabolic Heat Load	**CRITICAL STEP**
STANDARD:	Using the guidance of Attachment 6.1, determines metabolic heat load to be MODERATE	
NOTES:	**CRITICAL TO DETERMINE ALLOWED WORK TIME** ***NOTE: Per Attachment 6.1, moderate work are those average demands that are typical of a system walk-down, valve alignments, valve and motor repairs, and light materials handling.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Determine the Wet Bulb Globe Temperature (WBGT) for the work area	**CRITICAL STEP**
STANDARD:	Determines the WBGT is 96 °F and completes data entry on Attachment 6.3 as follows: Circles MEASURED WBGT = 96 DB = 94 WB = 95 GT = 98	
NOTES:	**CRITICAL TO ACCURATELY DETERMINE WBGT TO DETERMINE ALLOWED WORK TIME.** ***NOTE: WBGT (indoor) determined by adding WB x 0.7 and GT x 0.3. (95 x 0.7 + 98 x 0.3 = 66.5 + 29.4 = 95.9 = 96). (STEP 5.2.2 of AP-020)***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Determine ACTION TIME	**CRITICAL STEP**
STANDARD:	Using Attachment 6.2, determines ACTION TIME to be 30 minutes	
NOTES:	**CRITICAL TO ACCURATELY DETERMINE ALLOWED WORK TIME.** ***NOTE: Determined by referencing Attachment 6.2, locating section for Cloth Coveralls Over Scrub Suit, locating WBGT of 96 °F, and reading value listed under MODERATE metabolic heat load (Page 3 of 13).***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Determine RECOVERY PERIOD	**CRITICAL STEP**
STANDARD:	Calculates recovery period to be 40 minutes	
NOTES:	**CRITICAL TO ACCURATELY DETERMINE RECOVERY TIME TO PERMIT OPERATOR TO COOL DOWN FOLLOWING TASK.** ***NOTE: Determined by dividing actual task performance time (20 min) by action time (30 min) and then multiplying by 60 minutes.***	
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM SRO-A.1-2

ATTACHMENT 6.3
Page 1 of 1

HEAT STRESS EVALUATION FORM

JOB DATE: TODAY'S DATE

JOB LOCATION: CV

TASK(S): PERFORM CV INSPECTION (or similar, such as PLP-006)

SUPERVISOR: CANDIDATE

EST. PERSON-HOURS: 0.33

NUMBER OF WORKERS: 2

PLANT STATUS (for job planning use): HOT STANDBY

CLOTHING TYPE: SINGLE COVERALL OVER SCRUB SUIT

METABOLIC HEAT LOAD (CIRCLE ONE):
LIGHT MODERATE HEAVY

TEMPERATURE (CIRCLE ONE):
MEASUREMENT ESTIMATE

WBGT = 96 F
DB = 94 F WB = 95 F GT = 98 F

ACTION TIME = 30 minutes (from Attachment 6.2)

RECOVERY PERIOD = 40 minutes = (Time to minutes in Hot Environment) x (60) / (Action Time in minutes)

HAVE WORKERS RECEIVED A PRE-JOB BRIEFING INCLUDING HEAT STRESS CONCERNS? (CIRCLE ONE)
YES NO

ADDITIONAL INFORMATION:

Signature (Job Supervisor): _____ Date: _____

EXAMINER KEY

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

INITIAL CONDITIONS:

The unit is in Hot Standby.

An auxiliary operator and an HP technician will be entering containment to perform PLP-006, "Containment Vessel Inspection/Closeout". It is expected that it will take 20 minutes to complete the required tasks. Tasks include moving several step ladders to their proper location and removal of several 50 foot length extension cords.

The auxiliary operator will be wearing single cloth coveralls over scrub suit and is in good health with no known medical problems or illness.

The following readings have been determined:

- Dry bulb temperature is 94 °F
- Wet bulb temperature is 95 °F
- Globe temperature is 98 °F
- Relative humidity inside containment is 90%

INITIATING CUES:

Determine the maximum time that the auxiliary operator can work inside containment AND the amount of time that must be alloted for recovery following performance of the task.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.2

Review / Approve an Equipment Clearance (OPS-NGGC-1301)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Review / Approve an Equipment Clearance (OPS-NGGC-1301)

Alternate Path: NONE

Facility JPM #: NEW

K/A Rating: 2.2.13 Importance: SRO 3.8 RO NA

K/A Statement: Knowledge of tagging and clearance tagging procedures.

Task Standard: Clearance is disapproved with all three (3) discrepancies identified.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: 5379-685, Sheet 3, CVCS Purification & Makeup
EDP-003, MCC-Buses
OPS-NGGC-1301, Equipment Clearance

Validation Time: 30 minutes Time Critical: NO

Candidate: _____ _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT _____ UNSAT _____

Comments: _____

_____

Examiner: _____ Date: _____
Signature

Tools/Equipment/Procedures Needed:

OPS-NGGC-1301
5379-685, Sheet 3
EDP-003

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 is operating at 30% power.

The internals for CVC-397B, Boric Acid Transfer Pump 'B' Discharge Check Valve, must be replaced.

Boric Acid Transfer Pump 'B' has been secured and Pump 'A' is aligned for operation.

Mechanical Maintenance has submitted a clearance request. The clearance has been manually generated.

INITIATING CUES:

You are to review the Equipment Clearance Tag Sheet for CVC-397B and identify **EVERY** discrepancy which would prohibit approval.

NOTE: Individual tags have **NOT** been generated and are **NOT** part of the review process.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates OPS-NGGC-1301, EDP-003, and P&ID 5379-685, Sheet 3	
NOTES:	***NOTES:*** ***1) Provide candidate with Attachment 1, which includes the completed clearance forms.*** ***2) For clarity, the Steps in Section 9.2.1 are referenced, as applicable, in the JPM, but steps may be performed in any order provided the candidate identifies the required discrepancies.*** ***3) AN EXAMINER KEY, IDENTIFYING THE ERRORS, HAS BEEN INCLUDED WITH THE JPM.***	
COMMENTS:		____ SAT ____ UNSAT
STEP 2:	Secure pump/fan and hang a tag on its control switch (**Step 9.2.1.9.a**)	
STANDARD:	Verifies tag to be hung on Boric Acid Transfer Pump 'B' RTGB and local control switches	
NOTES:		
COMMENTS:		____ SAT ____ UNSAT

