Facility: ANO-2	Scenario No.: 1	Op-Test No.: 2003-1 Page 1

Examiners:		Operators:

Initial Conditions:

100% MOL, All ESF systems in standby. Green Train Maintenance Week. 'B' Vacuum pump tagged out for maintenance.

Turnover:

100%. 250 EFPD. 'B' Vacuum pump tagged out for maintenance. Green Train Maintenance Week. EOOS indicates 'Minimal Risk.'

Event No.	Malf. No.	Event Type*	Event Description
1	XRCCHAPCNT	I (CBOR)	Control Channel "A" Pressurizer Pressure fails HIGH.
2	XSPUPFAIL	C (CBOR)	Loss of Safety Parameter Display System (SPDS) Update
3	XFW2TE0361	I (CBOT)	Common MFP lube oil supply temperature transmitter, 2TE-0361, fails LOW (fails 2TIC-5283 closed).
4	RCP2P32BLOW RCP2P32BMID	R (CBOR) N (ALL)	RCP 2P32B Lower and Middle Seal failures; Requiring a plant shutdown.
5	RCP2P32BUPP	C (CBOR)	RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP.
6	RCSLOCATCB	M (ALL)	Loss of Coolant Accident after Reactor trip due to vapor seal leakage.
7	HPI2P89AFAL	C (CBOT)	'A' HPSI pump fails to auto start due to faulty ESF relay.
8	416_2A406	C (CBOT)	'B' HPSI pump fails to start due to breaker fault.

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

SCENARIO #1 NARRATIVE

Simulator session begins with the plant at 100% power and steady state. 'B' vacuum pump is tagged out for maintenance.

The in-service Pressurizer (PZR) control channel pressure instrument will fail high. Alarms on Pressurizer Control Channel 1 pressure HI and Pressure HI HI will come in. This will result in BOTH PZR spray valves opening, the backup heaters to deenergize, the proportional heaters to go to minimum fire and actual PZR pressure to drop. AOP 2203.028, PZR Systems Malfunctions, will be entered and actions directed by the CRS. The CBOR may take both PZR spray valves to manual and close them. The CBOR may take the Backup heaters to ON to raise PZR pressure. The CBOR will verify that the other pressure control channel is reading correctly and select the channel 2 for control using 2HS-4626. The CBOT will place SDBCS Master Controller in AUTO local and adjust setpoint to 1000 psia

About two minutes into scenario, the SPDS computer will fail to update. The CBOR will report that the SPDS is not updating. This will remain failed the rest of the scenario. Primarily the CBOR will be forced into using redundant indications since one of the SPDS CRT's is on 2C03 and the CBOR relies heavily on it for indications. The CBOT also will be forced to use redundant indications as one of the SPDS CRT is located on the upper part of 2C16. The CRS will notify maintenance and log the time SPDS is lost. This is a 1-hour reportable event if SPDS cannot be restored (10CFR50.72).

Five minutes into the scenario, 2TE0361 fails low. This will result in CCW isolation to the common MFP lube oil cooler. Temperature alarms will come in on supply temperature at 135°F. The CRS will refer to ACA2203.012C that will direct obtaining local lube oil temperatures from the AO. The CBOT will monitor MFP lube oil temperatures on 2TRS 0325 chart recorder located on 2C11. The CBOT will recognize that 2TIC-5283, MFP Lube Oil Temp. Controller on 2C04 has zero output due to the temperature feed failing low. The CBOT will take manual control of 2TIC-5283 to lower and control MFP lube oil temp using the PMS MFP screen and the AO to watch MFP lube oil temperature.

Approximately 15 minutes into the scenario, two seals on 'B' RCP will fail. Annunciator 2K11-G3, RCP Bleedoff flow HI/LO will alarm. The CBOT will verify using PMS and RCP chart recorder on 2C14 that the lower and middle seals have failed. The CRS will enter the RCP emergencies AOP, 2203.025 and direct the board operator actions. The crew will perform a power reduction such that the plant will be off line in one hour. The CBOR will borate the RCS and reduce turbine load to maintain Tave-Tref within 2°F. The CBOT will make preparations to remove secondary plant equipment out of service as power is reduced.

SCENARIO #1 NARRATIVE

When the lead examiner is ready, the third seal will fail on 'B' RCP. When the crew recognizes the failure the CRS will direct a manual Reactor trip and securing of 'B' RCP. The Crew will complete SPTA's when the reactor is tripped.
On the Reactor trip, the vapor seal on 'B' RCP will fail resulting in a 400 gpm LOCA ramped over 5 minutes. The crew will manually actuate SIAS and CCAS when pressure is observed to be trending towards the trip setpoint of 1650 psia. The CBOR will secure one RCP in each loop when RCS pressure reaches 1400 psia. When SIAS is manually actuated, the 'A' HPSI pump will fail to automatically start. The CBOT will recognize the 'A' HPSI pump not starting (annunciator will alarm) and manually start the pump (with direction from the CRS). Also when SIAS is manually actuated, the 'B' HPSI pump will fail due to a breaker fault (annunciator will alarm). The CBOT will place 'B' HPSI pump in PTL and start 'C' HPSI pump.

After SPTA's are complete, the CRS will diagnose a LOCA and enter the LOCA EOP 2202.003. The CRS will direct the CBOR to cooldown the RCS. The CBOR will cooldown the RCS using the SDBCS bypass valves to the condenser and plot and record the cooldown using standard attachments 1 and 8. When HPSI termination criteria is met, the crew will secure one HPSI pump and throttle the opposite loop HPSI injection MOV's to maintain PZR level. The scenario may be terminated at the lead examiner's discretion.

Simulator Instructions for Scenario 1

Reset to 100% power MOL IC.

Triggers T1, T3, T4, T5 set to false.

Conditional trigger T2 set to reactor trip.

Place Green train maintenance week sign in simulator.

Place Minimal Risk sign in simulator.

Align 'C' HPSI to Green Train and in PTL.

PZR Pressure control hand-switch 2HS-4626 in Channel A.

'B' Vacuum pump tagged out. Handswitch on 2C01 in PTL. Overide for Green light (2HS-0696-4) set to FALSE. Override for handswitch in PTL (2HS-0696) set to TRUE. Override for Seal Water Pump Green light (2CI-P31B) FALSE.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	XRCCHAPCNT Trigger=T1	2500	Control Channel "A" Pressurizer Pressure fails HIGH.
2	XSPUPFAIL Trigger = T1	Insert 2 min TD	Loss of Safety Parameter Display System (SPDS) Update
3	XFW2TE0361 Trigger = T3	0	Common MFP Lube Oil Supply Temperature Transmitter, 2TE-0361, fails LOW (fails 2TIC-5283 closed).
4	RCP2P32BLOW RCP2P32BMID Trigger = T4	100 3 min TD	RCP 2P32B Lower and Middle Seal failures: Requiring a plant shutdown.
5	RCP2P32BUPP Trigger = T5	100	RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP.
6	RCSLOCATCB Trigger = T2	400 gpm 5 min Ramp	Loss of Coolant Accident after Reactor trip due to vapor seal leakage.
7	HPI2P89AFAL	True	'A' HPSI pump fails to auto start due to faulty ESF relay.
8	416_2A406 2HS-5079-2_w	Locked OPEN True	'B' HPSI pump fails due to breaker fault.

Op-Test No.: 1 Scenario No.: 1 Event No.: 1 Page 5 of 16

Event Description: Control Channel “A” Pressurizer Pressure fails HIGH..

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce annunciator 2K10-E6 Pressurizer Pressure Control Channel 1 Pressure HI / LO. Report both Pressurizer spray valves open and actual pressurizer pressure dropping.
	CRS	Refer to PZR Systems Malfunctions AOP 2203.028 and direct board operators actions. Refer to **TS 3.2.8** if pressure not 2025 to 2275 psia.
	CBOR	Compare channels and determine Channel 1 failed low. Control backup heaters manually to maintain pressure > 2100 psia. Place PZR Pressure Channel Select switch (2HS-4626) to channel 2. Verify PZR spray valves closed. Restore backup heaters to automatic control.
	CBOT	Place SDBCS Master controller in AUTO local and adjust setpoint to 1000 psia.

Termination Criteria: PZR Pressure Control selected to Channel 2 in auto control or at examiner's discretion.

Op-Test No.: 1 Scenario No.: 1 Event No.: 2 Page 6 of 16

Event Description: Loss of the Safety Parameter Display (SPDS) Update.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce the loss of the SPDS computer to the CRS
	CRS	Logs the failure of the SPDS.
	CRS	Direct the CBOR/CBOT to use the other means of monitoring plant parameters.
	CBOR CBOT	Monitors the plant and provides information from other panel indications.
	CRS	Inform SM: ♦ To Contact maintenance (CSG), ♦ That it is a 1-hour reportable occurrence if it cannot be restarted within 1 hour. (10CFR50.72(b) (1) (v) and ANO procedure 2105.014, SPDS.

Termination criteria: SPDS is logged out of service, maintenance is contacted (CSG) and SM informed of loss of SPDS or at the examiner's discretion (NOTE: this condition will remain throughout the rest of the scenario).

Op-Test No.: 1 Scenario No.: 3 Event No.: 3 Page 7 of 16 Event Description: Common MFP Lube Oil Supply Temperature Transmitter, 2TE-0361, fails LOW (fails 2TIC-5283 closed).		
Time	Position	Applicant's Actions or Behavior
	CBOT	Announce annunciators: 2K03-E8/E11 Turbine bearing Metal Temperature High. 2K03-D8/D11 Turbine Bearing Oil Temperature High.
	CRS	Implement Annunciator Corrective Action AOP 2203.012C.
NOTE: When contacted by control room as AO, report that local MFP bearing temperatures to 'A' MFP (2TI2611A) and 'B' MFP (2TI2611B) are trending up are reading the value obtained from instructor's area qume (IEW CCT2E22).		
	CBOT	Report that 2TE-0374('A' MFP) and 2TE-0371('B' MFP) are > 135°F and trending up. Also Report that bearing metal temperatures are also trending up.
	CBOT	Report that MFP Lube Oil TEMP Controller (2TIC-5283) has zero output. Take manual control of controller and control MFP lube oil temperature < 135°F.
	CBOT	Report that PMS point T0361 has failed low. (P&ID M-2216 sh2, E7 & M-2234 sh 1, G-2)
Termination Criteria: When MFP Lube Oil controller is in manual and controlling MFP lube oil temperature or at examiner's discretion.		

Op-Test No.: 1 Scenario No.: 1 Event No.: 4 Page 8 of 16 Event Description: RCP 2P32B Lower and Middle Seal failures requiring a plant shutdown.		
Time	Position	Applicant's Actions or Behavior
	CBOR	Announce alarm 2K11-G3 RCP BLEEDOFF FLOW HI/LO. Report lower seal failure on “B” RCP.
	CRS	Refer to **RCP Emergencies AOP 2203.025** and direct board operator actions.
	CBOR CBOT	Monitor RCP seals for further degradation. Report middle seal failure on “B” RCP.
	CRS	Setup contingency to trip reactor and RCP if upper seal fails. **Refer to OP 2102.004 Power Operations** and commence a plant shutdown. Notify NLOs, Management, Dispatcher, Chemist, and Nuclear Eng.
	CBOR	Commence boration ~ 20 gpm. Maintain ASI –0.20 to +0.20 with Group 6 or P CEAs.
	CBOT	Reduce main turbine load to maintain Tave within 2° F of Tref.
Termination criteria: Plant shutdown in progress or at examiner’s discretion.		

Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 9 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce Upper Seal failure on "B" RCP (third seal). Manually trip reactor. Secure 'B' RCP and place associated spray valve in MANUAL and closed.
	CRS	**Implement Standard Post Trip Actions, 2202.001** Notify operators to monitor Exhibit 7 CBO Reactor Trip Checklist, track safety functions, and direct board operator actions.
	CBOR	**Check reactivity control:** Reactor power decreasing. All CEAs inserted.
	CBOT	**Check maintenance of vital auxiliaries:** Main turbine tripped. Generator output and exciter breakers open. Both 4160v and 6900 v non-vital buses energized. Both 4160v and 480v vital AC bus energized. Both 125v vital DC bus energized.
	CBOR	**Check inventory control:** PZR level 10 to 80%. Trend from setpoint. RCS MTS > 30°F

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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 10 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
	CBOR	**Check RCS pressure control:** RCS pressure 1800 to 2250 psia. Trend from setpoint Verify SIAS when pressure less than 1650 psia.
CT		Trip one RCP in each loop when pressure less than 1400 psia. (may not be done until LOCA procedure)
		Place spray valve for secured RCP in manual closed. **Secure ALL RCPs if NPSH requirements violated.**
	CBOR	**Check core heat removal by forced circulation:** RCP status Loop Δ T less than 10° F. RCS MTS 30° F or greater. Component cooling water aligned to RCPs. Service water not aligned to CCW.
	CBOT	**Restore SW to CCW using Exhibit 5.**
	CBOT or CBOR	**Check RCS Heat Removal:** Report SG levels. MFW in RTO (Reactor Trip Override). Report feedwater line intact. Report SG pressures.
	CBOR	Report RCS Tc 540 to 555°F.

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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 11 of 16 Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.		
Time	Position	Applicant's Actions or Behavior
	CBOR	**Check CNTMT parameters:** Temperature less than 140° F and trending up. Pressure less than 16 psia and trending up. CNTMT Spray Pumps secured. Status of radiation alarms: CAMS (2K10-B6) In alarm Area radiation (2K11-B10) in alarm. Process liquid (2K11-C10) Report trends on radiation monitors increasing. Status of SEC SYS RADIATION HI (2K11-A10) Report trends on secondary system radiation monitors stable.
	CRS	Notify SM to perform the following: SE report to control room. Announce reactor trip on plant page. Refer to Tech Specs and EALs. **Tech Specs 3.0.3, 3.6.3.1 and in Alert Emergency Class**
	CRS	Direct CBOs to acknowledge all control room annunciators and announce all significant alarms. **Diagnose Loss of Coolant Accident EOP 2202.003.**
	CRS	Implement Loss of Coolant ORP, open place keeping page, and direct board operators' actions.
	CRS	Perform crew brief and review floating steps.
	CRS	Contact chemistry to sample SG for activity
Continue to next page		

Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 12 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
	CBOR	Verify SIAS and CCAS actuated on PPS inserts.
	CBOT	Verify CCW aligned to RCPs **(Floating Step)**
	CBOR	Check RCS pressure greater than 1400 psia. **(Floating Step)**
CT		• Secure one RCP in loop 2 (if not done in SPTA's).
		• Secure ALL RCPs if MTS <30°F.
	CBOT	Restore ESF/Non-ESF systems: **(Floating step)**
		• Verify at least one SW pump running in each loop.
		• Verify DG SW outlet valves open.
		• Verify SW suction aligned to Lake.
		• Check 4160v Non-vital buses energized from offsite power.
		• Check 4160v Vital buses energized from offsite power.
		• Start SW pumps as needed to maintain header pressure.
		• Restore SW to ACW per Exhibit 5.
		• Maintain SW header greater than 85 psig.

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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 13 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
CT	CBOT	Verify HPSI flow to RCS: Report A HPSI pump failure to auto start and manually start. Report B HPSI Pump breaker trip. Manually start 'C' HPSI pump (Only one HPSI pump is required to be started).
	CBOT	Verify all CNTMT Cooling Fans running in emergency mode.
	CBOT	Verify SG levels greater than 22.2%. **(Floating Step)**
	CBOT	Align Feedwater: • Check EFW pump 2P7B running. • Secure EFW pump 2P7A. • Verify AFW pump 2P75 secured. • Secure running MFW pump and close ALL FW blocks.
	CBOT	Verify CCW surge tank constant and CCW radiation monitor trend stable.
	CBOR	Check LOCA is limited to containment. • Containment sump level going up. • Containment temperature, humidity and pressure are going up. • Auxiliary Building radiation levels steady. • Auxiliary building sump is less than 53%. • Waste tanks 2T20 A/B levels are steady.