STEP 3:	Remove the power source for the pump/fan prime mover (open breaker, remove fuse, shut steam supply valve and so forth) and place tag on the power source (**Step 9.2.1.9.b**)	**CRITICAL STEP**
STANDARD:	Determines power supply to Boric Acid Transfer Pump 'B' is incorrectly identified as MCC-5, Breaker 9C (**ITEM #1 - SHOULD BE MCC-6**), AND determines that breaker is incorrectly tagged after tagging the discharge isolation valves (**ITEM #2 - SHOULD BE TAGGED BEFORE VALVES**)	
NOTES:	**CRITICAL TO IDENTIFY DISCREPANCIES TO AVOID APPROVAL OF IMPROPER CLEARANCE.**	
		____ SAT
COMMENTS:		____ UNSAT
STEP 4:	Reposition manual valves as required by the clearance and place tag on handwheels of the valves covered by the clearance. For pumps, shut the discharge valve before shutting the suction valve (**Step 9.2.1.9.e**)	
STANDARD:	Verifies discharge isolation valves properly identified and are SHUT before shutting the suction isolation valves - CVC-379, Boric Acid Transfer Pump 'B' Discharge - CVC-341, Boric Acid Transfer Pump 'B' Discharge to Filter - CVC-284B, Boric Acid Transfer Pump 'B' Discharge to BIT - CVC-349F, BA Pump "B" Disch Press PI-110 Root Isolation	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Reposition manual valves as required by the clearance and place tag on handwheels of the valves covered by the clearance. For pumps, shut the discharge valve before shutting the suction valve (**Step 9.2.1.9.e**)	**CRITICAL STEP**
STANDARD:	Verifies suction isolation valve CVC-334, Boric Acid Transfer Pump 'B' Suction, properly identified and SHUT after shutting the discharge isolation valves, but determines CVC-336, Primary Water to Boric Acid Transfer Pump 'B' Suction NOT included on clearance (**ITEM #3 - SHOULD BE ALSO TAGGED**)	
NOTES:	**CRITICAL TO IDENTIFY DISCREPANCIES TO AVOID APPROVAL OF IMPROPER CLEARANCE.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 6:	Systems, or portions of systems, and components that normally operate at temperatures and pressures above ambient should be vented and drained as necessary for the performance of work (**Step 9.2.1.24**)	
STANDARD:	Verifies drain path inside isolation boundaries to be CVC-379A, Boric Acid Transfer Pump 'B' Discharge Line Drain	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	Systems, or portions of systems, and components that normally operate at temperatures and pressures above ambient should be vented and drained as necessary for the performance of work (**Step 9.2.1.24**)	
STANDARD:	Verifies vent path inside isolation boundaries to be CVC-334A, Boric Acid Transfer Pump 'B' Suction Line Vent	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	Does NOT approve clearance	
STANDARD:	Does NOT approve clearance based on 3 items: 1) Incorrect power supply listed for pump 2) Pump discharge isolated before breaker tagged 3) Suction isolation valve missing from clearance	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM SRO-A.2

ATTACHMENT 4
Sheet 1 of 1
Operations Clearance Tag Sheet

Clearance No. 01-99004

Page 1 of 1

INT	NAME (PRINT)	INT	NAME (PRINT)

* Independent Verification Required? YES (NO) If NO, N/A the Blocks
** N/A if Order is not Important

TAG TYPE AND #	** ORDER TO BE HUNG	COMPONENT ID/ LOCATION	CLR POSITION	ATTACHED BY (INITIAL)		RESTORED POSITION	** ORDER TO BE RESTORED	REMOVED BY (INITIALS)*	
					IND VER				IND VER *
1	1	'B' Boric Acid Transfer Pump / RTGB Cont Sw	Stop						
2	1	'B' Boric Acid Transfer Pump / Local Cont Sw	Stop						
3	2	CVC-379 / BAT Room	Shut						
4	2	CVC-341 / BAT Room	Shut						
5	2	CVC-284B / BAT Room	Shut						
6	2	CVC-349F / BAT Room	Shut						
7	3	52/MCC-5(9C) / E-1 Room	Off						
8	4	CVC-334 / BAT Room	Shut						
9	5	CVC-334A / BAT Room	Open						
10	5	CVC-379A / BAT Room	Cap Rem / Open						
11	6	Heat Trace Ckt E-2 Prim	Fuses Rem						
12	6	Heat Trace Ckt E-2 Sec	Fuses Rem						
		CVC-336 / BAT Room	Shut						

1) POWER SUPPLY SHOULD BE MCC-6
2) POWER SUPPLY SHOULD BE TAGGED BEFORE VALVES
3) PUMP SUCTION MISSING

Continued Y (N)

ATTACHMENT 1 FOR JPM SRO-A.2

ATTACHMENT 4
Sheet 1 of 1
Operations Clearance Tag Sheet

Clearance No. 01-99004

Page 1 of 1

INT	NAME (PRINT)	INT	NAME (PRINT)
____	_____	____	_____
____	_____	____	_____
____	_____	____	_____

* Independent Verification Required? YES (NO) If NO, N/A the Blocks
** N/A if Order is not Important

TAG TYPE AND #	** ORDER TO BE HUNG	COMPONENT ID/ LOCATION	CLR POSITION	ATTACHED BY (INITIAL)	IND VER	RESTORED POSITION	** ORDER TO BE RESTORED	REMOVED BY (INITIALS)*	IND VER *
1	1	'B' Boric Acid Transfer Pump / RTGB Cont Sw	Stop						
2	1	'B' Boric Acid Transfer Pump / Local Cont Sw	Stop						
3	2	CVC-379 / BAT Room	Shut						
4	2	CVC-341 / BAT Room	Shut						
5	2	CVC-284B / BAT Room	Shut						
6	2	CVC-349F / BAT Room	Shut						
7	3	52/MCC-5(9C) / E-1 Room	Off						
8	4	CVC-334 / BAT Room	Shut						
9	5	CVC-334A / BAT Room	Open						
10	5	CVC-379A / BAT Room	Cap Rem / Open						
11	6	Heat Trace Ckt E-2 Prim	Fuses Rem						
12	6	Heat Trace Ckt E-2 Sec	Fuses Rem						

Continued Y (N)

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

INITIAL CONDITIONS:

The unit is operating at 30% power.

The internals for CVC-397B, Boric Acid Transfer Pump 'B' Discharge Check Valve, must be replaced.

Boric Acid Transfer Pump 'B' has been secured and Pump 'A' is aligned for operation.

Mechanical Maintenance has submitted a clearance request. The clearance has been manually generated.

INITIATING CUES:

You are to review the Equipment Clearance Tag Sheet for CVC-397B and identify **EVERY** discrepancy which would prohibit approval.

NOTE: Individual tags have **NOT** been generated and are **NOT** part of the review process.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.3

Review / Approve a Liquid Waste Release Permit

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Review / Approve a Liquid Waste Release Permit

Alternate Path: NONE

Facility JPM #: ADM-09

K/A Rating: 2.3.6 Importance: SRO 3.1 RO NA

K/A Statement: Knowledge of the requirements for reviewing and approving release permits.

Task Standard: Liquid release permit is approved after identifying both discrepancies and having them corrected.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: EMP-023, Liquid Waste Release and Sampling

Validation Time: 30 minutes Time Critical: NO

Candidate: _____

Time Start: _____ Time Finish: _____

Performance Time: _____ minutes

Performance Rating: SAT _____ UNSAT _____

Comments: _____

_____

Examiner: _____ Date: _____
Signature

Tools/Equipment/Procedures Needed:

EXAMINER CAUTIONS:
1) Attachments are to be provided to candidates based on review of previously given attachment.

2) Attachment for PRE-RELEASE DATA (4 pages) is to be given to candidate ONLY if requested.

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 release of Monitor Tank 'A' is scheduled to be performed using the Unit 2 Circulating Water System.

TWO (2) Unit 2 Circulating Water Pumps are running.