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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 14 of 16 Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.		
Time	Position	Applicant's Actions or Behavior
	CBOR	Check CNTMT Isolation parameters. **(Floating Step)** CNTMT pressure exceeds 18.3 psia. CNTMT RADIATION HI alarm 2K10-A6 in alarm. Actuate CIAS and commence Attachment 5. Verify ONE Penetration Room Ventilation Fan Running.
	CBOR	Check CNTMT pressure trend not exceeded 23.3 psia. **(Floating Step)** • Verify CSAS actuated on PPS inserts. • Stop ALL RCPs, place spray valves in manual closed. • Verify spray pumps running with greater than 1875 gpm each.
	CBOT	Terminate CNTMT Spray if conditions met.
	CBOT	Start both Hydrogen Analyzers per 2104.044.
	CBOT	Verify All available miscellaneous CNTMT ventilation running: • CNTMT Bldg. Recirc fans (2VSF-31A-D) • Reactor Cavity fans (2VSF-34A&B) • Three CEDM Shroud Cooling fans (2VSF-35s)
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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 15 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
	CBOT	Check ALL AC and vital DC buses energized. **(Floating Step)**
	CBOR	Check IA pressure greater than 65 psig. **(Floating Step)**
	CRS	Check **LOCA not isolated and proceed to Section 3**
	CBOR	Perform controlled cooldown to 275°F. **(Float Step)** • Reset low PZR pressure and low SG pressure setpoints. • Record and plot cooldown on Attachments 1 and 8. Initiate cooldown using SDBCS bypass valves.
	CBOT	Check Condensate pump in service.
	CBOT	Maintain SG levels 45 to 90%. Check CST level greater than 82%
	CBOR	Restore PZR level. **(Floating Step)** Maintain 29% to 80%
	CBOR	Verify Natural Circulation if RCPs secured: • Loop ΔT less than 50° F. • Thot and Tcold constant or lowering. • RCS MTS 30° F or greater. • ΔT between Thot and average CETs less than 10° F.

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Op-Test No.: 1 Scenario No.: 1 Event No. 5, 6 , 7 & 8 Page 16 of 16

Event Description: RCP 2P32B Upper Seal Failure requiring manual Reactor trip and securing of 'B' RCP; Loss of Coolant Accident after Reactor trip due to vapor seal leakage; 'A' HPSI pump fails to auto start due to faulty ESF relay; 'B' HPSI pump fails due to breaker fault.

Time	Position	Applicant's Actions or Behavior
	CRS	Check that RCP restart criteria is NOT met.
	CBOR	Check RCS void free: • PZR level stable using aux spray. • RVLMS LVL 01 indicates WET. • Upper head thermocouples indicate subcooled.
	CBOR	Maintain RCS P-T limits and RCP NPSH per Attachment 1. Check uncontrolled RCS cooldown below 500° F Tcold has not occurred.
CT	CBOT CBOR	Override HPSI when termination criteria met: **(Floating Step)** • RCS MTS 30° F or greater. • PZR level greater than 29% and controlled. • RVLMS LVL 03 or higher indicates WET. • At least one SG available – Level 10 to 90% with FW available OR level being restored with FW flow greater than 485 gpm. Throttle HPSI flow OR place HPSI pump in PTL as needed to control RCS pressure, inventory, and heat removal.

Termination criteria: Cooldown in progress with HPSI throttled or at examiner's discretion.

Facility: ANO-2	Scenario No.: 2 (New)	Op-Test No.: 2003-1 Page 1 of 13

Examiners:		Operators:

Initial Conditions:
70% and decreasing. Down Power commenced from 100% due to Rod Drop (CEA # 46). Azimuthal Tilt in Alarm and continuing power decrease.

Turnover:
Continue power decrease to 50% due to Azimuthal Tilt Alarm. Azimuthal Tilt has not cleared with the Power Reduction. CEA 46 dropped to bottom ~ 80 minutes ago and has been re-aligned with other CEA's in Group 6. Entered AOP 2203.003, CEA Malfunctions. Green Train Maintenance week. EOOS indicates 'Minimal Risk.'

Event No.	Malf. No.	Event Type*	Event Description
1 CUED	XSG2LT11311	I (CBOT)	Steam Generator "B" Safety Channel Level Fails LOW.
2 T=0	POWER REDUCTION	N (ALL) R (CBOR)	Continue Power REDUCTION
3 T+10 From T1	XCVLDNHXOU	I (CBOR)	Letdown Heat Exchanger Outlet Temperature Transmitter fails LOW
4 T=0	CEA48STUCK Value = 80%	C(CBOR)	Degraded Rod Motion for CEA 48 on Controlling CEA Bank. This requires individual CEA adjustment to align the CEA with the CEA bank.
5 CUED	EHLEAK (NEW)	M(ALL)	Leak in Electro Hydraulic System resulting in Loss of EH Pressure to Main Turbine and MFPs resulting in Manual/Automatic Reactor Trip.
6 RX TRIP	MS1002 (Set to 0#)	M (ALL)	Main Steam Safety Valve OPENS and Fails to CLOSE on "A" Steam Generator resulting in an ESD outside Containment
7 EFAS	ESF1025 2CV10382_A	C (CBOT)	'B' EFW isolation valves to 'A' SG fail to close, one automatically and one with valve failure. This results in continued EFW Feed to Affected Steam Generator.

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

SCENARIO #2 NARRATIVE

Simulator session begins with the plant at 70% power and a power reduction in progress. Annunciator 2K10-B2, TECH SPEC AZ TILT EXCEEDED and 2K10-C2, CPC AZ TILT EXCEEDED are in alarm. Direction from Reactor Engineering has been given to continue reducing power to less than 50% in the next 30 minutes (40 minutes is the Tech Spec required time). The crew will enter OP 2102.004, Power Operations procedure, step 11.16, Power Reduction. The CBOR will start a power reduction by RCS boration and lowering turbine load on the turbine load potentiometer to maintain Tave-Tref within 2°F.

During the down power,Axial Shape Index (ASI) will become more negative; to maintain ASI within .01 of Equilibrium Shape Index (ESI), Group 6 CEA's will need to be inserted. As Group 6 CEAs are inserted, CEA 48 will lag behind the other four CEA's in the group. Annunciators 2K04-J5 CEAC #1 DEVIATION and 2K04-J6, CEAC#2 Deviation (5") may alarm. PMS CEA Annunciator 2K10-D1, CEA Minor Deviation (3") or 2K10-C1, CEA Major Deviation (6") may also alarm. Manual Individual CEDMCS operation will be needed to align CEA 48 with the rest of the group.

When Reactivity manipulation completed and on lead examiner's cue, 2LT-1131-1, safety channel for 'B' Steam Generator (SG) Level, will fail low. This will trip one of the four PPS trip channels for low SG level trip. Alarms for RPS Channel Trip/Pre-trip and Channel 'A' Operator Insert (2C03) trip and pre-trip lights will be lit. The CRS will refer to the ACA 2203.012D and Tech Specs 3.3.1.1, 3.3.2.1 and 3.3.3.5 for guidance. The CBOT will place Channel 'A' PPS in bypass for Point 8, LOW SG B Lvl, Point 10, HI SG B Lvl, and Point 20, SG B ?P for maintenance and trouble shooting. The crew will have one hour to place these points in bypass before exceeding the Tech Spec LCO.

Approximately 10 minutes after SG Level transmitter fails low, the Letdown Heat Exchanger temperature transmitter, 2TIC-4815, fails low. This will cause the temperature controller to close and actual Letdown temperature to go up. With no operator action, the Letdown Radiation Monitor will be isolated, the Letdown Demineralizer will be bypassed and the VCT temperature will rise. Annunciator 2K11-C1, Letdown HX 2E29 Outlet Temp Hi will alarm. CRS will refer to ACA for 2K11-C1 and direct actions. CBOR will evaluate 2HIC-4815 and report that demand out of HIC is zero and temperature indicated is zero. CBOR or CBOT will look at PMS computer point T4805 and report that letdown temperature is above alarm set point. CBOR will place 2HIC-4815 in manual and control CCW flow from the Letdown Heat Exchanger to maintain letdown temperature less than 140°F. CRS will contact the WCO and ask flow on 2FIS-5261, CCW flow out of Letdown Heat Exchanger. If letdown temperature exceeded 145°F, letdown flow through the letdown radiation monitor must be manually restored.

SCENARIO #2 NARRATIVE (Continued)

When cued by the lead examiner, an EH leak will start down stream of isolation valve 2EH-1A (on EH Pump Skid) on the common header. EH pressure will degrade to ~1300psig over the next 3 minutes. Annunciator 2K02-A9, LOW EH Pressure, will alarm and the standby EH pump will automatically start. EH pressure will rise and then lower again as the leak worsens. Annunciator 2K02-C10, EH Tank Low Level will alarm about 5 minutes after the start of the malfunction. The Main Turbine Generator will automatically trip at 1100 psig EH pressure. The Main Feed Pumps will automatically trip at 400 psig EH pressure. The crew will secure the EH pumps and the CRS will enter SPTA's.

Post reactor trip the Main Steam Safety Valve (2PSV-1002) on 'A' SG will fail open resulting in an Excess Steam Demand (ESD) outside containment. Also, post EFAS, Emergency Feed Actuation Signal, 2CV-1038-2, 'B' EFW Pump to 'A' SG will mechanically fail to close and 2CV-1025-1, 'B' EFW Pump to 'A' SG will fail to close due to a stuck relay. This will result in severe overcooling of the RCS, if not corrected. The CBOT will override 2CV-1025-1 and close.

Simulator Instructions for Scenario 2

Reset simulator to MOL 70% power IC normal system lineup.
Group 6 is inserted for ASI control.
Markup OP 2102.004, Power Operations up to step 11.16 for power reduction.
Place Green train maintenance week sign in simulator.
2K10-B2, Tech Spec AZ Tilt Exceeded alarm in.
2K10-C2, CPC AZ Tilt Exceeded alarm in.
Triggers T1, T3, and T4 are set to False.
Conditional Trigger T2 is set to Reactor trip.
Conditional Trigger T5 is set to EFAS-1.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	XSG2LT11311 Trigger T1	0	Steam Generator “B” Safety Channel Level Fails LOW.
2	POWER REDUCTION		Continue Power REDUCTION
3	XCVLDNHXOU Trigger T3	50°F	Letdown Heat Exchanger Outlet Temperature Transmitter fails LOW
4	CEA48STUCK	80%	Degraded Rod Motion for CEA 48 on Controlling CEA Bank. This requires individual CEA adjustment to align the CEA with the CEA bank.
5	EHLEAK Trigger T4	TRUE	Leak in Electro Hydraulic System resulting in Loss of EH Pressure to Main Turbine and MFPs resulting in Manual/Automatic Reactor Trip.
6	MS1002 Trigger T2	0 Ramp = 20 min.	Main Steam Safety Valve OPENS and Fails to CLOSE on “A” Steam Generator resulting in an ESD outside Containment
7	ESF1025 2CV10382_A 2HS-1038-2_R Trigger T5	TRUE 1.0 FALSE TD 20 sec.	‘B’ EFW isolation valves to ‘A’ SG fail to close. 2CV-1025-1 fails to automatically CLOSE. 2CV-1038-2 fails to CLOSE due to valve failure. This results in continued EFW Feed to AFFECTED Steam Generator.

Op-Test No.: 1 Scenario No.: 2 Event No.: 1 Page 5 of 15

Event Description: Steam Generator "B" Safety Channel Level Fails LOW.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce annunciators: 2K04-A4, CH A RPS/ESF/PRETRIP/TRIP 2K04-B3, PPS Channel TRIP 2K12-K7, DEFAS Trouble
	CRS	Implement Annunciator Corrective Action AOP 2203.012D.
	CBOR	Report B SG level low pretrip/trip on 'A' PPS insert.
	CBOT	Compare all four channels and report 2LI-1131-1 indicates zero.
	CRS	Inform SM to refer to Tech Spec **3.3.1.1 and 3.3.2.1** and TRM **3.3.1.1.**
	CBOT	Place the following points in bypass on PPS Channel A: LOW SG B Lvl (Point 8) HI SG B Lvl (Point 10) SG B ΔP (Point 20)
	CBOR	Verify annunciator 2K04-C3, PPS CHANNEL BYPASSED alarms. Verify correct channels in bypass.
	CRS	Contact Maintenance/Work Week Manager.

Termination criteria: Affected points are placed in bypass or at examiner's discretion.

Op-Test No.: 1 Scenario No.: 2 Event No.: 2 Page 6 of 13

Event Description: Continue Power REDUCTION

Time	Position	Applicant's Actions or Behavior
	ALL	Crew will conduct brief for power decrease.
	CRS	Implement normal operating procedure 2102.004, Power Operations, Section 11.0. (Step11.16) Direct CBOR to borate to lower RCS temperature and adjust turbine load using load set potentiometer.
	CBOR	Commence RCS boration using OP 2104.003, Chemical Addition, Exhibit 3, Normal Boration At Power. Verify Boric Acid Makeup Controller in Auto at desired flow rate. Verify selected Boric Acid Pump in Normal-After-Stop. Verify Mode Selector Switch (2HS-4928) in BORATE. Verify 2CV-4830, Charging Pump Suction from Boric Acid, opens. Verify selected Boric Acid Pump running. Open associated Boric Acid Pump Recirc valve. Depress red push button on Boric Acid Makeup Batch Controller, 2FIQS-4926 and verify it is set for proper quantity. Verify 2FIC-4926 indicates proper flow rate. Monitor Tave and ASI. Obtain PEER check.
	CBOR	Adjust turbine load to maintain reference temperature and RCS average temperature within two degrees. Obtain PEER check.
	CBOR	Maintain ASI within 0.05 of power dependant ESI by inserting CEA's. Obtain PEER check and CRS permission to insert CEA's.

Termination criteria: Reactivity manipulation observed or at examiner's discretion.

Op-Test No.: 1 Scenario No.: 2 Event No.: 3 Page 7 of 11

Event Description: Letdown Heat Exchanger Outlet Temperature Transmitter fails LOW.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce Annunciator 2K12-C1, Letdown HX 2E29 Outlet Temp HI Verify temperature 2TIS-4815 is reading zero.
	CRS	Refer to ACA for 2K12-C1 and direct Board Operator actions.
	CBOR or CBOT	Verify Computer point T4805 and 2C09 TIS-4805 are reading greater than 140°F.
	CBOR	Verify normal letdown flow.
NOTE: When contacted as WCO, Report CCW flow rate based on approximate demand of 2TIC 4815. (Until manual control is initiated the flow rate is zero, the maximum flow rate is 1200 gpm.)		
	CRS	Contact WCO to verify CCW flow through Letdown Heat Exchanger using 2FIS-5261.
	CBOT	Report CCW Loop II temperature from 2C14.
	CBOR	Report that 2TIC-4815 is not controlling CCW flow in Automatic and take manual control of 2TIC-4815 and raise CCW flow through the Letdown Heat Exchanger to maintain Letdown temperature less than 140°F.
	CBOR	If Letdown temperature went above 145°F, then verify: • That the Letdown To Ion Exchanger valve, 2CV-4803, is in bypass • That the Letdown To Radmonitor valve, 2CV-4804, is closed.
	CBOR	When Letdown temperature drops below 140°F, then verify: • That the Letdown To Ion Exchanger valve, 2CV-4803, is NOT in bypass • Take the Letdown to Radmonitor valve, 2CV-4804, closed then open.
	CRS	Contact Maintenance / Work Week Manager.
Termination criteria: Letdown Heat Exchanger temperature controller, 2TIC-4815 is in manual and controlling Letdown temperature less than 140°F.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 4 Page 8 of 13

Event Description: Degraded Rod Motion for CEA 48 on Controlling CEA Bank.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce CEA 48 position indication deviating from rest of bank: • CEAC 1 or 2 indication • Announce Annunciator 2K04-J5, CEAC #1 Deviation and 2K04-J6, CEAC#2 Deviation alarms. Report 5" deviation. • Announce PMS CEA Annunciator 2K10-D1, CEA Minor Deviation. Report 3" deviation. • Announce Annunciator 2K10-C1, CEA Major Deviation alarm. Report 6" deviation.
	CRS	Direct Manual Individual CEDMCS operation to align CEA 48 with the rest of the group.
	CBOR	Align CEA 48 with rest of group by Manual Individual operation of CEDMCS and insert CEA 48 until it is aligned with the other four CEA's in Group 6. Obtain PEER Check.