The Release Permit has been completed and submitted for Superintendent Shift Operations approval.

INITIATING CUES:

You are to review / approve the attached Release Permit.

START TIME: _____

STEP 1:	Locates proper procedure and required information	
STANDARD:	Locates completed Liquid Release Permit	
NOTES:	***NOTE: Provide candidate Liquid Release Permit (ORIGINAL PROVIDED PERMIT) with INITIATING CUE.*** ***EXAMINER CAUTIONS:*** ***1) Attachments are to be provided to candidates based on review of previously given attachment.*** ***2) Attachment for PRE-RELEASE DATA (4 pages) is to be given to candidate ONLY if requested.*** ***ONLY those items identified as requiring disapproval of the Release Permit will be considered CRITICAL.***	____ SAT ____ UNSAT
COMMENTS:		

STEP 2:	Review tank release information	
STANDARD:	Determines Monitor Tank 'A' is tank to be released	
NOTES:	***NOTE: If candidate questions ESTIMATED RELEASE START and STOP as being "TODAY," inform them that this is acceptable.***	____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Review 10CFR20 Compliance Data	**CRITICAL STEP**
STANDARD:	Determines UNIT INVOLVED is correctly identified as "2," MAX RELEASE RATE is correctly identified as "4.2390E1," MONITOR NAME is correctly identified as "R-18," and SETPOINT is correctly identified as "3.8217E6" - also determines that NUMBER OF PUMPS / DILUTION FLOW is INCORRECTLY identified as "3" instead of "2"	
NOTES:	***CAUTION: May request PRE-RELEASE DATA attachment for MAX RELEASE RATE, MONITOR NAME, and SETPOINT. Provide ONLY if requested. This is normally completed by Chemistry and not included with paperwork to be signed by SSO.*** ***CONDITIONAL CUE: If candidate indicates that the permit CANNOT be approved at this time, based on the pump configuration being incorrect, inform candidate that permit has been regenerated with the correct pump configuration being used and provide candidate with 2 pages of attachment following INCORRECT PUMP CONFIGURATION IDENTIFIED.*** ***If candidate does NOT address this error at this time, or if candidate does identify the error, but continues with review, DO NOT provide candidate with any additional attachments at this time.*** **CRITICAL TO IDENTIFY ERROR IN PUMP CONFIGURATION.**	____ SAT
COMMENTS:		____ UNSAT

STEP 4:	Review Dose Assessment Data	
STANDARD:	Determines 31 DAY DOSE PROJECTION / ORGAN is "LIVER," % LIMIT for organ is "7.26%," % LIMIT for total body is "21.46%," determines 10CFR50 QUARTERLY LIMIT / ORGAN is "THYROID," % LIMIT for thyroid is "37.82%," % LIMIT for total body is "51.04%," determines 10CFR50 ANNUAL LIMIT / ORGAN is "THYROID," % LIMIT for thyroid is "22.20%," % LIMIT for total body is "26.63%", determines RADWASTE TREATMENT SYSTEM is identified as "OPERABLE" by initials, and determines TANK pH of "7.2" is above NPDES pH limit of 6.0	
NOTES:	***CAUTION: May request PRE-RELEASE DATA attachment for 31 DAY DOSE PROJECTION, 10CFR50 QUARTERLY LIMIT, and 10CFR50 ANNUAL LIMIT. Provide ONLY if requested. This is normally completed by Chemistry and not included with paperwork to be signed by SSO.***	____ SAT
COMMENTS:		____ UNSAT

STEP 5:	Review Preparer's and E&C Supervisor Signature blocks	**CRITICAL STEP**
STANDARD:	Determines PREPARER'S SIGNATURE is in place and determines E&C SUPERVISOR SIGNATURE should also be required for approval since the TOTAL BODY % LIMIT (10CFR50 QUARTERLY LIMIT) of "51.04%" exceeds 50%	

NOTES:

CONDITIONAL CUE: If candidate indicates that the permit CANNOT be approved at this time, based on the signature being missing and this is the FIRST ERROR IDENTIFIED, then inform candidate that permit has been regenerated with the signature included and provide candidate with 2 pages of attachment following MISSING SIGNATURE IDENTIFIED.

If candidate indicates that the permit CANNOT be approved at this time, based on the signature being missing and this is the SECOND ERROR IDENTIFIED and the first error (PUMP CONFIGURATION) has already been identified and a second attachment with corrected pump configuration has been given candidate, then inform candidate that permit has been regenerated with the signature included and provide candidate with 2 pages of attachment following BOTH ERRORS IDENTIFIED.

If candidate indicates that the permit CANNOT be approved at this time, based on the signature being missing and the pump configuration being incorrect, then inform candidate that permit has been regenerated with the signature included and the correct pump configuration and provide candidate with 2 pages of attachment following BOTH ERRORS IDENTIFIED.

CRITICAL TO IDENTIFY MISSING SIGNATURE.

____ SAT

____ UNSAT

COMMENTS:

STEP 6:	Approve Release after errors corrected	**CRITICAL STEP**
STANDARD:	Determines errors have been corrected and approves release by signing on second page	
NOTES:	**CRITICAL TO APPROVE RELEASE PERMIT WHEN ERRORS IDENTIFIED AND CORRECTED.**	
		____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

PRE-RELEASE DATA

EXAMINER CAUTION: Attachment for PRE-RELEASE DATA (next 4 pages) is to be given to candidate ONLY if requested.

CAROLINA POWER AND LIGHT COMPANY
ROBINSON S.E.G PLANT
LIQ PROC NAME
Liquid Radioactive Release Permit 0100XX-L
Pre-Release Supplementary Data

PART I: PRE-RELEASE DATA

RELEASE POINT (2): MONITOR TANKS A / B
DISCHARGE POINT (1): WASTE DISPOSAL SYSTEM
Dilution Stream (1): DISCHARGE CANAL

Permit Issued: TODAY

Release Type: Batch

Waste Tank Volume: 1.0000E+04 GAL
Recirc. Start: TODAY 01:00:00
Sample After: TODAY 02:01:00

Recirc. Rate: 6.0000E+01 GPM
Min Recirc Time: 61 MIN
Agitator Used:

Rad Monitor: (R-18)
Rad Monitor Bckgrnd: 1.1200E+04 CPM

(N/A)
0.0000E+00

Estim. Dilution Flow: 4.0000E+05 GPM
Estim. Dilution Vol.: 1.0000E+08 GAL
Dilution Factor (Act): 2.5010E+03
Estim. Release Start: TODAY
Estim. Release End: TODAY

Estim. Waste Flow: 4.0000E+01 GPM
Estim. Waste Vol.: 1.0000E+04 GAL
Estim. Duration: 250.00 MIN

PART II: PRE-RELEASE CALCULATIONS

Sample Entry # : 204
Sample time: TODAY
Sampled by: JONES
Configuration File Name: N/A

Total Waste Activity: 4.4668E+01 Curies
Total Waste Conc/ECL: 1.1800E+03
Dilution Allocation: 2.5000E-01
Min Dilution Flow: 3.7745E+05 GPM
Dilution Strm Sample: 0
Max Monitor Setpoint: 1.4009E-02 uCi/ml
3.8217E+06 CPM