NOTE: This evolution may occur more than once during the scenario. It is dependant on the magnitude of power reduction.

Termination Criteria: Event may be terminated when CEA 48 is aligned with the rest of the CEA's in Group 6 or at the discretion of the lead examiner.

Op-Test No.: 1 Scenario No.: 2 Event No.: 5 Page 9 of 13

Event Description: Leak in Electro Hydraulic System resulting in Loss of EH Pressure to Main Turbine and MFPs resulting in Manual/Automatic Reactor Trip.

Time	Position	Applicant's Actions or Behavior
	CBOT	Report Annunciators 2K02-A9, EH Header Press LO and 2K02-B9, EH Pump 2P14A/B Auto Start are in alarm and report that Standby EH Pump 2P14B automatically started.
	CRS	Refer to ACA for 2K02-A9 and direct actions.
	CBOT	Report EH pressure is less than 1300 psig and lowering.
NOTE: When contacted by CRS, report that EH fluid is spraying into EH pit area from a break on the common EH discharge header down stream of isolation valve 2EH-1A and is a large leak.		
	CRS	Direct AO to investigate EH system.
	CBOT	Report Annunciator 2K02-C10, EH Tank 2T38 Level Hi/LO is in alarm.
	CRS	Refer to ACA for Annunciator 2K02-C10, EH Tank 2T38 Level Hi/LO and direct actions.
	CBOT	Monitor EH pressure and report that pressure is approaching Main Turbine Generator (MTG) trip set point and recommend manually tripping the plant.
	CBOT	Report that the MTG is tripped.
	CRS	Direct CBOR to manual trip the reactor.
	CBOR	Manually trip the reactor.
	CBOT	Place both EH pumps in PTL. Manually trip the MFP's or report that they have tripped on low EH pressure.
Termination Criteria: Event may be terminated when the reactor is tripped.		

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 and 7 Page 10 of 13

Event Description: On reactor trip one MSSV on 'A' SG, 2PSV-1002, will stick open. On EFAS actuation, the 'B' EFW isolation valves to 'A' SG, 2CV-1038-2 and 2CV-1025-1 will not close. Implement SPTA's and diagnose event.

Time	Position	Applicant's Actions or Behavior
	CREW	Announce reactor trip.
	CRS	**Implement 2202.001, Standard Post Trip Actions,** track safety functions, and direct board operator actions.
	CRS	Direct crew to use Exhibit 7, CBO Reactor Trip Checklist, track safety functions, and that the CRS has control of annunciator horn during moment of silence.
	CRS	Directs crew to take control of annunciator horns and implement SPTA's.
	CBOR	**Check reactivity control:** Report reactor power lowering. Report all CEA's are inserted.
	CBOT	**Check maintenance of vital auxiliaries:** Report main turbine tripped. Report generator output and exciter breakers open. Report both 4160vac and 6900vac non-vital buses energized form S/U #3. Report both 4160v and 480v vital AC bus energized from S/U #3. Report both 125v vital DC bus energized.
	CBOR	**Check inventory control:** Report PZR level 10 to 80%. Report PZR level NOT trending to setpoint. Report RCS MTS greater than 30 °F

Event 6&7 Continued.

Op-Test No.: 1 Scenario No.: 1 Event No.: 6 & 7 Page 11 of 13

Event Description: On reactor trip one MSSV on 'A' SG, 2PSV-1002, will stick open. On EFAS actuation, the 'B' EFW isolation valves to 'A' SG, 2CV-1038-2 and 2CV-1025-1 will not close. Implement SPTA's and diagnose and mitigate event.

Time	Position	Applicant's Actions or Behavior
	CBOR	**Check RCS pressure control:** Report RCS pressure 1800 to 2250 psia. May be lower than 1800 due to the RCS cooldown.
	CBOR	**Check core heat removal by forced circulation:** Report RCP's are running. Report CCW is aligned to RCP's. Report SW is aligned to CCW.
	CBOT	**Check RCS Heat Removal:** Report SG levels are lowering. Report all condensate pumps are secured. Report both MFW pumps are secured. Manually actuate EFAS, if not already actuated. Report that a SG safety valve is open and depressurizing the SG. **Manually actuate MSIS or announce that MSIS has been automatically actuated.** CRS can direct the CBOT to setup to maintain post SG lowdown RCS temperature using upstream ADV on 'B' SG.
	CBOR	Report RCS Tc 540 to 555°F and slowly lowering.
CT	CBOT	Close 2CV-1025-1 by overriding EFAS actuation or secure 2P7B, Motor Driven EFWP to secure feeding the AFFECTED SG.

Event 6&7 Continued.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 & 7 Page 12 of 13

Event Description: On reactor trip, one MSSV on 'A' SG, 2PSV-1002, will stick open. On EFAS actuation, the 'B' EFW isolation valves to 'A' SG, 2CV-1038-2 and 2CV-1025-1 will not close. Implement SPTA's and diagnose event.

Time	Position	Applicant's Actions or Behavior
	CBOR	**Check CNTMT parameters:** Report temperature less than 140° F. Report pressure less than 16 psia. Report containment spray pumps secured. Report status of radiation alarms: CAMS (2K10-B6) not in alarm Area radiation (2K11-B10) not in alarm Process liquid (2K11-C10) not in alarm Report stable trends on radiation monitors. Report SEC SYS RADIATION HI (2K11-A10) not in alarm. Report stable trends on secondary system radiation monitors.
	CRS	Notify SE to report to control room. Announce reactor trip on plant page. Notify SM to refer to Tech Specs and EALs. **(3.7.1.2 EFW valve failure and NUE – 3.1, Uncontrolled depressurization of secondary that results in MSIS actuation)**
	CRS	Direct CBOs to acknowledge all control room annunciators and announce all significant alarms. Notify crew of status of Safety functions. Diagnose EXCESS STEAM DEMAND event on 'A' SG. Conduct crew brief.

Event 6 & 7 Continued.

Op-Test No.: 1 Scenario No.: 2 Event No.: 6 & 7 Page 13 of 13

Event Description: On reactor trip, one MSSV on 'A' SG, 2PSV-1002, will stick open. On EFAS actuation, the 'B' EFW isolation valves to 'A' SG, 2CV-1038-2 and 2CV-1025-1 will not close. Implement SPTA's and diagnose event.

Time	Position	Applicant's Actions or Behavior
	CRS	Implement EXCESS STEAM DEMAND Event EOP 2202.006. Direct board operators in performing the below actions.
	CBOR	Verify one RCP in each loop if RCS pressure drops less than 1400 psia and associated spray valve in manual and closed.
CT	CBOT	Maintain Post SG Blowdown RCS temperature and pressure less than 200°F margin to saturation by steaming the 'B' SG using the Upstream Atmospheric Dump Valve.
CT	CBOR	Maintain Post SG Blowdown RCS temperature and pressure less than 200°F margin to saturation by controlling RCS pressure using Normal Spray or Auxiliary Spray.
	CBOR CBOT	Maintain PZR level by overriding HPSI.

Event Termination: RCS temperature is maintained using Upstream ADV on 'B' SG and RCS pressure is maintained using Normal or Auxiliary Spray or at the discretion of the lead examiner.

Facility: ANO-2	Scenario No.: 3	Op-Test No.: 2003-1 Page 1 of 12
Examiners:		Operators:

Initial Conditions:

100% MOL; Thunderstorm Watch for Pope and Conway counties.

Turnover::

National Weather service has issued a Thunderstorm Watch for Pope and Conway Counties until 8:00 pm today. AOP 2203.008, Natural Emergencies, Section 3, Tornado, steps 1 and 2 have been completed. Call 890-4987 for weather updates.

Event No.	Malf. No.	Event Type*	Event Description
1	500BRK5106 500BRK5110	N (ALL) R (CBOR)	Mabelvale 500KV line failure. Site must reduce load to 1250MW total net generation. Unit One will reduce turbine load to 350MW. Unit 2 will reduce turbine load to 900 MW in 15 minutes.
2 CUED	XRCCHAPLVL	I (CBOR)	'A' Pressurizer Level Control Channel fails LOW.
3 10 Min after event 2	CVC2P36BFAL	C (CBOR)	'B' CCP breaker trip.
4 CUED	RCSPZSTMLK RPSRXAUTO RPSRXMAN RPSDSSAUTO RPSDSSMAN	M (ALL)	PZR Steam Space leak. RPS/DSS fail to manually and automatically trip. Open feeder breakers to MG sets.
5 TRIP	CEA52STUCK	C (CBOR)	Stuck CEA # 52 on Reactor trip.
6 EFAS	MFWPMPATRP 2CV-0332 EFW2P7BESF	C (CBOT)	'A' MFP trip. 'A' EFW pump over speed trip on startup. 'B' EFW pump fails to auto start.
7 CUED	416_2A306	C (CBOT)	'A' HPSI trip after verification.

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

SCENARIO #3 NARRATIVE

When crew takes the watch, the Systems Dispatcher will call the Control Room and report that the 500 KV line to Mabelvale has failed and the ANO site output must be reduced to less than 1250 MW within 15 minutes. Unit 2 must reduce load to 900 MW gross output within 15 minutes. The CRS will enter Attachment 'H' of OP 2102.004, Power Operations, and direct the CBOR to borate and reduce turbine load to maintain Tave –Tref within 2°F.

After the CBOR has completed the required reactivity manipulation, the in-service Pressurizer (PZR) Control Channel Level instrument will fail low. Alarms on Control Channel 1 Level LO and Level LO LO will come in. This will result in Letdown going to minimum flow, the two backup CCP's will automatically start, all PZR heaters will de-energize and actual PZR level will go up. AOP 2203.018, PZR Systems Malfunctions, will be entered and actions directed by the CRS. The CBOR will take the Letdown Flow Controller to manual and control PZR level. The CBOR will also verify that the other level control channel is reading correctly and select that channel for control and place the PZR Low Level Cutoff switch to the unaffected channel. When the auto and manual signals are matched, the CBOR will place the Letdown Flow Controller to automatic. The CRS will determine that TS 3.3.3.5 and 3.3.3.6 are applicable.

Approximately 10 minutes after the PZR Level Control Channel fails low, 'B' CCP breaker will trip. The CRS will enter the Loss Of Charging AOP. The crew will determine that the CCP breaker tripped and start a backup CCP. Letdown may isolate on high Regen Heat Exchanger temperature, depending on the promptness of starting the Backup CCP. If letdown isolated, then, letdown will be restored using 2104.002, CVCS.

When Charging and Letdown have been restored, a PZR Steam Space leak in excess of PZR heaters capacity to maintain pressure will begin. PZR pressure will drop rapidly and the crew will manually trip the reactor. Both the RPS and DSS manual and auto pushbuttons will fail to actuate a reactor trip. The CRS will direct the CBOT to open the feeder breakers to the MG sets, 2B712 and 2B812. CRS will identify 3.0.3 applicability due to the failure of all manual trip pushbuttons. When the reactor is tripped, one CEA will fail to insert requiring the CBOR to perform Exhibit 1, Emergency Boration. The CRS will enter Standard Post Trip Actions and determine safety function status and diagnose a LOCA. During SPTA's the crew will verify SIAS, CCAS actuations. The Crew will secure ALL RCP's when Margin to Saturation conditions are reached. When RCS Heat removal safety function is evaluated, EFW will be manually actuated due to the trip of 'A' MFP. Upon EFAS

actuation ‘A’ EFW pump will overspeed trip and ‘B’ EFW pump will fail to auto start. The CBOT will manually start ‘B’ EFW pump.

SCENARIO #3 NARRATIVE (continued)

After SIAS has been verified to be operating correctly, ‘A’ HPSI pump will trip. The CBOT will place the handswitch for ‘A’ HPSI in PTL and manually start ‘B’ HPSI pump. The crew will complete the entry section for LOCA procedure and determine that the LOCA is an unisolated event and the CRS will implement Section 3 of the LOCA procedure. The crew will start an RCS cooldown to SDC.

Simulator Instructions for Scenario 3

Reset simulator to MOL 100% power IC.
Align swing pumps (HPSI and SW) to the Red train, except for Charging.
Markup AOP 2203.008, Natural Emergencies Section 3, Tornado steps 1 & 2.
Ensure that AACG is secured and annunciators clear.
'B' CCP is selected as lead pump.
Place MINIMAL RISK and Green Train Maintenance Week signs on 2C100.
T1, T3, T4, T5, T7 set to false.
T2 set to RXTRP; T6 set to EFAS 1.

Event No.	Malf. No.	Value/ Ramp Time	Event Description
1	500BKR5106 500BKR5110 Trigger = T1	TRUE	Mabelvale distribution line failure.
2	XRCCHAPLVL Trigger = T3	0	'A' Pressurizer Level Control Channel fails LOW.
3	CVC2P36BFAL Trigger = T4	TRUE	'B' CCP breaker trip.
4	RCSPZSTMLK Trigger = T5 RPSRXAUTO RPSRXMAN RPSDSSAUTO RPSDSSMAN TRUE	50 Ramp = 5 min.	PZR Steam Space Leak RPS/DSS fail to manually and automatically trip. Open feeder breakers to MG sets.
5	CEA52STUCK	0	Stuck CEA 52 on Reactor trip.
6	MFWPMPATRP Trigger T2 2CV-0332 EFW2P7BESF Trigger T6	TRUE 0 TRUE	'A' MFP trip. 'A' EFW pump over speed trip on startup. 'B' EFW pump fails to auto start.
7	416_2A306	LCK-	'A' HPSI pump trips after verification and entry into

	Trigger = T7	OP	LOCA EOP.

Op-Test No.: 1 Scenario No.: 3 Event No.: 1 Page 6 of 15

Event Description: Mabelvale distribution line failure.

Time	Position	Applicant's Actions or Behavior
Simulator operator's cue: When directed by lead examiner; call the CRS as the System Dispatcher with the following direction: "The 500KV line to Mabelvale has been damaged and ANO's net generation must be reduced to 1250KW within the next 15 minutes. Unit One will reduce load to 350 MW and Unit Two will reduce load to 900 MW gross output."		
	ALL	Crew will conduct brief for RAPID power reduction to net Unit 2 Generation of 900 MW.
	CRS	Implement normal operating procedure 2102.004, Power Operations Section 11.0, Power Reduction and refer to Attachment 'H' for rapid power reduction.
	CBOR	Commence RCS Boration using OP 2104.003, Chemical Addition, Exhibit 3, Normal Boration At Power. Verify Boric Acid Makeup Controller in Auto at desired flow rate. Verify selected Boric Acid Pump in Normal-After-Stop. Verify Mode Selector Switch (2HS-4928) in BORATE. Verify 2CV-4830, Charging Pump Suction from Boric Acid, opens. Verify selected Boric Acid Pump running. Open associated Boric Acid Pump Recirc valve. Depress red push button on Boric Acid Makeup Batch Controller, 2FIQS-4926 and verify it is set for proper quantity. Verify 2FIC-4926 indicates proper flow rate. Monitor Tave and ASI. Obtain PEER checks.
	CBOR	Adjust turbine load to maintain reference temperature and RCS average temperature within two degrees. Obtain PEER checks.
	CBOR	Maintain ASI within 0.05 of power dependant ESI by inserting CEA's. Obtain PEER checks and CRS permission to withdraw CEA's.
Termination criteria: ~150 MW reduction and Reactivity manipulation observed or at		

examiner's discretion.