Total Waste Conc: 1.1800E+00 uCi/ml
Total Gamma Conc: 4.0752E-06
Concurrent Releases: 1
Max Waste Flow: 4.0000E+01 GPM
Dilution Conc/ECL: 4.7182E-01
Flag:
Rqrd Dilution Fct: 2.3600E+03

Setpoint data for other dilution flow rates:

Dilution (GPM)	Max Waste (GPM)	Setpoint (uCi/ml)	Setpoint (CPM)		Flag
5.0000E+04	5.2987E+00	0.0000E+00	1.1200E+04	(MAX)	F
1.0000E+05	1.0956E+01	0.0000E+00	1.1200E+04	(MAX)	F
2.5000E+05	2.6494E+01	0.0000E+00	1.1200E+04	(MAX)	F
4.0000E+05	4.2390E+01	1.4009E-02	3.8217E+06	(MAX)	

Flags: F- Waste Flow > Max Allowable

CAROLINA POWER AND LIGHT COMPANY
ROBINSON S.E.G PLANT
LIQ PROC NAME
Liquid Radioactive Release Permit

0100XX-L

Pre-Release Supplementary Data

ISOTOPIC IDENTIFICATION - Unit 2

ISOTOPE		Pre-Dilut Measured uCi/ml	Pre-Dilut Measured Conc/ECL	Pre-Dilut Measured Conc/Total	Post Dilution uCi/ml	Post Dilution Conc/ECL	Estimated Curies Released
CO-57	P	1.12E-08	1.87E-04	9.49E-09	4.48E-12	7.46E-08	4.24E-07
FE-55	O	4.13E-07	4.13E-03	3.50E-07	1.65E-10	1.65E-06	1.56E-05
H-3	O	1.18E+00	1.18E+03	1.00E+00	4.72E-04	4.72E-01	4.47E+01
XE-133	N	4.06E-06	2.03E-02	3.44E-06	1.62E-09	8.12E-06	1.54E-04
Totals		1.18E+00	1.18E+03		4.72E-04	4.72E-01	4.47E+01

CAROLINA POWER AND LIGHT COMPANY
ROBINSON S.E.G PLANT
LIQ PROC NAME
Liquid Radioactive Release Permit

0100XX-L

Pre-Release Supplementary Data

Dose Calculation by Isotope (mrem) from This Release Unit 2

Isotope	:Bone	:Liver	:Tot-body	:Thyroid	:Kidney	:Lung	:GI-LLI
CO-57	:4.73E-11	:1.35E-10	:2.10E-10	:4.73E-11	:4.73E-11	:4.73E-:11	:2.53E-09
FE-55	:1.13E-07	:7.84E-08	:1.83E-08	:0.00E+00	:0.00E+00	:4.37E-08	:4.50E-08
H-3	:0.00E+00	1.11E-01:	:1.11E-01	:1.11E-01	:1.11E-01	:1.11E-01	:1.11E-01
Totals	:1.13E-07	:1.11E-02	:1.11E-02	:1.11E-02	:1.11E-02	:1.11E-02	:1.11E-02

CAROLINA POWER AND LIGHT COMPANY
ROBINSON S.E.G PLANT
LIQ PROC NAME
Liquid Radioactive Release Permit

0100XX-L

Pre-Release Supplementary Data

Report Category : Cumulative Maximum Individual Dose (mrem) for
: Controlling Age Group at Controlling Location
Type of Activity : Radioiodines and Particulates
Age Group & Pathway(s) : Adult . sff wr
Location : NE at 6.760 km.
Unit number : 2

	Bone	Liver	Tot-body	Thyroid	Kidney	Lung	GI-LLI
This Release	1.13E-07	1.11E-02	1.11E-02	1.11E-02	1.11E-02	1.11E-02	1.11E-02
31D Prior To Rel	3.42E-07	3.42E-03	3.28E-03	3.28E-03	3.28E-03	3.28E-03	3.28E-03
31D After Release	4.56E-07	1.45E-02	1.44E-02	1.44E-02	1.44E-02	1.44E-02	1.44E-02
31 Day Limit	2.00E-01	2.00E-01	6.70E-02	2.00E-01	2.00E-01	2.00E-01	2.00E-01
% 31 Day Limit	0.00%	7.26%	21.46%	7.20%	7.20%	7.20%	7.20%
Qtr Prior To Rel	6.06E-06	6.89E-01	7.54E-01	1.86E+00	1.86E+00	1.86E+00	1.86E+00
Qtr After Release	6.18E-06	7.00E-01	7.66E-01	1.89E+00	1.88E+00	1.88E+00	1.88E+00
Quarterly Limit	5.00E+00	5.00E+00	1.5E+00	5.00E+00	5.00E+00	5.00E+00	5.00E+00
% Quarter Limit	0.00%	14.00%	51.04%	37.82%	37.63%	37.63%	37.63%
Ann Prior To Rel	8.92E-05	9.86E-01	7.88E-01	2.18E+00	2.18E+00	2.18E+00	2.18E+00
Ann After Release	8.93E-05	9.97E-1	7.99E-01	2.22E+00	2.19E+00	2.19E+00	2.19E+00
Annual Limit	1.00E+01	1.00E+01	3.00E+00	1.00E+01	1.00E+01	1.00E+01	1.00E+01
% Annual Limit	0.00%	9.97%	26.63%	22.20%	21.90%	21.90%	21.90%

BOTH ERRORS IDENTIFIED

EXAMINER: Provide the following 2 pages after <u>BOTH</u> errors have been identified (these contain <u>NO</u> errors and should be approved).

Title: R0551

ATTACHMENT 10.3
Page 1 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

RELEASE NUMBER: 0100XX-L SSN: 204 DATE: TODAY

This revision is the latest revision available as verified by:

JEFF JONES			TODAY
Name (Print)	Initial	Signature	Date

PART I: RELEASE INFORMATION (E&C)

Waste Condensate Tank: A B C D E
Monitor Tank: (A) B
S/G Drainage: A B C
Other.....

Estimated Release Start TODAY (Date Time)
Estimated Release Stop TODAY (Date Time)

10CFR20 Compliance

Dilution Flow Data			Release Rate Data	Monitor Data	
Unit Involved[1]	No. of Pumps	Dilution Flow (GPM)	Max. Release Rate (GPM)	Monitor Name	Setpoint (CPM)
1 or (2)	1 or (2) or 3	2.5000E5	4.2390E1	R-18	3.8217E6

DOSE ASSESSMENT

31 DAY DOSE PROJECTION		10CFR50 QUARTERLY LIMIT		10CFR50 ANNUAL LIMIT	
ORGAN	% LIMIT	ORGAN	% LIMIT	ORGAN	% LIMIT
LIVER	7.26%	THYROID	37.82%	THYROID	22.20%
TOTAL BODY	21.46%	TOTAL BODY	51.04%	TOTAL BODY	26.63%

Radwaste Treatment System:[2] Operable ✓ Inoperable ..... (Init.) (CR 99-01075)

Tank pH: 7.2 NPDES pH limit: ≥ 6.0 (CR 99-01699)

NOTE: DO NOT USE UNIT #1 CIRCULATING WATER PUMPS WITHOUT AN OFFICIAL LETTER FROM UNIT #1 OPERATIONS.