Op-Test No.: 1 Scenario No.: 3 Event No.: 2 Page 8 of 15 Event Description: 'A' Pressurizer Level Control Channel fails LOW.		
	CBOR	Announce alarms 2K10-G6 CNTRL CH 1 LEVEL LO. 2K10-F6 CNTRL CH 1 LEVEL LO LO. Report 2LI-4627-2 and 2LR-4625 indicate normal. Report backup Charging Pumps started.
	CRS	Refer to **PZR Systems Malfunctions AOP 2203.028** and direct board operators actions.
	CBOR	Determine PZR Level Channel A failed. Place Letdown Flow Controller (2HIC-4817) in MANUAL. Place PZR Level Channel Select switch (2HS-4628) to Channel B. Place PZR Low Low Level Cutoff select switch (2HS-4642) to Channel B. Verify PZR heaters and Normal Spray maintaining RCS pressure 2025 to 2275 psia. The CBOR will take the Letdown Flow Controller to AUTO when AUTO and MANUAL signals match.
	CRS	Inform SM to refer to TS 3.3.3.6 Post Accident Instrumentation.
Termination criteria: Unaffected PZR Level Channel selected and Letdown in automatic or at examiner's discretion.		

Op-Test No.: 1 Scenario No.: 3 Event No.: 3 Page 9 of 15

Event Description: 2P36B, 'B' CCP breaker trip.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce annunciator 2K12-B3 CHARGING HEADER FLOW LO Verify that Charging flow indicates zero.
	CRS	Implement Loss of Charging AOP 2203.036 and direct board operator actions.
	CBOR	Verify suction and discharge flow path. Verify Charging Header Isolation valve 2CV-4840-2 OPEN. Verify that 'B' CCP Breaker is tripped (RED and GREEN Lights out)
	CBOR	Start Backup CCP. Verify proper operation of CCP (Flow, Pressure and Temperature)
	CRS	Contact WCO to locally check 'B' CCP for gas binding.
Simulator Operator Cue: **When contacted to check for gas binding, report that 'B' CCP venting complete and no gas was observed.**		
	CBOR	Restores Letdown System to operation using OP 2104.002, Chemical and Volume Control, Section 9.2 Restoring Letdown After Temporary Isolation (if isolated on high Regenerative HX Outlet Temperature previously).

Termination criteria: CVCS restored to operation, or at examiners discretion.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4 Page 10 of 15

Event Description: Pressurizer Steam Space Leak and failure of RPS and DSS to Automatically or Manually actuate.

Time	Position	Applicant's Actions or Behavior
	CBOR	Announce the following: • PZR pressure dropping rapidly. • ALL PZR heaters are energized. • Containment temperature and pressure are rising.
	CRS	Verify that leak is from the PZR and not a Main Steam Line Break by comparing Tave, Steam/Feed Flows, PZR Pressure and PZR Level. Direct CBO's to manually trip the reactor.
	CBOR	Attempt Manual Reactor Trip pushbuttons on 2C03, Attempt Manual DSS pushbutton on 2C03, Attempt Manual Reactor trip pushbuttons on 2C14.
C	CBOT	Open Breakers 2B712 and 2B812 and reclose after 10 seconds.
	CRS	Direct board operators to verify Safety Functions using Exhibit 7.
	CRS	Identify 3.0.3 applicability.

Termination criteria: Reactor tripped or at discretion of Lead Examiner.

Op-Test No.: 1 Scenario No.: 3 Event No.: 4, 5, 6 and 7 Page 11 of 15

Event Description: Pressurizer Steam Space Leak (post trip), Stuck CEA 52, 'A' & 'B' EFW pump failures, 'A' HPSI pump failure.

Time	Position	Applicant's Actions or Behavior
	CRS	**Implement SPTA's and direct contingency actions.**
	CBOR	**Check reactivity control:** Reactor power decreasing. Identify CEA 52 stuck out. Emergency Boration in progress (SIAS will actuate/ CBOR will verify 40 gpm Charging Flow and BAM pumps started and Emergency Borate valve is open)
	CBOT	**Check maintenance of vital auxiliaries:** Main turbine tripped. Generator output and exciter breakers open. All 4160v and 6900 v Non-Vital busses energized. ALL 4160v and 480v vital AC bus energized. All 125v vital DC bus energized.
	CBOR	**Check inventory control:** PZR level 16 to 80%. Trend from setpoint. Report SIAS actuated or manually actuate and verify all PZR heaters off when PZR level less than 29%.
C	CBOR	**Check RCS pressure control:** RCS pressure 1800 to 2300 psia. Trend from setpoint Secure Two RCP's when RCS pressure is less than 1400 psia or ALL RCP's when MTS is lost. Place spray valve for secured RCPs in manual closed. Verify SIAS when pressure less than 1650 psia.

Termination criteria: RCP's secured, RCS Cooldown in progress, EFW pump started or at lead examiner's discretion. (continued on next page)

Op-Test No.: 1 Scenario No.: 3 Event No.: 4, 5, 6 and 7 Page 13 of 15

Event Description: Pressurizer Steam Space Leak (post trip), Stuck CEA 52, 'A' & 'B' EFW pump failures, 'A' HPSI pump failure.

Time	Position	Applicant's Actions or Behavior
	CBOR	**Check core heat removal by forced circulation:** Two RCP 's running (if all are secured no further actions are taken) Loop Δ T less than 10° F. RCS MTS 30° F or greater. Service Water Pump suction aligned to Lake. Component Cooling Water aligned to RCPs.
	CBOT	Restore SW to ACW per Exhibit 5. (NOTE: This action requires several minutes) Check SIAS actuated. Maintain SW pressure greater than 85 psig. (If all RCPs are secured, above actions are not taken until LOCA procedure)
	CBOT	**Check RCS Heat Removal:** Report SG levels and method of feed. Manually actuate EFW. Announce 'A' EFW pump overspeed trip. Manually start 'B' EFW pump. Report feedwater line intact. Report SG pressures.
	CBOR	RCS Tcold 540 to 555° F.

Termination criteria: RCP's secured, RCS Cooldown in progress, EFW pump started or at lead examiner's discretion. (continued)

Op-Test No.: 1 Scenario No.: 3 Event No.: 4, 5, 6 and 7 Page 14 of 15

Event Description: Pressurizer Steam Space Leak (post trip), Stuck CEA 52, 'A' & 'B' EFW pump failures, 'A' HPSI pump failure.

Time	Position	Applicant's Actions or Behavior
	CBOR	**Check CNTMT parameters:** Temperature trending up. Pressure trending up. Status of radiation alarms: CAMS (2K10-B6) in alarm Area radiation (2K11-B10) in alarm Process liquid (2K11-C10) Secondary Sys Radiation Hi (2K11-A10) NOT in alarm.
	CBOR	Check CCAS, and SIAS actuated on PPS inserts. Verify one Emergency Penetration Room Vent fan running. CNTMT coolers in Emergency Mode.
	CRS	Notify SM to perform the following: SE report to control room. Announce reactor trip on plant page. Refer to Tech Specs and EALs.
	CRS	Direct CBOs to acknowledge all control room annunciators and announce all significant alarms. Diagnose Loss of Coolant Accident.
	CRS	Implement Loss of Coolant Accident procedure and open place keeping page. Direct board operators in performing the following actions.
	ALL	Perform crew brief and review floating steps.

Termination criteria: RCP's secured, RCS Cooldown in progress, EFW pump started or at lead examiner's discretion. (continued)

Op-Test No.: 1 Scenario No.: 3 Event No.: 4, 5, 6 and 7 Page 15 of 15

Event Description: Pressurizer Steam Space Leak (post trip), Stuck CEA 52, 'A' & 'B' EFW pump failures, 'A' HPSI pump failure.

Time	Position	Applicant's Actions or Behavior
	CRS	Direct actions in LOCA procedure.
	CBOT	Restore CCW to RCP's (Att.21), SW to CCW (ATT.5) and SW to ACW (ATT. 5)
	CBOR	Verify HPSI and LPSI flow adequate.
	CBOT	Verify Containment Cooling is operating in Emergency Mode.
	CBOT	Verify one Penetration Room Exhaust Fan running.
	CBOT	Start Hydrogen Analyzers.
	CBOR	Start RCS cooldown.

Termination criteria: RCP's secured, RCS Cooldown in progress, EFW pump started or at lead examiner's discretion.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: 2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

TASK: Calculate an Estimated Critical Boron Concentration (for given CEA positions)
JTA#: 20015130101
KA VALUE RO: 3.5 SRO: 3.9 KA REFERENCE: 001 A4.10

APPROVED FOR ADMINISTRATION TO: RO: X SRO: X

TASK LOCATION: INSIDE CR: X OUTSIDE CR: BOTH:

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: SIMULATOR: Perform Perform LAB:

POSITION EVALUATED: RO: _____ SRO: _____.

ACTUAL TESTING ENVIRONMENT: SIMULATOR: PLANT SITE: LAB:

TESTING METHOD: SIMULATE: PERFORM:

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S): OP 2103.015

EXAMINEE'S NAME: SSN: - -

EVALUATOR'S NAME:

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM
AND IS DETERMINED TO BE:

SATISFACTORY: UNSATISFACTORY:

PERFORMANCE CHECKLIST COMMENTS:

Start Time: _____ Stop Time: _____ Total Time: _____.

SIGNED_____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist with the examinee.

JPM INITIAL TASK CONDITIONS:

Plant startup in progress.

RCS pressure= 2200 psia

RCS Tave = 545°F

Shutdown Bank "A" CEA's withdrawn

EFPD = 122.0

Reactor trip occurred @ 07/13/03 at 1800

Startup target @ 07/14/03 at 0500

From RHOBAL Program:

Xe worth = - 3.8526

Sm worth = - 0.8262

Reactor Engineering states the Reactivity Correction factor is "0"

(handout JPM task initial conditions attachment to examinee)

TASK STANDARD: Estimated Critical Boron (ECB) for Group P at 90.0" withdrawn is calculated.

TASK PERFORMANCE AIDS: Calculator, OP 2103.015, and completed Worksheet 1 (cycle 13)

SIMULATOR INITIAL CONDITIONS: Plant is in hot standby condition.
OP-2103.015 Reactivity Balance Calculation

Tools, Equipment, Job Aids, etc:
Calculator
OP-2103.015
RHOBAL computer program
JPM- ANO-2-JPM-RO-Estimated Critical Condition

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIATING CUE:
The SM/CRS directs, "Calculate an ECB for 07/14/03 at 0500 hours with Group P at 90 inches withdrawn using RHOBAL computer program."

CRITICAL ELEMENTS (C): 9, 10, 11

	PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
1.	Select worksheet 1.	From Unit 2 RHOBAL computer program screen, select Worksheet 1.	N/A SAT UNSAT
2.	Entered correct EFPD in appropriate box.	Entered 122.0 in EFPD box.	N/A SAT UNSAT
3.	Entered correct RCS temperature.	Entered 545 °F in RCS temperature box.	N/A SAT UNSAT
4.	Entered correct Xenon worth.	Entered – 3.8526 in Xenon worth box.	N/A SAT UNSAT
5.	Entered correct Samarium worth.	Entered – 0.8262 in Samarium worth box.	N/A SAT UNSAT
6.	Entered Correct CEA position for criticality.	Entered Group 'P' and 90.0 inches for critical CEA position.	N/A SAT UNSAT
7.	Enter Correct Date.	Entered 07/14/2003 05:00 in correct box.	N/A SAT UNSAT
8.	Obtain printout of ECB.	Printed ECB to local printer.	N/A SAT UNSAT
	EXAMINER'S NOTE: Expected value 998.1 ppm to 1219.9 ppm		
9. (C)	Verify ECB.	Determined ECB to be 1109 ppm boron.	N/A SAT UNSAT
	EXAMINER'S NOTE: Expected value 941.4 ppm to 1150.6 ppm		
10. (C)	Verify +0.5% ECB.	Determined the +0.5% ECB to be 1046 ppm boron.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

	PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
	EXAMINER'S NOTE: Expected value 1054.8 ppm to 1289.2 ppm		
11. (C)	Verify -0.5% ECB.	Determined the -0.5% ECB to be 1172 ppm boron.	N/A SAT UNSAT

END

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER's COPY

JPM INITIAL TASK CONDITIONS:

Plant startup in progress.

RCS pressure= 2200 psia

RCS Tave = 545°F

Shutdown Bank "A" CEA's withdrawn

EFPD = 122.0

Reactor trip occurred @ 07/13/03 at 1800

Startup target @ 07/14/03 at 0500

From RHOBAL Program:

Xe worth = - 3.8526

Sm worth = - 0.8262

Reactor Engineering states the Reactivity Correction factor is "0"

INITIATING CUE:

The SM/CRS directs, "Calculate an ECB for 07/14/03 at 0500 hours with Group P at 90 inches withdrawn using RHOBAL computer program."

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE's COPY

JPM INITIAL TASK CONDITIONS:

Plant startup in progress.

RCS pressure= 2200 psia

RCS Tave = 545°F

Shutdown Bank "A" CEA's withdrawn

EFPD = 122.0

Reactor trip occurred @ 07/13/03 at 1800

Startup target @ 07/14/03 at 0500

From RHOBAL Program:

Xe worth = - 3.8526

Sm worth = - 0.8262

Reactor Engineering states the Reactivity Correction factor is "0"

INITIATING CUE:

The SM/CRS directs, "Calculate an ECB for 07/14/03 at 0500 hours with Group P at 90 inches withdrawn using RHOBAL computer program."

JPM- ANO-2-JPM-RO-Valve lineup

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.1: Conduct of Operation

JTA Task #:

TASK: Prepare a manual tag out to isolate the 2E28C Heat Exchanger for tube repair.

JTA#: _____

KA VALUE **RO: 3.5** **SRO: 3.9** **KA REFERENCE: 2.1.29**

APPROVED FOR ADMINISTRATION TO: RO: X **SRO: ___.**

TASK LOCATION: INSIDE CR: X **OUTSIDE CR:** **BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: **SIMULATOR: Perform** **Perform LAB:**

POSITION EVALUATED: RO: **SRO:**

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** **PLANT SITE:** **LAB:**

TESTING METHOD: SIMULATE: **PERFORM:**

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S):
OP-1015.035 Valve Operations,
PID for Component Cooling Water System M-2234 sheet 1 & 2
PID for Service water M2210 Sheet 3

EXAMINEE'S NAME: _____ **SSN:** _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: **UNSATISFACTORY:**

PERFORMANCE CHECKLIST COMMENTS:

Start Time: **Stop Time:** **Total Time:**

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

Initiating Cue: The 2E28C Heat Exchanger is being isolated to repair a leaking tube. The Control Room Supervisor/Shift Manager has instructed you to prepare the TAGOUT TAG HANG LIST FORM to mechanically isolate the heat exchanger for repairs.

Terminating Conditions:

Finishes preparation of the TAGOUT TAG HANG LIST FORM.

1	Provide candidate with completed copy of the initiating cue. Candidate should review Admin JPM and initiating cue.		SAT UNSAT
2.	Prepare a tag out hang list which completely isolates the 2E28C Heat Exchanger	Tag out hang list completed which completely isolates the 2E28C Heat Exchanger	SAT UNSAT
3.	2CCW-83, 2E28C CCW inlet Position: Shut Sequence either 1 or 3		SAT UNSAT
4.	2CCW-84, 2E28C CCW outlet Position: Shut Sequence either 2 or 4		SAT UNSAT
5.	2CCW-1110, 2E28C CCW vent Position: Open Sequence 5		SAT UNSAT
6.	2CCW-83, 2E28C CCW drain Position: Open Sequence 5		SAT UNSAT
7.	2SW-8, 2E28C SW inlet Position: Shut Sequence either 1 or 3		SAT UNSAT
8.	2SW-9, 2E28C SW Outlet Position Shut Sequence either 2 or 4		SAT UNSAT
9.	2SW-1174, 2E28C SW Vent Position Shut Sequence 5		SAT UNSAT
10.	2SW-1175, 2E28C SW Drain Position Shut Sequence 5		SAT UNSAT

EXAMINER's COPY

Initiating Cue:

The 2E28C Heat Exchanger is being isolated to repair a leaking tube. The Control Room Supervisor/Shift Manager has instructed you to prepare the TAGOUT TAG HANG LIST FORM to mechanically isolate the heat exchanger for repairs.

EXAMINEE's COPY

Initiating Cue:

The 2E28C Heat Exchanger is being isolated to repair a leaking tube. The Control Room Supervisor/Shift Manager has instructed you to prepare the TAGOUT TAG HANG LIST FORM to mechanically isolate the heat exchanger for repairs.

Tagout Coversheet
Clearance #(U-YY-Man-##)_____
Tagout: (SSS-FFFFFFFFFFFFF-###)_____ Date_________

Component to be Worked:

Description

_____
_____

Placement
Inst._____
_____
_____

Hazards:_____
_____
_____

Restoration
Inst._____
_____
_____

Tagout Attributes:

Attribute Description	Attribute Value
Tech Spec Impact?	
Compensatory Actions Req?	Yes\No (circle one)
Locked Components(e.g. Cat E)?	Yes\No (circle one)
Fire Protection Impairment	Yes\No (circle one)
Equip Drain/Vent Required?	Yes\No (circle one)

Work Order Task List

Work Order Task #	Description

Tagout Verification:

Status	Description	User	Verification Date
Prepared	Ops Prepared By		
Reviewed	Ops Reviewed By		
Approved	Approved		
Verified Hung	Tags Verified By		
Removal Approved	Removal Approved		
Verified Removed	Tags Verified Removed by		

Tagout Tag Hang List
Clearance#(U-YY-Man-##)_____
Tagout:_____ Date_________

Tag No.	Tag Type	Equipment Equipment Desc. Equip Location	SEQ	Placement Configuration ---------- Notes.	Placement 1st verif	Placement 2nd verif	SEQ	Restoration. Configuration. ---------- Notes	As Left Config	Rest 1st Verif.	Rest 2nd Verif.

Page __of__

FORM TITLE:	FORM NO.	REV.
TAGOUT TAG HANG LIST FORM (TYPICAL)	**1015.046E**	**000-00-0**

JPM- ANO-2-JPM-Surveillance review

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.2: Equipment Control

JTA Task #:

TASK: Identify Errors in a completed surveillance

JTA#: 20015130101
KA VALUE RO: 3.5 SRO: 3.9 KA REFERENCE: 2.1.12

APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____

TASK LOCATION: INSIDE CR: X OUTSIDE CR: BOTH:

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: SIMULATOR: Perform Perform LAB:

POSITION EVALUATED: RO: X SRO:

ACTUAL TESTING ENVIRONMENT: SIMULATOR: PLANT SITE: LAB:

TESTING METHOD: SIMULATE: PERFORM:

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S):

PROC./WORK PLAN NO. 2104.005 PROCEDURE/WORK PLAN TITLE: CONTAINMENT SPRAY CHANGE: 041-06-0

EXAMINEE'S NAME: _____ SSN: _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: UNSATISFACTORY:

PERFORMANCE CHECKLIST COMMENTS:

Start Time: Stop Time: Total Time:

SIGNED_____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

SET-UP

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026)
- Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Provide a marked-up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

NO	PERFORMANCE STEP	STANDARD	S/U	Comments (Required for Unsat)
NOTE: Provide a marked up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.				
1	Perform review of the surveillance procedure results.	Reviews the surveillance procedure provided.		Start Time:
2 (C)	Discover errors Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open	 Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open (Identification of three of the four errors required and two of the three must be the Pump D/P and the Axial Vibration)		 SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT
3	Report to CRS that the results of the surveillance are unsatisfactory.	Reports to CRS that results of the surveillance are unsatisfactory **TERMINATING CUE:** **This JPM is complete.**		Stop Time: SAT UNSAT

EXAMINER's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

SUPPLEMENT 1

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-35A operation AND compare against limiting range of values for operability.

TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST.	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suction Pressure	2PI-5677 (local)	32.5 psig	N/A	> 6 psig	YES NO
Discharge Pressure	2PI-5678 (local)	249.5 psig	N/A	N/A	N/A
	2PI-5622 (2C17)	251.5 psig	N/A	N/A	N/A
Pump D/P	2PI-5678 - 2PI-5677	219 psid	N/A	217.9 to 245.3 psid	YES NO
Flow (1)	2FIS-5610 (2C17)	2430.00 gpm	N/A	≥ 2330 gpm	YES NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-304	A 49 Amps B 50 Amps C 48 Amps	N/A	N/A	N/A
Upper Motor Brg Radial #1 (North) Vibes	VIB001	0.105 in/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	YES NO
Upper Motor Brg Radial #2 (West) Vibes	VIB001	0.135 in/sec	≤ 0.185 in/sec	≤ 0.444 in/sec	YES NO
Upper Motor Brg Axial Vibes	VIB001	0.321 in/sec	≤ 0.130 in/sec	≤ 0.312 in/sec	YES NO
2BS-4A	N/A	X (X) if closed	N/A	Closed	YES NO
2BS-1A (2)	N/A	X ( ) if Full Open per Component Engineer	N/A	Full Open per Component Engineer	YES NO N/A
2BS-1B Closure {4.3.6}	Initial P5058	34.5	N/A	N/A	N/A
	Final P5058	41.2	N/A	N/A	N/A
	Final - Initial	6.7	N/A	> 4 psid	YES NO

{4.3.3}
(1) ≥ 2330 gpm verifies partial stroke of 2BS-1A AND full stroke of 2BS-3A AND 2BS-4A
(2) (2) N/A if test not performed

Vibration Instrument Number VIB001 Cal Due Date 07/30/2003

Vibration Data Collected By Joe Electrician .

FOR TRAINING PURPOSES ONLY

JPM- ANO-2-JPM-Surveillance review

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.2: Equipment Control

JTA Task #:

TASK: Identify Errors in a completed surveillance

JTA#: 20015130101
KA VALUE RO: 3.5 SRO: 3.9 KA REFERENCE: 2.1.12

APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____

TASK LOCATION: INSIDE CR: X OUTSIDE CR: BOTH:

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: SIMULATOR: Perform Perform LAB:

POSITION EVALUATED: RO: X SRO:

ACTUAL TESTING ENVIRONMENT: SIMULATOR: PLANT SITE: LAB:

TESTING METHOD: SIMULATE: PERFORM:

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S):

PROC./WORK PLAN NO. 2104.005 PROCEDURE/WORK PLAN TITLE: CONTAINMENT SPRAY CHANGE: 041-06-0

EXAMINEE'S NAME: _____ SSN: _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: UNSATISFACTORY:

PERFORMANCE CHECKLIST COMMENTS:

Start Time: Stop Time: Total Time:

SIGNED_____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

SET-UP

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026)
- Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Provide a marked-up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

NO	PERFORMANCE STEP	STANDARD	S/U	Comments (Required for Unsat)
NOTE: Provide a marked up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.				
1	Perform review of the surveillance procedure results.	Reviews the surveillance procedure provided.		Start Time:
2 (C)	Discover errors Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open	 Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open (Identification of three of the four errors required and two of the three must be the Pump D/P and the Axial Vibration)		 SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT
3	Report to CRS that the results of the surveillance are unsatisfactory.	Reports to CRS that results of the surveillance are unsatisfactory **TERMINATING CUE:** **This JPM is complete.**		Stop Time: SAT UNSAT

EXAMINER's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

SUPPLEMENT 1

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-35A operation AND compare against limiting range of values for operability.

TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST.	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suction Pressure	2PI-5677 (local)	32.5 psig	N/A	> 6 psig	YES NO
Discharge Pressure	2PI-5678 (local)	249.5 psig	N/A	N/A	N/A
	2PI-5622 (2C17)	251.5 psig	N/A	N/A	N/A
Pump D/P	2PI-5678 - 2PI-5677	219 psid	N/A	217.9 to 245.3 psid	YES NO
Flow (1)	2FIS-5610 (2C17)	2430.00 gpm	N/A	≥ 2330 gpm	YES NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-304	A 49 Amps B 50 Amps C 48 Amps	N/A	N/A	N/A
Upper Motor Brg Radial #1 (North) Vibes	VIB001	0.105 in/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	YES NO
Upper Motor Brg Radial #2 (West) Vibes	VIB001	0.135 in/sec	≤ 0.185 in/sec	≤ 0.444 in/sec	YES NO
Upper Motor Brg Axial Vibes	VIB001	0.321 in/sec	≤ 0.130 in/sec	≤ 0.312 in/sec	YES NO
2BS-4A	N/A	X (X) if closed	N/A	Closed	YES NO
2BS-1A (2)	N/A	X ( ) if Full Open per Component Engineer	N/A	Full Open per Component Engineer	YES NO N/A
2BS-1B Closure {4.3.6}	Initial P5058	34.5	N/A	N/A	N/A
	Final P5058	41.2	N/A	N/A	N/A
	Final - Initial	6.7	N/A	> 4 psid	YES NO

{4.3.3}
(1) ≥ 2330 gpm verifies partial stroke of 2BS-1A AND full stroke of 2BS-3A AND 2BS-4A
(2) (2) N/A if test not performed

Vibration Instrument Number VIB001 Cal Due Date 07/30/2003

Vibration Data Collected By Joe Electrician .

FOR TRAINING PURPOSES ONLY

JPM- ANO-2-JPM-RO-NRC-A3

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** ___ **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.3 Radiation Control

TASK: Utilization of Radiation Work Package to determine radiation equipment requirements for a job as well as ALARA concerns

JTA#:

KA VALUE **RO: 2.9** **SRO: 3.3** **KA REFERENCE: 2.3.10**

APPROVED FOR ADMINISTRATION TO: **RO: X** **SRO: X**

TASK LOCATION: INSIDE CR: **OUTSIDE CR: X** **BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: **SIMULATOR: Perform** **Perform LAB:**

POSITION EVALUATED: **RO:** **SRO:**

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** **PLANT SITE:** **LAB:**

TESTING METHOD: **SIMULATE:** **PERFORM:**

APPROXIMATE COMPLETION TIME IN MINUTES: 32 minutes

REFERENCE (S):

EXAMINEE'S NAME: _____ **SSN:** _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: **UNSATISFACTORY:**

PERFORMANCE CHECKLIST COMMENTS:

Start Time: **Stop Time:** **Total Time:**

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

This JPM is to be conducted in conjunction with JPM B.2.b ANO-2-JPM-NRC-SFPSW Add water from Loop II SW to the Spent Fuel Pool.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

Inform the examinee that the JPM shall begin as soon as the RCA control point is reached.
Provide the RWP to the examinee.

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. **Plant is DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps and 2K11-K5 "FUEL POOL TEMP HI" is in alarm.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

TASK STANDARD: 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

TASK PERFORMANCE AIDS: RWP, Dosimeter, protective clothing as necessary

SIMULATOR INITIAL CONDITIONS:

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

Hand the examinee the RWP and survey for this JPM when he is ready to enter the RCA

CRITICAL ELEMENTS (C): 1, 2

PERFORMANCE CHECKLIST		**STANDARDS**	(Circle One)
1. (C)	Review RWP. Identify required dosimetry from the survey map. <u>POSITIVE CUE:</u> Dosimeter obtained	Examinee reviews the RWP and survey map to determine requirements. Identifies that the required dosimetry based on the provided survey is only a TLD.	N/A SAT UNSAT N/A SAT UNSAT
EXAMINER: Do not provide JPM RWP and Survey map until Examinee has completed review of the actual RWP and survey.			
2. (C)	Obtain Electronic Alarming Dosimeter (EAD) from the rack outside the CAA entrance and activate it at the access turnstile using appropriate Radiation Work Permit number, and enters the CAA when access is granted. Determine the requirements for dosimetry, clothing, and respirators.	Examinee will obtain an EAD and insert the EAD into the activation slot, scan the bar code on his TLD, and follow the instructions on the screen. Entering RWP number and answering the questions on the computer fields of the access terminal. Once all fields have been entered appropriately, access is granted. Used RWP and survey provided to determine that protective clothing is required to be worn in this area.	N/A SAT UNSAT N/A SAT UNSAT
3.	Dons personal safety equipment as required inside the CAA	Hardhat, safety glasses, and earplugs worn where required in the CAA.	N/A SAT UNSAT
4. (C)	While in the CAA the examinee observes and adheres to all applicable postings and entry requirements.	While in the CAA the examinee observes and adheres to all applicable postings and entry requirements.	N/A SAT UNSAT
5.	Determines radiological status of area around valves to be operated to refill SFP.	Determines or knows that the area around valves to be operated to refill SFP is a contamination area.	N/A SAT UNSAT

6. (C)	Determines requirements for entry into the contaminated area around the SFP.	NO additional dosimetry, single PCs, and no pre-job brief. CUE: Examinee is not required to don Protective clothing	N/A SAT UNSAT
7. (C)	When exiting the CAA the examinee enters the control point area and enters a PCM-1 monitor.	Examinee clears the PCM-1 monitor and exits.	N/A SAT UNSAT
8. (C)	If hand carried materials were taken into the CAA, they will be cleared through the tool contamination monitor (TCM)	Examinee places hand carried items in the TCM for counting	N/A SAT UNSAT
9.	After clearing the PCM-1 monitor, the examinee exits through the Portal Monitor	Examinee clears the Portal Monitor	N/A SAT UNSAT
10.	Examinee deactivates EAD at final exit of session	Examinee deactivates his EAD and returns it to the Health Physics rack.	

Terminating cue: Egress from CAA completed.

END

EXAMINEE COPY

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. **Plant is DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps and 2K11-K5 "FUEL POOL TEMP HI" is in alarm.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

Status: Active **RADIOLOGICAL WORK PERMIT** Rev 0 Unit C RWP **2003-0005**

SECTION I	**RWP DESCRIPTION**	
START DATE: 01-Jan-2003	END DATE: 31-Dec-2003	RWP TYPE: General

DESCRIPTION:

Tours and Inspections

SYSTEM	COMPONENT	BLDG	LOCATION
NA	NA	A1	Non LHRA's
NA	NA	A2	Non LHRA's|
NA	NA	OSCA	Non LHRA's

JOB CONTACTS. Various
JOB CODE.....ROS-

ALARA CODE....C0008011
ALARA CAT.....Level II

SECTION II TASK LIST

TASK	STATUS	TASK DESCRIPTION	ESTIMATED	
			PR-HR	PER-REM
1	Active	Non Locked High Radiation Areas	116709.	0.617
		TOTALS	|116709.	0.617

SECTION III RWP REVIEWS AND APPROVAL

Originator FULTZ MW 19-Dec-2002 Development RASMUSSON DC 19-Dec-2002
ALARA Eval RASMUSSON DC 19-dec-2002 HP Supv. RASMUSSON DC 19-Dec-2002
Terminated _____ _____ Completed _____ _____
Withdrawn _____ _____

SECTION IV	**PROTECTIVE REQUIREMENTS BY TASK**	Rev 0	RWP **2003-0005**			
TASK TASK DESCRIPTION (Task# 1)						
1) **Non Locked High Radiation Areas**						
RADIOLOGICAL CONDITIONS (Task# 1)						
Component/Location	(mrem/Hr) Gen	Max	Dpm/100cm2		Yr/DANI#		
A1,A2 OSCA	1 1	200 80	<1K <1K		Monthly pkg Monthly pkg		
Dosimetry : Whole body TLD required, and Alarming Dosimeter.							