Release requires E&C Supervisor Approval if: (1) Any 31 day dose projection limit exceeds 90%, or (2) Any 10CFR50 Quarterly Limit exceeds 50% or (3) Any 10CFR50 Annual Limit exceeds 50%.

Prepared By: Jeff Jones

Release Approval
E&C Supervisor: David Greenwood

ATTACHMENT 10.3
Page 2 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

Release # **0100XX-L**

PART II: RADIATION MONITOR INFORMATION[1] (OPS and E&C)		(CR 98-00002)
Reading	R-18	R-19 ( )
Prior[4]	**10.2 K** CPM	CPM
Source Check[5]	OPS INI. wjs	E&C INI.
Setpoint Verified at[6]	**1.0 E6** CPM	CPM
Status Board Updated	OPS INI. wjs	OPS INI.
Monitor Reading During Release	CPM	CPM
Monitor Reading After Release	CPM	CPM

Approved for Release: _____ (CR 97-00059)
(Superintendent Shift Ops)

PART III: RELEASE INFORMATION[1] (OPS)				(CR 98-00002)
Number of Circulating Water Pumps in Service: _____ [Unit 1 or 2] (circle one)				
Release	Date	Time	Tank or SG Level	Integrator
Start				
Stop				
Difference		MIN.	GAL.	GAL.
FI-1064 (GPM)[3]		Actual Release Rate (GPM)		

1. N/A all blanks not applicable.
2. If quarterly % of limit is ≥ 13 % to the total body or ≥ 12% to any organ, see ODCM Specification 2.9.1 and 2.9.2.
3. If FI-1064 is out of service, estimate flow every 4 hours.
4. If Rad Monitor is out of service, refer to Section 7.9 of EMP-023.
5. Source check required prior to each batch release via R-18 or R-19 A, B, or C .
6. Log actual value which the setpoint was changed to.
7. If any limit is exceeded, make immediate notification to the Superintendent Shift Operations and the E&C Supervisor

Rad Monitor Information Completed By: _____
(R-18: Control OPS, or R-19: E&C Tech)

Release Information Completed By: _____/_____
(Aux. OPS/Control OPS)

Reviewed By: _____
(Shift Superintendent)

POST RELEASE REVIEW

Release Posted By: _____ Date: _____

Sample Composited By: _____ Date: _____

_____ _____ _____ _____
Reviewed By Date E&C Supervisor Date

MISSING SIGNATURE IDENTIFIED

EXAMINER: Provide the following 2 pages after MISSING SIGNATURE error has been identified (these contain PUMP CONFIGURATION error and should NOT be approved).

Title: R0551

ATTACHMENT 10.3
Page 1 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

RELEASE NUMBER: 0100XX-L SSN: 204 DATE: TODAY

This revision is the latest revision available as verified by:

JEFF JONES			TODAY
Name (Print)	Initial	Signature	Date

PART I: RELEASE INFORMATION (E&C)

Waste Condensate Tank: A B C D E
Monitor Tank: (A) B
S/G Drainage: A B C
Other.....

Estimated Release Start TODAY (Date) (Time)
Estimated Release Stop TODAY (Date) (Time)

10CFR20 Compliance

Dilution Flow Data			Release Rate Data	Monitor Data	
Unit Involved[1]	No. of Pumps	Dilution Flow (GPM)	Max. Release Rate (GPM)	Monitor Name	Setpoint (CPM)
1 or (2)	1, 2, or (3)	4.0000E5	4.2390E1	R-18	3.8217E6

ATTACHMENT 10.3
Page 2 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

Release # **0100XX-L**

PART II: RADIATION MONITOR INFORMATION[1] (OPS and E&C)		(CR 98-00002)
Reading	R-18	R-19 ( )
Prior[4]	**10.2 K** CPM	CPM
Source Check[5]	OPS INI. wjs	E&C INI.
Setpoint Verified at[6]	**1.0 E6** CPM	CPM
Status Board Updated	OPS INI. wjs	OPS INI.
Monitor Reading During Release	CPM	CPM
Monitor Reading After Release	CPM	CPM

Approved for Release: _____ (CR 97-00059)
(Superintendent Shift Ops)

PART III: RELEASE INFORMATION[1] (OPS)				(CR 98-00002)
Number of Circulating Water Pumps in Service: _____ [Unit 1 or 2] (circle one)				
Release	Date	Time	Tank or SG Level	Integrator
Start				
Stop				
Difference		MIN.	GAL.	GAL.
FI-1064 (GPM)[3]		Actual Release Rate (GPM)		

1. N/A all blanks not applicable.
2. If quarterly % of limit is ≥ 13 % to the total body or ≥ 12% to any organ, see ODCM Specification 2.9.1 and 2.9.2.
3. If FI-1064 is out of service, estimate flow every 4 hours.
4. If Rad Monitor is out of service, refer to Section 7.0 of EMP-023.
5. Source check required prior to each batch release via R-18 or R-19 A, B, or C .
6. Log actual value which the setpoint was changed to.
7. If any limit is exceeded, make immediate notification to the Superintendent Shift Operations and the E&C Supervisor

Rad Monitor Information Completed By: _____
(R-18: Control OPS, or R-19: E&C Tech)

Release Information Completed By: _____/_____
(Aux. OPS/Control OPS)

Reviewed By: _____
(Shift Superintendent)

POST RELEASE REVIEW

Release Posted By: _____ Date: _____

Sample Composited By: _____ Date: _____

_____ _____ _____ _____
Reviewed By Date E&C Supervisor Date

INCORRECT PUMP CONFIGURATION IDENTIFIED

EXAMINER: Provide the following 2 pages after PUMP CONFIGURATION error has been identified (these contain SIGNATURE error and should NOT be approved).

Title: R0551

ATTACHMENT 10.3
Page 1 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

RELEASE NUMBER: 0100XX-L SSN: 204 DATE: TODAY

This revision is the latest revision available as verified by:

JEFF JONES (Name (Print)) _____ (Initial) _____ (Signature) TODAY (Date)

PART I: RELEASE INFORMATION (E&C)

Waste Condensate Tank: A B C D E
Monitor Tank: (A) B
S/G Drainage: A B C
Other _____

Estimated Release Start TODAY (Date Time)
Estimated Release Stop TODAY (Date Time)

10CFR20 Compliance

Dilution Flow Data			Release Rate Data	Monitor Data	
Unit Involved[1]	No. of Pumps	Dilution Flow (GPM)	Max. Release Rate (GPM)	Monitor Name	Setpoint (CPM)
1 or (2)	1 or (2) or 3	2.5000E5	4.2390E1	R-18	3.8217E6

DOSE ASSESSMENT

31 DAY DOSE PROJECTION		10CFR50 QUARTERLY LIMIT		10CFR50 ANNUAL LIMIT	
ORGAN	% LIMIT	ORGAN	% LIMIT	ORGAN	% LIMIT
LIVER	7.26%	THYROID	37.82%	THYROID	22.20%
TOTAL BODY	21.46%	TOTAL BODY	51.04%	TOTAL BODY	26.63%

Radwaste Treatment System:[2] Operable // Inoperable _____ (Init.) (CR 99-01075)

Tank pH: 7.2 // NPDES pH limit: ≥ 6.0 (CR 99-01699)

NOTE: DO NOT USE UNIT #1 CIRCULATING WATER PUMPS WITHOUT AN OFFICIAL LETTER FROM UNIT #1 OPERATIONS.