SECTION IV	PROTECTIVE REQUIREMENTS BY TASK Rev 0	RWP **2003-0005**
TASK	**TASK DESCRIPTION** (Task# 1)	

---------- SPECIAL INSTRUCTIONS ----------

ALARA Actions:

1) Unless otherwise directed by RP supervision, Electronic Alarming Dosimeter (EAD) set points will be 5 mrem dose and 40 mrem/hr dose rate.

2) Utilize low dose areas whenever possible to minimize exposure.

Monitoring:

1) Notify the zone coverage RP or the on duty shift RP of areas to be entered and work to be performed.

2) Area posting/survey maps should be reviewed to ensure awareness of radiological conditions in your work area. This information can be obtain from one or more of the following:
A.) RWP - Radiological Conditions Section.
B.) Area Posting - Locale posting in the field.
C.) Status Board - At CA-2, Unit-1 elevation 404', Unit-2 elevations 354', 335' and 317' general areas.
D.) Surveys Maps - Posted outside cubicles. (Unit-1 only, 386' elevation and below).
E.) RWP File - Contact RP if file is desired.
F.) RP Personnel - Contact RP @ CA-1 (#5166), or use radios (on channel 2), located at CA-2 386' dress out area, 354' and 335' elevations near the elevators.

3) Periodically check Electronic Alarming Dosimeter (EAD). This check should be more frequent in areas where your ability to hear the alarm is diminished. If any EAD alarm is received secure work, exit area, and notify RP.

4) Initial/intermittent RP coverage is required for entry into High Radiation Areas unless the individual is "Category 3 Advanced Radworker" qualified and has the appropriate radiation survey meter at all times during the entry.
NOTE: An EAD is not an appropriate survey meter.

5) Prior to entering a "Radioactive Materials Area" outside Controlled Access, contact RP to ensure all personnel, equipment, and material is evaluated for appropriate monitoring upon exit.

Work Controls:

1) Ensure the proper surveys are performed prior to removing any items from the RCA.

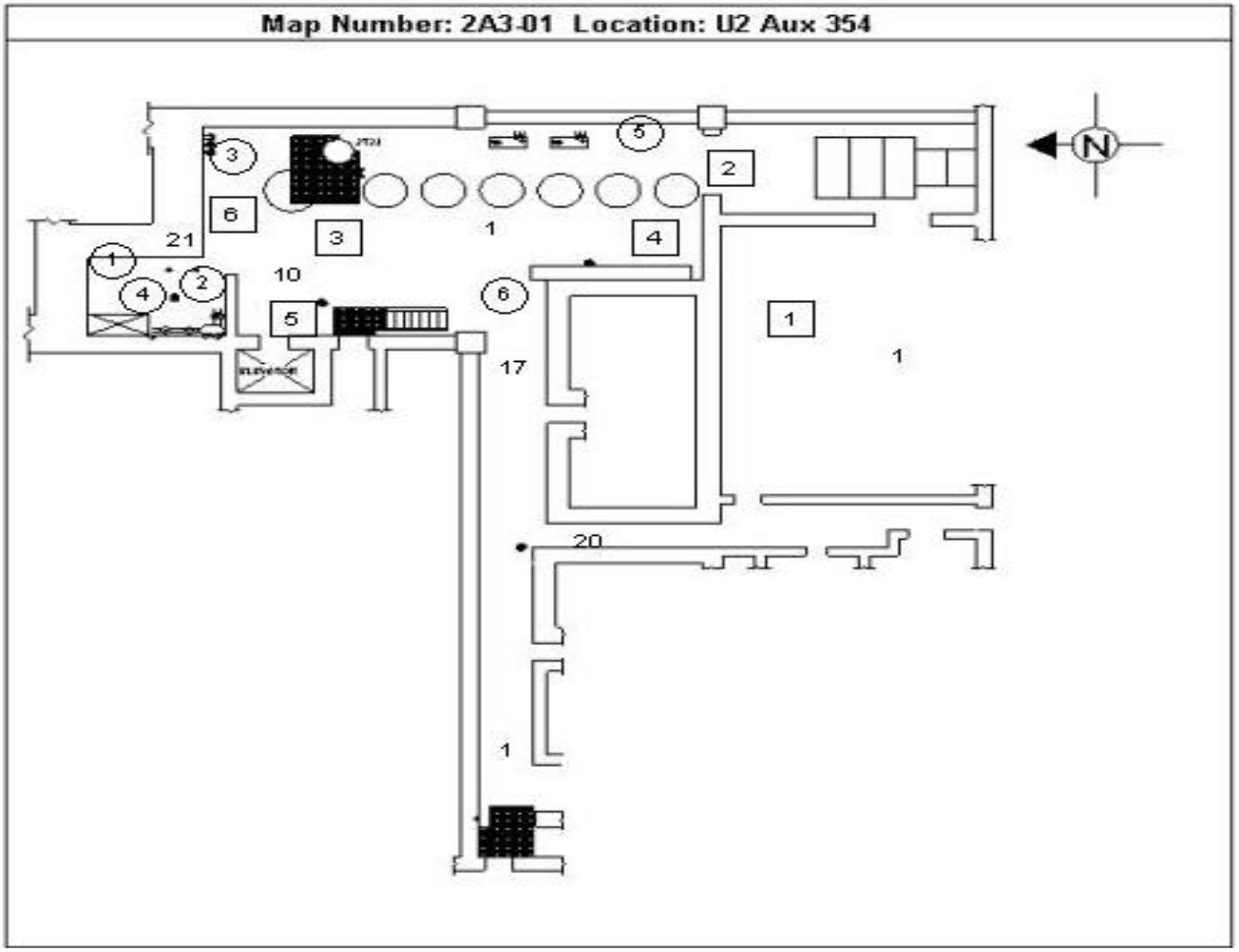
Respiratory:

|1) Based on historical and current data Airborne Activity is <30% DAC. Respiratory protection is not required unless otherwise posted.

Anti-C's:

1) Use Anti-C's appropriate for the area to be entered.

FOR TRAINING PURPOSES ONLY



All Radiation values are in mrem/hour unless otherwise noted
Smear results: < 1000 dpm/100cm2 or < 100 CCPM/LAS unless otherwise noted
O Smear location (100cm2)
- ❑ Large Area Smear (LAS) location

SMEAR DATA (DPM/100cm2)	**SURVEY DATA**
1- 2000 2- 3000 3- 800 4- 1000 5- 200 6- 400	Unit: **2** Building: **RAB** Elevation: **354** Room: **2151** RxPwr: 100 Template: 2A2-24 Frequency: monthly Survey Date:07-01-2003 Survey Time: 21:10:00 Status: Complete RWP: 1 Task1 DAN#: 5-1-7 Surveyed By: Keith A. Murray Badge: 956 Reviewed By: James D. Looper Notes: Peer Check by BEK/837
L.A.S. Data (cpm/LAS) 1. 20 2. 30 3. 20 4. 20 5. 40 6. 35	
Alpha Data (DPM/100cm2)	**Instruments Used** Instrument: RAM-ION-RAM-049 Cal Due:08-31-2003 SrcCk Due: 07-04-2003 D/C & Bkg N/A N/A Instrument: RM-CHP-CR-106 Cal Due:07-30-2003 SrcCk Due:N/A D/C & Bkg 10 100
L.A.S. Alpha (cpm/LAS)	

TYPE: OPEN REFERENCE

COMPLETION TIME: 10 Minutes

KA VALUE RO: 2.6 SRO: 4.0 KA REFERENCE: 2.4.29

REFERENCES:

1903.010, EAL CLASSIFICATION (Revision 037-01-0), Step 4.20.

RO OPERATING ADMIN TEST SUBJECT A.4

QUESTION 1:

Given the following plant conditions:

- The selected Back Pressure Control Valve, 2CV-4810 has failed closed.
- Letdown relief valve, 2PSV-4822 has lifted and is stuck open.

How long does the Control Room staff have to isolate this leak before it will be classified as RCS leakage for the purpose of Emergency Action Level classification?

ANSWER:

10 minutes

COMMENTS:

EXAMINEE'S COPY

TYPE: OPEN REFERENCE

RO OPERATING ADMIN TEST SUBJECT A.4

QUESTION 1:

Given the following plant conditions:

- The selected Back Pressure Control Valve, 2CV-4810 has failed closed.
- Letdown relief valve, 2PSV-4822 has lifted and is stuck open.

How long does the Control Room staff have to isolate this leak before it will be classified as RCS leakage for the purpose of Emergency Action Level classification?

TYPE: OPEN REFERENCE

COMPLETION TIME 10 Minutes

KA VALUE RO: 2.6 SRO: 4.0 KA REFERENCE: 2.4.29

REFERENCES:

1903.030, EVACUATION (Revision 024-03-0), Section 6.3
1903.011, EMERGENCY RESPONSE/NOTIFICATION (Revision 027-00-0), GE EMERGENCY DIRECTION AND CONTROL CHECKLIST

RO OPERATING ADMIN TEST SUBJECT A.4

QUESTION 2:

A General Emergency has been declared and a site evacuation declared. As a Control Room Operator:

How are you accounted for, and,

What is the time limit for initial accountability?

ANSWER:

All Control Room personnel (operators, chemists, RP, etc.) log into the designated security card reader (in the Unit 1 Control Room) using "0000".

30 minutes time limit from the time that declaration is made.

COMMENTS:

EXAMINEE'S COPY

TYPE: OPEN REFERENCE

RO OPERATING ADMIN TEST SUBJECT A.4

QUESTION 2:

A General Emergency has been declared and a site evacuation declared. As a Control Room Operator:

How are you accounted for, and,

What is the time limit for initial accountability?

JPM- ANO-2-JPM-SRO-Estimated Critical Condition

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: 2.1.25 Ability to obtain and interpret station reference materials such as graphs, monographs, and tables which contain performance data.

TASK: **Identify Errors in a Faulted Estimated Critical Boron Concentration calculation (for given CEA positions)**

JTA#: _____.

KA VALUE **RO:** **3.5** **SRO:** **3.9** **KA REFERENCE: 001 A4.10**

APPROVED FOR ADMINISTRATION TO: RO: _____ **SRO:** **X**

TASK LOCATION: INSIDE CR: **X** **OUTSIDE CR:** **BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: **SIMULATOR:** **Perform** **Perform LAB:**

POSITION EVALUATED: RO: **SRO:**

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** **PLANT SITE:** **LAB:**

TESTING METHOD: SIMULATE: **PERFORM:**

APPROXIMATE COMPLETION TIME IN MINUTES: **15 minutes**

REFERENCE (S): OP 2103.015

EXAMINEE'S NAME: _____ **SSN:**_____- _____-_____.

EVALUATOR'S NAME: _____.

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: **UNSATISFACTORY:**

PERFORMANCE CHECKLIST COMMENTS:

Start Time: _____ **Stop Time:** _____ **Total Time:** _____.

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JPM- ANO-2-JPM-SRO-Estimated Critical Condition

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist with the examinee.

JPM TASK INITIAL CONDITIONS

Plant startup in progress.

RCS pressure= 2200 psia

RCS Tave = 545°F

Shutdown Bank "A" CEA's withdrawn

EFPD = 397.0

Reactor trip occurred @ 07/13/03 at 1800

Startup target @ 07/14/03 at 0500

From RHOBAL Program:

Xe worth = - 4.4325
Sm worth = - 0.9943

Reactor Engineering states the Reactivity Correction factor is "0"

TASK STANDARD: Estimated Critical Boron (ECB) for Group P at 90" withdrawn is reviewed for approval.

TASK PERFORMANCE AIDS: Calculator, OP 2103.015, and completed Worksheet 1 (cycle 13)

SIMULATOR INITIAL CONDITIONS: Plant is in hot standby condition.
OP-2103.015 Reactivity Balance Calculation

Tools, Equipment, Job Aids, etc:
Calculator
OP-2103.015
RHOBAL computer program

JPM- ANO-2-JPM-SRO-Estimated Critical Condition

JOB PERFORMANCE MEASURE

Instructions: Make or simulate all written and/or oral reports as if the evolution is actually being performed. You are expected to discuss the steps that you would take to include identification of what problems you find and actions necessary to correct them.

Initiating Cue: The ECC was prepared by the previous shift and you have been asked by the Shift Manager to review the prepared ECC prior to commencing the reactor startup. Identify all the substantive errors associated with ECC.

Terminating Conditions:

Finishes review of the ECC and identifies 3 errors. Errors can be found in any order.

PERFORMANCE CHECKLIST	**STANDARDS**	(Circle One)
1. Identify errors in the ECC		N/A SAT UNSAT
(C) a. Step 1 wrong value for Rho (Fuel)	Identify wrong value in step 1	N/A SAT UNSAT
(C) b. Step 2 wrong value for Rho (Temp)	Identify wrong value in step 2	N/A SAT UNSAT
c. Step 5 not N/A ed	Identify step 5 not N/A ed	N/A SAT UNSAT

EXAMINER's COPY

JPM TASK INITIAL CONDITIONS

Plant startup in progress.

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EXAMINEE's COPY

JPM TASK INITIAL CONDITIONS

Plant startup in progress.

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Reactor Engineering states the Reactivity Correction factor is "0"

Initiating Cue:

The ECC was prepared by the previous shift and you have been asked by the Shift Manager to review the prepared ECC prior to commencing the reactor startup. Identify all the substantive errors associated with ECC.

WORKSHEET 1

Calculation of Estimated Critical Configuration

Reference Conditions: 0% FP, No Xenon, No Samarium, No CEAs inserted, Tref=545 degF

Data Needed for Calculation:

Cycle Burnup: _____ EFPD
RCS Boron Conc.: _____ PPM (if calculating Critical CEA position)
Critical on: Group _____ at _____ inches withdrawn (if calculating Critical Boron Concentration)
RCS Tave: _____ degF
Last B-10 atom:% _____ a/o (use 19.8 a/o if no B-10 depletion exists)

---

1. From Figure B1 or Table B1

   Rho(Fuel) = _____ %dk/k

2. If Tave is not within 2 degF of the reference condition make a temperature correction, otherwise Rho(Temp)=0.0. From Table A4 or Figure A4 (note, if determining control rod positions, use actual boron concentration. If determining boron concentration, use critical boron concentration from Physics Data):

   MTC = _____ dk/k per degF @ _____ PPM and _____ EFPD

   Rho(Temp) = MTC * 100. * (Tave - Tref)

   Rho(Temp) = _____ * 100. * (_____ - 545.0)

   Rho(Temp) = _____ %dk/k

3. a.) Enter the Xenon Worth as a function of time from:

   RHOBAL _____, Other _____ (Indicate Method)

   b.) Enter the Net Samarium Worth as a function of time from:

   RHOBA _____, Other _____ (Indicate Method)

Time	Rho(Xenon)	Rho(Samarium)

WORKSHEET 1

Calculation of Estimated Critical Configuration

NOTE

Step 4 is completed if determining the estimated critical boron. Step 5 is completed if determining the estimated critical control rod position. Complete the desired step and N/A the other step.