Release requires E&C Supervisor Approval if: (1) Any 31 day dose projection limit exceeds 90%, or (2) Any 10CFR50 Quarterly Limit exceeds 50% or (3) Any 10CFR50 Annual Limit exceeds 50%.

Prepared By: _____

Release Approval
E&C Supervisor: N/A

ATTACHMENT 10.3
Page 2 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

Release # 0100XX-L

PART II: RADIATION MONITOR INFORMATION[1] (OPS and E&C)		(CR 98-00002)
Reading	R-18	R-19 ( )
Prior[5]	10.2 K CPM	CPM
Source Check[5]	OPS INI. WJS	E&C INI.
Setpoint Verified at[6]	1.0 E6 CPM	CPM
Status Board Updated	OPS INI. WJS	OPS INI.
Monitor Reading During Release	CPM	CPM
Monitor Reading After Release	CPM	CPM

Approved for Release: _____ (CR 97-00059)
(Superintendent Shift Ops)

PART III: RELEASE INFORMATION[1] (OPS)				(CR 98-00002)
Number of Circulating Water Pumps in Service: _____ [Unit 1 or 2] (circle one)				
Release	Date	Time	Tank or SG Level	Integrator
Start				
Stop				
Difference		MIN.	GAL.	GAL.
FI-1064 (GPM)[3]		Actual Release Rate (GPM)		

1. N/A all blanks not applicable.
2. If quarterly % of limit is ≥ 13 % to the total body or ≥ 12% to any organ, see ODCM Specification 2.9.1 and 2.9.2.
3. If FI-1064 is out of service, estimate flow every 4 hours.
4. If Rad Monitor is out of service, refer to Section 7.0 of EMP-023.
5. Source check required prior to each batch release via R-18 or R-19 A, B, or C .
6. Log actual value which the setpoint was changed to.
7. If any limit is exceeded, make immediate notification to the Superintendent Shift Operations and the E&C Supervisor

Rad Monitor Information Completed By: _____
(R-18: Control OPS, or R-19: E&C Tech)

Release Information Completed By: _____/_____
(Aux. OPS/Control OPS)

Reviewed By: _____
(Shift Superintendent)

POST RELEASE REVIEW

Release Posted By: _____ Date: _____

Sample Composited By: _____ Date: _____

_____ _____ _____ _____
Reviewed By Date E&C Supervisor Date

ORIGINAL PROVIDED PERMIT

EXAMINER: Provide the following 2 pages at the start of the JPM.

Title: R0551

ATTACHMENT 10.3
Page 1 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

RELEASE NUMBER: 0100XX-L SSN: 204 DATE: TODAY

This revision is the latest revision available as verified by:

JEFF JONES (Name (Print)) _____ (Initial) Jeff Jones (Signature) TODAY (Date)

PART I: RELEASE INFORMATION (E&C)

Waste Condensate Tank: A B C D E
Monitor Tank: (A) B
S/G Drainage: A B C
Other.....

Estimated Release Start: TODAY (Date) Time
Estimated Release Stop: TODAY (Date) Time

10CFR20 Compliance

Dilution Flow Data			Release Rate Data	Monitor Data	
Unit Involved[1]	No. of Pumps	Dilution Flow (GPM)	Max. Release Rate (GPM)	Monitor Name	Setpoint (CPM)
1 or (2)	1, 2, or (3)	4.0000E5	4.2390E1	R-18	3.8217E6

DOSE ASSESSMENT

31 DAY DOSE PROJECTION		10CFR50 QUARTERLY LIMIT		10CFR50 ANNUAL LIMIT	
ORGAN	% LIMIT	ORGAN	% LIMIT	ORGAN	% LIMIT
LIVER	7.26%	THYROID	37.82%	THYROID	22.20%
TOTAL BODY	21.46%	TOTAL BODY	51.04%	TOTAL BODY	26.63%

Radwaste Treatment System:[2] Operable JJ Inoperable _____ (Init.) (CR 99-01075)

Tank pH: 7.2 JJ NPDES pH limit: ≥ 6.0 (CR 99-01699)

NOTE: DO NOT USE UNIT #1 CIRCULATING WATER PUMPS WITHOUT AN OFFICIAL LETTER FROM UNIT #1 OPERATIONS.

Release requires E&C Supervisor Approval if: (1) Any 31 day dose projection limit exceeds 90%, or (2) Any 10CFR50 Quarterly Limit exceeds 50% or (3) Any 10CFR50 Annual Limit exceeds 50%.

Prepared By: Jeff Jones

Release Approval
E&C Supervisor: N/A

ATTACHMENT 10.3
Page 2 of 2

LIQUID WASTE RELEASE PERMIT (BATCH RELEASES)

Release # 0100XX-L

PART II: RADIATION MONITOR INFORMATION[2] (OPS and E&C) (CR 98-00002)				
Reading	R-18		R-19 ( )	
Prior[4]	10.2 K	CPM		CPM
Source Check[5]	OPS INI. wjs		E&C INI.	
Setpoint Verified at[6]	1.0 E6	CPM		CPM
Status Board Updated	OPS INI. wjs		OPS INI.	
Monitor Reading During Release		CPM		CPM
Monitor Reading After Release		CPM		CPM

Approved for Release: _____ (CR 97-00059)
(Superintendent Shift Ops)

PART III: RELEASE INFORMATION[1] (OPS) (CR 98-00002)				
Number of Circulating Water Pumps in Service: _____ [Unit 1 or 2] (circle one)				
Release	Date	Time	Tank or SG Level	Integrator
Start				
Stop				
Difference		MIN.	GAL.	GAL.
FI-1064 (GPM)[3]		Actual Release Rate (GPM)		

1. N/A all blanks not applicable.
2. If quarterly % of limit is ≥ 13 % to the total body or ≥ 12% to any organ, see ODCM Specification 2.9.1 and 2.9.2.
3. If FI-1064 is out of service, estimate flow every 4 hours.
4. If Rad Monitor is out of service, refer to Section 7.0 of EMP-023.
5. Source check required prior to each batch release via R-18 or R-19 A, B, or C .
6. Log actual value which the setpoint was changed to.
7. If any limit is exceeded, make immediate notification to the Superintendent Shift Operations and the E&C Supervisor

Rad Monitor Information Completed By: _____
(R-18: Control OPS, or R-19: E&C Tech)

Release Information Completed By: _____ / _____
(Aux. OPS/Control OPS)

Reviewed By: _____
(Shift Superintendent)

POST RELEASE REVIEW

Release Posted By: _____ Date: _____

Sample Composited By: _____ Date: _____

_____ _____ _____ _____
Reviewed By Date E&C Supervisor Date

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

INITIAL CONDITIONS:

A release of Monitor Tank 'A' is scheduled to be performed using the Unit 2 Circulating Water System.

TWO (2) Unit 2 Circulating Water Pumps are running.

The Release Permit has been completed and submitted for Superintendent Shift Operations approval.

INITIATING CUES:

You are to review / approve the attached Release Permit.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM SRO-A.4

Perform an Emergency Action Level Classification and Recommend Protective Actions (EAL-1 / EPCLA-01)

CANDIDATE: _____

EXAMINER: _____

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task: Perform an Emergency Action Level Classification and Recommend Protective Actions (EAL-1 / EPCLA-01)

Alternate Path: NONE

Facility JPM #: NEW

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 declared due to three (3) fission product barriers jeopardized or breached AND PARs completed satisfactorily.

Preferred Evaluation Location: Simulator X In Plant _____

Preferred Evaluation Method: Perform X Simulate _____

References: Emergency Action Level Flowpath (EAL-1)
EPCLA-01, Emergency Control

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-1 and EAL-2 Flowpaths
EPCLA-01

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:

Several minutes ago, the crew was performing the actions of AOP-015, "Excessive Primary Plant Leakage." Letdown had been isolated and all charging pumps were operating at maximum speed when the CRSS ordered a manual reactor trip and safety injection due to lowering RCS pressure and Pressurizer level.

The following current plant conditions are noted:

- All ESF equipment is operating.
- RCS pressure has stablized at approximately 950 psig.
- Containment pressure has risen to approximately 8 psig and has appeared to stabilize.
- An Auxiliary Operator reports there appears to be outward air flow around one of the containment penetrations.
- FRP-C.1, "Response to Inadequate Core Cooling," is being implemented, with all CETs indicating between 750 °F and 770 °F.
- All SG levels are stable with AFW flow throttle to approximately 150 gpm per SG.
- The most recent RCS activity sample was 89 uCi/gm dose equivalent I-131.
- Core damage assessments are NOT yet available.
- Emergency dose projections are NOT yet available.

INITIATING CUES:

You are to classify this event in accordance with the Emergency Action Level flow paths.

START TIME: _____

STEP 1:	Locates proper procedure and required information.	
STANDARD:	Locates EAL-1 Flowpath	
NOTES:	***NOTE:*** ***1) CRITICAL steps are determined by those decision blocks which, if answered incorrectly, could cause an improper classification.*** ***2) AN EXAMINER KEY, IDENTIFYING THE SECTORS TO EVACUATE AND SHELTER, HAS BEEN INCLUDED WITH THE JPM.***	____ SAT
COMMENTS:		____ UNSAT

STEP 2:	Off Normal Condition Indicated or Observed	
STANDARD:	Determines entry into EOP Network to be an off-normal condition	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 3:	Valid Rad Monitor Alarm?	
STANDARD:	**<YES>** Determines R-11 and R-12 are both in alarm condition	
NOTES:	***CUE: PROVIDE CANDIDATE WITH ATTACHMENT 'A', RADIATION MONITORING PANEL INDICATIONS, WHEN CANDIDATE REQUESTS RADIATION MONITOR DATA.***	____ SAT
COMMENTS:		____ UNSAT
STEP 4:	R-9 Rad Monitor Greater Than 25K mRem/hr or Increased Greater Than 5K mRem/hr in 30 minutes?	
STANDARD:	**<NO>** Determines R-9 indicates approximately 13 mRem/hr	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 5:	R-11 and R-12 Rad Monitors Aligned to CV?	
STANDARD:	**<YES>** Determines R-11 and R-12 are aligned to CV	
NOTES:	***NOTE: Given in Attachment A.***	
		____ SAT
COMMENTS:		____ UNSAT
STEP 6:	R-11 Rad Monitor Greater Than 1M CPM?	
STANDARD:	**<NO>** Determines R-11 indicating 2E4 cpm and rising slowly	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 7:	R-12 Rad Monitor Greater Than 40K CPM?	
STANDARD:	**<NO>** Determines R-12 indicating 1.8E3 cpm and rising slowly	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 8:	RCS Activity I-131 Dose Equivalent Greater Than 300 uCi/gm?	
STANDARD:	**<NO>** Determines latest RCS activity to be 89 uCi/gm	
NOTES:	***NOTE: Given in initial conditions.***	
		____ SAT
COMMENTS:		____ UNSAT

STEP 9:	Monitor CSFST for Information Only	
STANDARD:	Directs CRSS to monitor CSFSTs	
NOTES:	***NOTE: Given conditions included that entry has already been made to FRP-C.1, so crew is already monitoring CSFSTs.***	____ SAT
COMMENTS:		____ UNSAT
STEP 10:	Reactor Shutdown or Valid Reactor Trip Signal Present?	**CRITICAL STEP**
STANDARD:	**<YES>** Based on plant conditions, determines that a reactor trip signal has occurred	
NOTES:	**CRITICAL SINCE INCORRECTLY RESPONDING TO THIS DECISION WOULD RESULT IN IDENTIFYING FUEL AS INTACT.**	____ SAT
COMMENTS:		____ UNSAT

STEP 11:	Core Exit T/Cs Greater Than 700 °F?	**CRITICAL STEP**
STANDARD:	**<YES>** Based on initial conditions, determines CETs are greater than 700 °F	
NOTES:	**CRITICAL SINCE INCORRECTLY RESPONDING TO THIS DECISION WOULD EVENTUALLY RESULT IN IDENTIFYING FUEL AS INTACT, ASSUMING REMAINING DECISIONS WERE RESPONDED TO CORRECTLY.**	
		____ SAT
COMMENTS:		____ UNSAT

STEP 12:	Indicate Fuel Jeopardized on FPB Status Board	
STANDARD:	Indicates that Fuel FPB is JEOPARDIZED on FPB Status Board	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 13:	RCS Leakage Greater Than Charging Capacity?	
STANDARD:	**<YES>** Determines that all charging pumps with letdown isolated could not maintain pressure or inventory in the RCS	
NOTES:	***NOTES:*** ***1) Given in initial conditions.*** ***2) Not considered to be CRITICAL decision since later determination that RCS leakage is greater than 50 gpm OR that CV pressure is greater than 2 psig would also lead to correct determination of RCS FPB even if this decision was made incorrectly.***	____ SAT
COMMENTS:		____ UNSAT

STEP 14:	Indicate Site Area Emergency on EAL Status Board	
STANDARD:	Indicates SAE on EAL Status Board	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 15:	Indicate RCS Breached on FPB Status Board	
STANDARD:	Indicates that RCS FPB is BREACHED on FPB Status Board	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 16:	Primary to Secondary Leakage Greater Than Tech Specs?	
STANDARD:	**<NO>** Determines that no indication exists that would support concluding that SG tube leakage has occurred	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT

STEP 17:	Phase A or CV Ventilation Isolation Initiated or Required?	
STANDARD:	**<YES>** Based on SI signal having occurred, determines that both a Phase A and CV Vent isolation has been initiated	
NOTES:	***NOTE: Not considered critical since next decision, regarding status of Fuel and RCS FPBs, would still provide required status of CV FPB, even if this decision is made incorrectly.***	____ SAT
COMMENTS:		____ UNSAT
STEP 18:	Pathway Exists From CV Atmosphere to Environment?	**CRITICAL STEP**
STANDARD:	**<YES>** Based on report from AO, determines that pathway from the containment to atmosphere does exist	
NOTES:	**CRITICAL SINCE INCORRECTLY RESPONDING TO THIS DECISION WOULD RESULT IN IDENTIFYING CV AS INTACT.** ***NOTE: Initial conditions identified air flow from around penetration area.***	____ SAT
COMMENTS:		____ UNSAT

STEP 19:	Indicate CV Breached on FPB Status Board	
STANDARD:	Indicates that CV FPB is BREACHED on FPB Status Board	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 20:	3 FPBs Breached or Jeopardized?	**CRITICAL STEP**
STANDARD:	**<YES>** Determines 2 FPBs are BREACHED (RCS and CV) and the third FPB is JEOPARDIZED	
NOTES:	**CRITICAL TO CORRECTLY DETERMINE THAT ALL 3 FPBs ARE BREACHED / JEOPARDIZED SINCE AN INCORRECT DECISION AT THIS POINT WOULD RESULT IN A SITE AREA EMERGENCY BEING DECLARED SINCE NO OTHER CONDITIONS FURTHER IN THE FLOWPATH WOULD WARRANT A GENERAL EMERGENCY.**	____ SAT
COMMENTS:		____ UNSAT

STEP 21:	Declare General Emergency	
STANDARD:	Declares a General Emergency	
NOTES:		
		____ SAT
COMMENTS:		____ UNSAT
STEP 22:	Go To EPCLA-01	
STANDARD:	Goes to EPCLA-01	
NOTES:	***CUE: IF CANDIDATE <u>DOES</u> DETERMINE EAL CLASSIFICATION TO BE A GENERAL EMERGENCY, DIRECT CANDIDATE TO NOW DETERMINE PROTECTIVE ACTION RECOMMENDATIONS BASED ON THIS EVENT.***	
	CONDITIONAL CUE: IF CANDIDATE <u>DOES</u> <u>NOT</u> DETERMINE EAL CLASSIFICATION TO BE A 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 23:	If a General Emergency has been declared, formulate a protective Action Recommendation (PAR) using the guidance in Attachments 8.1.5.1, Initial Protective Action Recommendation Flowchart, and Attachment 8.1.5.3, PAR Affected Zones Based on Wind Direction, to formulate the initial recommendation and zones to be evacuated based on wind direction (**Step 8.1.3.12.a of EPCLA-01**)	
STANDARD:	Refers to Attachment 8.1.5.1 and 8.1.5.3 to formulate initial recommendations	
NOTES:		____ SAT
COMMENTS:		____ UNSAT

STEP 24:	Evacuate 2 Mile Radius and 5 Miles Downwind	**CRITICAL STEP**
STANDARD:	Acquires wind direction and determines EVACUATION is required for Sectors A-0, A-1, B-1, and E-1	
NOTES:	**CRITICAL TO DETERMINE PROPER SECTORS FOR EVACUATION.** ***CUE: PROVIDE CANDIDATE WITH ATTACHMENT 'B', WIND DIRECTION AND SPEED, WHEN CANDIDATE REQUESTS INFORMATION.*** ***NOTE: Sectors determined by referencing Attachment 8.1.5.3 and identifying those sectors corresponding to SOUTHWEST wind direction. Note that Sectors A-2, B-2, and E-2 are also in the affected sectors due to wind direction, but are outside the 5-mile radius per Attachment 8.1.5.1 and only require sheltering.***	____ SAT
COMMENTS:		____ UNSAT

STEP 25:	Shelter Remaining Sectors	**CRITICAL STEP**
STANDARD:	Determines Sectors to be sheltered include A-2, B-2, and E-2	
NOTES:	**CRITICAL TO DETERMINE PROPER SECTORS FOR SHELTERING.** ***NOTE: Sectors determined by sheltering all affected Sectors within the 10-mile radius which were not evacuated.***	____ SAT
COMMENTS:		____ UNSAT
STEP 26:	Evaluate Dose Assessments Against PAGs to Determine Additional Sectors to Evacuate	
STANDARD:	Determines dose assessment not available for determination of additional evacuation	
NOTES:	***NOTE: Given in initial conditions.***	____ SAT
COMMENTS:		____ UNSAT
	END OF TASK	

STOP TIME: _____

EXAMINER KEY FOR JPM SRO A-4

ATTACHMENT 8.1.5.1
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INITIAL PROTECTIVE ACTION RECOMMENDATION FLOWCHART
PAR REFERENCE GUIDE AND DOCUMENTATION FORM

RULES FOR PROTECTIVE ACTION RECOMMENDATIONS

1. SHELTER ALL REMAINING SECTORS NOT EVACUATED.
2. A PROTECTIVE ACTION RECOMMENDATION MAY NOT BE REDUCED FROM THE INITIAL RECOMMENDATION FOR ANY SECTOR UNTIL THE RELEASE IS TERMINATED AND THE DECISION IS COORDINATED WITH THE STATE AND COUNTIES.
3. A PROTECTIVE ACTION REQUIRED FOR ANY PORTION OF A SECTOR REQUIRES THAT ACTION BE IMPLEMENTED FOR THE ENTIRE SECTOR.

RECOMMENDATION

PLACE A ✓ IN THE APPROPRIATE BLANK FOR EACH SECTOR.

2 MILE RADIUS			10 MILE RADIUS		
EVACUATE	SHELTER	SECTOR	EVACUATE	SHELTER	SECTOR
X		A-0		X	A-2
5 MILE RADIUS				X	B-2
X		A-1			C-2
X		B-1			D-2
		C-1		X	E-2
		D-1			
X		E-1			

RECOMMENDED BY / TIME: _____ / _____
RCD OR RCM

APPROVED BY / TIME: _____ / _____
SEC OR ERM

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 43 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 from 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
R-9	Letdown Line Area	13 mR/hr / Normal (Green)
R-11 (align to CV)	CV Air and Plant Vent - Part	2E4 cpm, rising slowly / Alarm (Red)
R-12 (align to CV)	CV Air and Plant Vent - Gas	1.8E3 cpm, rising slowly / Alarm (Red)

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

INITIAL CONDITIONS:

Several minutes ago, the crew was performing the actions of AOP-015, "Excessive Primary Plant Leakage." Letdown had been isolated and all charging pumps were operating at maximum speed when the CRSS ordered a manual reactor trip and safety injection due to lowering RCS pressure and Pressurizer level.

The following current plant conditions are noted:

- All ESF equipment is operating.
- RCS pressure has stablized at approximately 950 psig.
- Containment pressure has risen to approximately 8 psig and has appeared to stabilize.
- An Auxiliary Operator reports there appears to be outward air flow around one of the containment penetrations.
- FRP-C.1, "Response to Inadequate Core Cooling," is being implemented, with all CETs indicating between 750 °F and 770 °F.
- All SG levels are stable with AFW flow throttle to approximately 150 gpm per SG.
- The most recent RCS activity sample was 89 uCi/gm dose equivalent I-131.
- Core damage assessments are NOT yet available.
- Emergency dose projections are NOT yet available.

INITIATING CUES:

You are to classify this event in accordance with the Emergency Action Level flow paths.