4. If determining the estimated critical control rod position, N/A this step._____

4.1 From Figure B3 or Table B3, for the desired CEA group position:

Rho(CEAs) = _____ %dk/k

4.2 At each time step interval calculate Rho(Boron) and enter in the table below:

Rho(Boron) = -(Rho(Fuel) + Rho(CEAs) + Rho(Temp) + Rho(Xenon) + Rho(Samarium))

	Rho(Boron)			Boron Conc.			Adjusted Conc.		
TIME	Rho(Boron)	+0.5% dk/k	-0.5% dk/k	ECB	+0.5% dk/k	-0.5% dk/k	ECB	+0.5% dk/k	-0.5% dk/k

4.3 For each value of Rho(Boron) determine a maximum and minimum boron worth which corresponds to +0.5%dk/k and -0.5%dk/k from the value of Rho(Boron) for each time step. Enter these values in the table under step 4.2.

4.4 For the values of Rho(Boron) at each time step (including the minimum and maximum), from Figure B2 or Table B2, determine the boron concentration which corresponds to that value and enter the value in the table under step 4.2. These are the critical boron concentrations and the minimum and maximum boron concentrations.

4.5 For each value of boron concentration calculated in Step 4.4, convert to the B-10 adjusted boron concentration based upon the latest B-10 atom % as follows:

Boron(Adjusted) = Boron * 19.8 / latest B-10 atom %

Record the values found in the last three columns in the table under Step 4.2. These are the adjusted critical boron concentrations and the minimum and maximum boron concentrations.

WORKSHEET 1

Calculation of Estimated Critical Configuration

5. If determining the estimated critical boron concentration, N/A this step._____

5.1 Adjust the measured boron concentration to account for B-10 depletion using the latest B-10 atom %:

Boron(Adjusted) = RCS Boron * latest B-10 atom % / 19.8
Boron(Adjusted) = _____ * _____ / 19.8

Boron(Adjusted) = _____ ppm

5.2 From Figure B2 or Table B2 and using the boron concentration from Step 5.1:

Rho(Boron) = _____ %dk/k

5.3 At each time step interval calculate Rho(CEAs) and enter in the table below. This is the worth of the CEAs necessary to obtain criticality.

Rho(CEAs) = -(Rho(Fuel) + Rho(Boron) + Rho(Temp) + Rho(Xenon) + Rho(Samarium))

	Rho(CEAs)			GROUP # & INCHES WITHDRAWN		
Time	Rho(CEAs)	+0.5%dk/k	-0.5%dk/k	ECP	+0.5%dk/k	-0.5%dk/k

5.4 For each value of Rho(CEAs) determine a maximum and minimum CEA worth which corresponds to +0.5%dk/k and -0.5%dk/k from the value of Rho(CEAs) for each time step. Enter these values in the table under step 5.3.

5.5 For the values of Rho(CEAs) at each time step (including the minimum and maximum), from Figure B3 or Table B3, calculate the CEA position which corresponds to that value and enter the value in the table under step 5.3. These are the ECPs and the minimum and maximum withdrawal positions (the minimum withdrawal position shall be the zero power insertion limit if the calculated position is less than this position).

Performed By:_____

Date and Time:_____

Reviewed By:_____

2103.015	REACTIVITY BALANCE CALCULATION	PAGE 1 0F 3 CHANGE:

WORKSHEET 1

Calculation of Estimated Critical Configuration

Reference Conditions: 0% FP, No Xenon, No Samarium, No CEAs inserted, Tref = 545 deg F

Data Needed for Calculation:

Cycle Burn up: 379.0 EFPD
RCS Boron Conc.: _____ (if calculating Critical CEA Position)
Critical on: Group P at 90.0 inches withdrawn (if calculating Boron Concentration)
RCS Tave: 540 deg F
Latest B-10 atom %: 19.8a/o (use 19.8a/0 if no Boron-10 depletion)

1. From Figure B1 or Table B1
   Rho (Fuel) = 8.4786 %dk/k

2. If Tave is not within 2 deg F of the reference condition make a temperature correction, otherwise Rho (Temp) = 0.0. From Table A4 or Figure A4 (note, if determining control rod positions, use actual boron concentration. If determining boron concentrations, use critical boron concentrations from Physics data):

   MTC = -1.7984E-04 dk/k per deg F @ 246.8.0 PPM and 397.00 EFPD
   Rho (Temp) = MTC * 100. * (Tave – Tref)
   Rho (Temp) = -1.7984E-04 * 100. * (540.00 – 545.00)
   Rho (Temp) = 0.0899 % dk/k

3. a) Enter the Xenon worth as a function of time from:

   RHOBAL __X__, Other _____ (Indicate method)

   b) Enter the Net Samarium worth as a function of time from:

   RHOBAL __X__, Other _____ (Indicate method)

Time	Rho (Xenon)	Rho (Samarium)
07/17/03 07:30	-4.4325	-0.9943
07/17/03 08:30	-4.4325	-0.9943
07/17/03 09:30	-4.4325	-0.9943
07/17/03 10:30	-4.4325	-0.9943
07/17/03 11:30	-4.4325	-0.9943
07/17/03 12:30	-4.4325	-0.9943
07/17/03 13:30	-4.4325	-0.9943
07/17/03 14:30	-4.4325	-0.9943

Worksheet 1

Calculation of Estimated Critical Configuration

Note: Step 4 is completed if determining the estimated critical boron. Step 5 is completed if determining the estimated critical control rod position. Complete the desired step and N/A the other step.

4. If determining the estimated critical control rod position, N/A this step. _____.

4.1 From FigureB3 or Table B3, for the desired CEA group position:

Rho (CEAs) -0.7082%dk/k

4.2 At each time step interval calculate Rho (Boron) and enter in the table below:

Rho (Boron) = - (Rho (Fuel) + Rho (Temp) + Rho (Xenon) + Rho (Samarium))

Time	Rho (Boron)			Boron Concentration			Adjusted concentration		
	Rho (Boron)	+0.5%dk/k	-0.5%dk/k	ECB	+0.5%dk/k	-0.5%dk/k	ECB	+0.5%dk/k	-0.5%dk/k
07/17/03 07:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 08:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 09:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 10:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 11:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 12:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 13:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 14:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.
07/17/03 15:30	-2.3435	-1.8435	-2.8435	257.	202.	311.	257.	202.	311.

4.3 For each value of Rho (Boron) determine a maximum and minimum boron worth which corresponds to +0.5%dk/k and –0.5%dk/k from the value of Rho (Boron) foe each time step. Enter these values in the table under step 4.2.

4.4 For the values of Rho (Boron) at each time step (including the minimum and maximum), from Figure B2 or Table B2, determine the boron concentration which corresponds to that value and enter the value in the table under step 4.2. These are the critical boron concentrations and the minimum and maximum boron concentrations.

4.5 For each value of boron concentration calculated in step 4.4, convert to the B-10 adjusted boron concentration based on the latest B-10 atom % as Follows

Boron (Adjusted) = Boron * 19.8 / Latest Boron B-10 atom %

Record the values found in the last three columns in the table under step 4.2. These are the adjusted critical boron concentrations and the maximum and minimum boron concentrations.

Worksheet 1

Calculation of Estimated Critical Configuration

5. If determining the estimated critical boron concentration, N/A this step. _____.

Performed by: _____.

Date and Time: 06/17/2003 10:42

Reviewed by _____.

RHOBAL DATABASE=(A2C16BF RHOBAL UPDATE, NEAD-SR-2002/017.RO, **BANK P IS THE LEAD BANK)

JPM- ANO-2-JPM-SRO-Valve lineup

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.1: Conduct of Operation

JTA Task #:

TASK: Review a system lineup to restore the Component Cooling Water system to normal operation following completion of maintenance.

JTA#: _____

KA VALUE **RO: 3.5** **SRO: 3.9** **KA REFERENCE: 2.1.29**

APPROVED FOR ADMINISTRATION TO: **RO:** ___ **SRO:** **X.**

TASK LOCATION: INSIDE CR: X **OUTSIDE CR:** **BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: **SIMULATOR: Perform** **Perform LAB:**

POSITION EVALUATED: RO: _____ **SRO:** **X .**

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** **PLANT SITE:** **LAB:**

TESTING METHOD: SIMULATE: **PERFORM:**

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S):

OP-1015.035 Valve Operations,
PID for Component Cooling Water System M-2234 sheet 1 & 2

EXAMINEE'S NAME: _____ **SSN:** _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: **UNSATISFACTORY:**

PERFORMANCE CHECKLIST COMMENTS:

Start Time: **Stop Time:** **Total Time:**

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

Initiating Cue: The component cooling water system is being restored to normal system lineup following completion of maintenance on the system. The Control Room Supervisor/Shift Manage has instructed you to review the system lineup and verify proper restoration.

Terminating Conditions:

Finishes review of the system lineup.

NO	PERFORMANCE STEP	STANDARD	S/U	Comments (Required for Unsat)
NOTE: Provide a marked up copy of the system lineup to the examinee				
1	Perform final SRO review of the system lineup paperwork.	Reviews the system lineup paperwork provided.		Start Time:
(C) 2	2CV-5217 Loop I CCW Surge Tank Vent: wrong position 2CCW-1023 Surge Tank 2T-37B Drain: wrong position 2CV-5210 Condensate Transfer to 2T-37A: wrong position 2CV-5218 Loop II CCW Surge Tank Vent: wrong position	Examinee Identifies 3 of the 4 errors and must identify the vent valves.	SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT	
(C) 3	Perform the step required for unsatisfactory results.	Informs Shift Manager of errors. Initiates actions to correct errors		
TERMINATING CUE: **This JPM is complete.**				

ARKANSAS NUCLEAR ONE		
E-DOC TITLE: **PARTIAL SYSTEM LINEUP SHEET**	**E-DOC NO.** **1015.017C**	**CHANGE NO.** **008-00-0**

System: Component Cooling Water Page 1 of 1.

Reason for partial lineup, e.g. post maintenance test, clearance no., etc. Describe lineup if needed, e.g., list major components, boundaries, or list components excluded, etc.:

Restore system to normal line up following completion of piping repairs

Partial lineup approval: _____ _____
SRO Signature Date:

Component	Description (optional)	Required Position	Checked Initial	SRO Initial*
2CCW-5214	2LT/LG-5214 Root Valve	OPEN		
2CV-5217	Loop I CCW Surge Tank Vent	Per 1015.017, Att. D Locked shut		
2CCW-1023	Surge Tank 2T-37B Drain	Open		
2CCW-89	Surge Tank 2T-37B Chem. Recirc	OPEN		
2CCW-5031	Surge Tanks 2T-37A/B X-Connect Drain	CLOSED		
2CCW-5030	Surge Tanks 2T-37A/B Drain to LRW	CLOSED		
2CT-651	2FI-5210 Inlet Isol	OPEN		
2CT-650	2FI-5210 Outlet Isol	OPEN		
2CT-652	2FI-5210 Bypass	CLOSED		
2CT-653	2FI-5210 Drain	CLOSED		
2CT-16	Surge Tanks 2T-37A/B Makeup Isol	OPEN		
2CV-5210	Condensate Transfer to 2T-37A	Per 1015.017, Att. D shut		
2CV-5218	Loop II CCW Surge Tank Vent	Per 1015.017, Att. D Locked shut		
2CCW-5082	Surge Tank 2T-37A Makeup Line Vent	CLOSED		
2CCW-5083	2LT/LG-5210 Root Valve	OPEN		
2CCW-5210	2LT/LG-5210 Root Valve	OPEN		
2CCW-1022	Surge Tank 2T-37A Drain	CLOSED		
2CCW-88	Surge Tank 2T-37A Chem. Recirc	OPEN		
2CV-5214	Condensate Transfer Supply to 2T-37B	Per 1015.017, Att. D shut		
2CCW-5084	Surge Tank 2T-37B Makeup Line Vent	CLOSED		
2CCW-5085	2LT/LG-5214 Root Valve	OPEN		

*SRO Initial signifies review.
Lineup Performed By:

. _____ / _____ / _____
Signature Initial Date

. _____ / _____ / _____
Signature Initial Date

SRO Review: _____ Date _____

EXAMINER'S COPY

Initiating Cue:

The component cooling water system is being restored to normal system lineup following completion of maintenance on the system. The Control Room Supervisor/Shift Manager has instructed you to review the system lineup and verify proper restoration.

EXAMINEE'S COPY

Initiating Cue:

The component cooling water system is being restored to normal system lineup following completion of maintenance on the system. The Control Room Supervisor/Shift Manager has instructed you to review the system lineup and verify proper restoration.

JPM- ANO-2-JPM-Surveillance review

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 7 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.2: Equipment Control

JTA Task #:

TASK: Identify Errors in a completed surveillance

JTA#: 20015130101
KA VALUE RO: 3.5 SRO: 3.9 KA REFERENCE: 2.1.12

APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: X

TASK LOCATION: INSIDE CR: X OUTSIDE CR: BOTH:

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: SIMULATOR: Perform Perform LAB:

POSITION EVALUATED: RO: _____ SRO: X_____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: PLANT SITE: LAB:

TESTING METHOD: SIMULATE: PERFORM:

APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutes

REFERENCE (S): PROC./WORK PLAN NO. 2104.005 PROCEDURE/WORK PLAN TITLE: CONTAINMENT SPRAY

EXAMINEE'S NAME: _____ SSN: _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: UNSATISFACTORY:

PERFORMANCE CHECKLIST COMMENTS: _____

_____

Start Time: Stop Time: Total Time:

SIGNED_____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

SET-UP

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026)
- Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Provide a marked-up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

NO	PERFORMANCE STEP	STANDARD	S/U	Comments (Required for Unsat)
NOTE: Provide a marked up copy of Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED.				
1	Perform final SRO review of the surveillance procedure.	Reviews the surveillance procedure provided.		Start Time:
(C) 2	Discover errors: Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open	 Pump D/P is out of LIMITING RANGE FOR OPERABILITY. YES has been circled instead of NO. Axial Vibes Upper Motor Brg is out of LIMITING RANGE FOR OPERABILITY. 2BS-1A is not marked as full open (Identification of three of the four errors required and two of the three must be the Pump D/P and the Axial Vibration)		SAT UNSAT SAT UNSAT SAT UNSAT SAT UNSAT
(C) 3	Perform the step required for unsatisfactory results.	Performs the following: - Refers to TS LCO's 3.6.2.1. - Initiates actions IAW TS 3.6.2.1 With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. - Repeats the surveillance test **TERMINATING CUE:** **This JPM is complete.**		Stop Time: SAT UNSAT

EXAMINER's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

The Containment Emergency Cooling System 2P-35A QUARTERLY TEST WITH SDC SECURED (WMS TASK #9026) - Train A has just been completed IAW Procedure 2104.005 Containment Spray Supplement 1.

Initiating CUE:

The Control Room Supervisor/Shift Manager directs determination of the operability of the Train A Containment Spray System by performing a review of completed surveillance data.

SUPPLEMENT 1

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-35A operation AND compare against limiting range of values for operability.

TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST.	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suction Pressure	2PI-5677 (local)	32.5 psig	N/A	> 6 psig	YES NO
Discharge Pressure	2PI-5678 (local)	249.5 psig	N/A	N/A	N/A
	2PI-5622 (2C17)	251.5 psig	N/A	N/A	N/A
Pump D/P	2PI-5678 - 2PI-5677	219 psid	N/A	217.9 to 245.3 psid	YES NO
Flow (1)	2FIS-5610 (2C17)	2430.00gpm	N/A	≥ 2330 gpm	YES NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-304	A 49 Amps B 50 Amps C 48 Amps	N/A	N/A	N/A
Upper Motor Brg Radial #1 (North) Vibes	VIB001	0.105 in/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	YES NO
Upper Motor Brg Radial #2 (West) Vibes	VIB001	0.183 in/sec	≤ 0.185 in/sec	≤ 0.444 in/sec	YES NO
Upper Motor Brg Axial Vibes	VIB001	0.321 in/sec	≤ 0.130 in/sec	≤ 0.312 in/sec	YES NO
2BS-4A	N/A	X (X) if closed	N/A	Closed	YES NO
2BS-1A (2)	N/A	X ( ) if Full Open per Component Engineer	N/A	Full Open per Component Engineer	YES NO N/A
2BS-1B Closure {4.3.6}	Initial P5058	34.5	N/A	N/A	N/A
	Final P5058	41.2	N/A	N/A	N/A
	Final - Initial	6.7	N/A	> 4 psid	YES NO

{4.3.3}
(1) ≥ 2330 gpm verifies partial stroke of 2BS-1A AND full stroke of 2BS-3A AND 2BS-4A
(2) (2) N/A if test not performed

Vibration Instrument Number VIB001 Cal Due Date 07/30/2003

Vibration Data Collected By Joe Electrician .

FOR TRAINING PURPOSES ONLY

JPM- ANO-2-JPM-RO-NRC-A3

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** ___ **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: A.3 Radiation Control

TASK: Utilization of Radiation Work Package to determine radiation equipment requirements for a job as well as ALARA concerns

JTA#:

KA VALUE **RO: 2.9** **SRO: 3.3** **KA REFERENCE: 2.3.10**

APPROVED FOR ADMINISTRATION TO: **RO: X** **SRO: X**

TASK LOCATION: INSIDE CR: **OUTSIDE CR: X** **BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):
PLANT SITE: **SIMULATOR: Perform** **Perform LAB:**

POSITION EVALUATED: **RO:** **SRO:**

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** **PLANT SITE:** **LAB:**

TESTING METHOD: **SIMULATE:** **PERFORM:**

APPROXIMATE COMPLETION TIME IN MINUTES: 32 minutes

REFERENCE (S):

EXAMINEE'S NAME: _____ **SSN:** _____ - _____ - _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: **UNSATISFACTORY:**

PERFORMANCE CHECKLIST COMMENTS:

Start Time: **Stop Time:** **Total Time:**

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

This JPM is to be conducted in conjunction with JPM B.2.b ANO-2-JPM-NRC-SFPSW Add water from Loop II SW to the Spent Fuel Pool.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

Inform the examinee that the JPM shall begin as soon as the RCA control point is reached.
Provide the RWP to the examinee.

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. **Plant is DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps and 2K11-K5 "FUEL POOL TEMP HI" is in alarm.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

TASK STANDARD: 2.3.10 Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

TASK PERFORMANCE AIDS: RWP, Dosimeter, protective clothing as necessary

SIMULATOR INITIAL CONDITIONS:

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

Hand the examinee the RWP and survey for this JPM when he is ready to enter the RCA

CRITICAL ELEMENTS (C): 1, 2

PERFORMANCE CHECKLIST		**STANDARDS**	(Circle One)
1. (C)	Review RWP. Identify required dosimetry from the survey map. <u>POSITIVE CUE:</u> Dosimeter obtained	Examinee reviews the RWP and survey map to determine requirements. Identifies that the required dosimetry based on the provided survey is only a TLD.	N/A SAT UNSAT N/A SAT UNSAT
EXAMINER: Do not provide JPM RWP and Survey map until Examinee has completed review of the actual RWP and survey.			
2. (C)	Obtain Electronic Alarming Dosimeter (EAD) from the rack outside the CAA entrance and activate it at the access turnstile using appropriate Radiation Work Permit number, and enters the CAA when access is granted. Determine the requirements for dosimetry, clothing, and respirators.	Examinee will obtain an EAD and insert the EAD into the activation slot, scan the bar code on his TLD, and follow the instructions on the screen. Entering RWP number and answering the questions on the computer fields of the access terminal. Once all fields have been entered appropriately, access is granted. Used RWP and survey provided to determine that protective clothing is required to be worn in this area.	N/A SAT UNSAT N/A SAT UNSAT
3.	Dons personal safety equipment as required inside the CAA	Hardhat, safety glasses, and earplugs worn where required in the CAA.	N/A SAT UNSAT
4. (C)	While in the CAA the examinee observes and adheres to all applicable postings and entry requirements.	While in the CAA the examinee observes and adheres to all applicable postings and entry requirements.	N/A SAT UNSAT
5.	Determines radiological status of area around valves to be operated to refill SFP.	Determines or knows that the area around valves to be operated to refill SFP is a contamination area.	N/A SAT UNSAT

6. (C)	Determines requirements for entry into the contaminated area around the SFP.	NO additional dosimetry, single PCs, and no pre-job brief. CUE: Examinee is not required to don Protective clothing	N/A SAT UNSAT
7. (C)	When exiting the CAA the examinee enters the control point area and enters a PCM-1 monitor.	Examinee clears the PCM-1 monitor and exits.	N/A SAT UNSAT
8. (C)	If hand carried materials were taken into the CAA, they will be cleared through the tool contamination monitor (TCM)	Examinee places hand carried items in the TCM for counting	N/A SAT UNSAT
9.	After clearing the PCM-1 monitor, the examinee exits through the Portal Monitor	Examinee clears the Portal Monitor	N/A SAT UNSAT
10.	Examinee deactivates EAD at final exit of session	Examinee deactivates his EAD and returns it to the Health Physics rack.	

Terminating cue: Egress from CAA completed.

END

EXAMINEE COPY

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. **Plant is DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps and 2K11-K5 "FUEL POOL TEMP HI" is in alarm.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

Status: Active **RADIOLOGICAL WORK PERMIT** Rev 0 Unit C RWP **2003-0005**

SECTION I	**RWP DESCRIPTION**	
START DATE: 01-Jan-2003	END DATE: 31-Dec-2003	RWP TYPE: General

DESCRIPTION:

Tours and Inspections

SYSTEM	COMPONENT	BLDG	LOCATION
NA	NA	A1	Non LHRA's
NA	NA	A2	Non LHRA's|
NA	NA	OSCA	Non LHRA's

JOB CONTACTS. Various
JOB CODE.....ROS-

ALARA CODE....C0008011
ALARA CAT.....Level II

SECTION II TASK LIST

TASK	STATUS	TASK DESCRIPTION	ESTIMATED	
			PR-HR	PER-REM
1	Active	Non Locked High Radiation Areas	116709.	0.617
		TOTALS	|116709.	0.617

SECTION III RWP REVIEWS AND APPROVAL

Originator FULTZ MW 19-Dec-2002 Development RASMUSSON DC 19-Dec-2002
ALARA Eval RASMUSSON DC 19-dec-2002 HP Supv. RASMUSSON DC 19-Dec-2002
Terminated _____ _____ Completed _____ _____
Withdrawn _____ _____

SECTION IV	**PROTECTIVE REQUIREMENTS BY TASK**	Rev 0	RWP **2003-0005**			
TASK TASK DESCRIPTION (Task# 1)						
1) **Non Locked High Radiation Areas**						
RADIOLOGICAL CONDITIONS (Task# 1)						
Component/Location	(mrem/Hr) Gen	Max	Dpm/100cm2		Yr/DANI#		
A1,A2 OSCA	1 1	200 80	<1K <1K		Monthly pkg Monthly pkg		
Dosimetry : Whole body TLD required, and Alarming Dosimeter.							

SECTION IV	PROTECTIVE REQUIREMENTS BY TASK Rev 0	RWP **2003-0005**
TASK	**TASK DESCRIPTION** (Task# 1)	

---------- SPECIAL INSTRUCTIONS ----------

ALARA Actions:

1) Unless otherwise directed by RP supervision, Electronic Alarming Dosimeter (EAD) set points will be 5 mrem dose and 40 mrem/hr dose rate.

2) Utilize low dose areas whenever possible to minimize exposure.

Monitoring:

1) Notify the zone coverage RP or the on duty shift RP of areas to be entered and work to be performed.

2) Area posting/survey maps should be reviewed to ensure awareness of radiological conditions in your work area. This information can be obtain from one or more of the following:
A.) RWP - Radiological Conditions Section.
B.) Area Posting - Locale posting in the field.
C.) Status Board - At CA-2, Unit-1 elevation 404', Unit-2 elevations 354', 335' and 317' general areas.
D.) Surveys Maps - Posted outside cubicles. (Unit-1 only, 386' elevation and below).
E.) RWP File - Contact RP if file is desired.
F.) RP Personnel - Contact RP @ CA-1 (#5166), or use radios (on channel 2), located at CA-2 386' dress out area, 354' and 335' elevations near the elevators.

3) Periodically check Electronic Alarming Dosimeter (EAD). This check should be more frequent in areas where your ability to hear the alarm is diminished. If any EAD alarm is received secure work, exit area, and notify RP.

4) Initial/intermittent RP coverage is required for entry into High Radiation Areas unless the individual is "Category 3 Advanced Radworker" qualified and has the appropriate radiation survey meter at all times during the entry.
NOTE: An EAD is not an appropriate survey meter.

5) Prior to entering a "Radioactive Materials Area" outside Controlled Access, contact RP to ensure all personnel, equipment, and material is evaluated for appropriate monitoring upon exit.

Work Controls:

1) Ensure the proper surveys are performed prior to removing any items from the RCA.

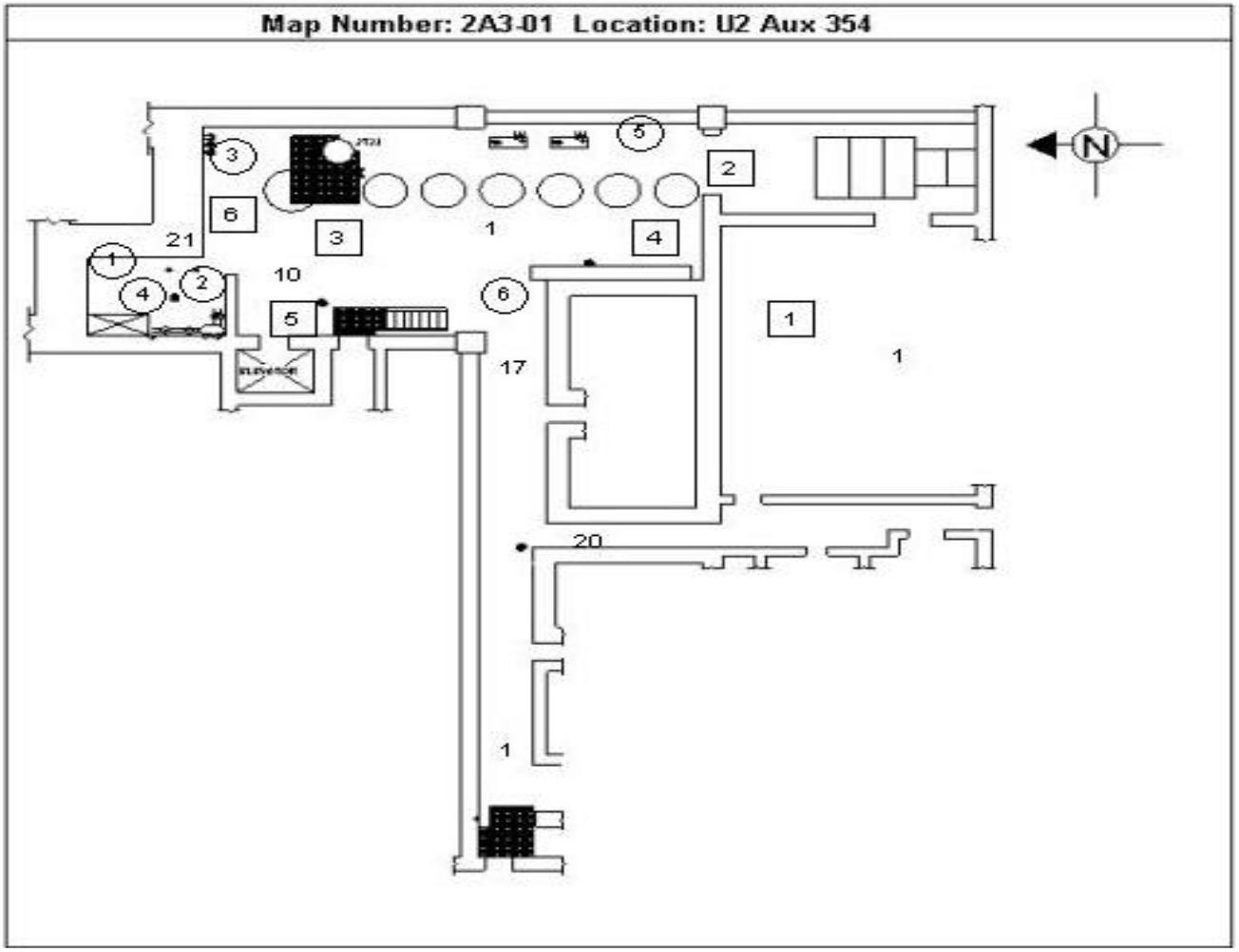
Respiratory:

|1) Based on historical and current data Airborne Activity is <30% DAC. Respiratory protection is not required unless otherwise posted.

Anti-C's:

1) Use Anti-C's appropriate for the area to be entered.

FOR TRAINING PURPOSES ONLY



All Radiation values are in mrem/hour unless otherwise noted
Smear results: < 1000 dpm/100cm2 or < 100 CCPM/LAS unless otherwise noted
O Smear location (100cm2)
- ❑ Large Area Smear (LAS) location

SMEAR DATA (DPM/100cm2)	**SURVEY DATA**
1- 2000 2- 3000 3- 800 4- 1000 5- 200 6- 400	Unit: **2** Building: **RAB** Elevation: **354** Room: **2151** RxPwr: 100 Template: 2A2-24 Frequency: monthly Survey Date:07-01-2003 Survey Time: 21:10:00 Status: Complete RWP: 1 Task1 DAN#: 5-1-7 Surveyed By: Keith A. Murray Badge: 956 Reviewed By: James D. Looper Notes: Peer Check by BEK/837
L.A.S. Data (cpm/LAS) 1. 20 2. 30 3. 20 4. 20 5. 40 6. 35	
Alpha Data (DPM/100cm2)	**Instruments Used** Instrument: RAM-ION-RAM-049 Cal Due:08-31-2003 SrcCk Due: 07-04-2003 D/C & Bkg N/A N/A Instrument: RM-CHP-CR-106 Cal Due:07-30-2003 SrcCk Due:N/A D/C & Bkg 10 100
L.A.S. Alpha (cpm/LAS)	

UNIT: 2 **REV #:** 000 **DATE:** _____

SYSTEM/DUTY AREA: Emergency Plan (A.4)

TASK: Review and approve Emergency Class Initial Notification Message (Time Critical)

JTA#: ANO-SRO-EPLAN-EMERG-279

KA VALUE **RO:** 2.3 **SRO:** 4.0 **KA REFERENCE:** 2.4.40

APPROVED FOR ADMINISTRATION TO: **RO:** _____ **SRO:** X

TASK LOCATION: **INSIDE CR:** _____ **OUTSIDE CR:** _____ **BOTH:** X

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ **SIMULATOR:** Perform **Classroom:** Perform

POSITION EVALUATED: **RO:** _____ **SRO:** X

ACTUAL TESTING ENVIRONMENT: **SIMULATOR:** _____ **PLANT SITE:** _____ **Classroom:** _____

TESTING METHOD: **SIMULATE:** _____ **PERFORM:** X

APPROXIMATE COMPLETION TIME IN MINUTES: 5 Minutes

REFERENCE (S): Form 1903.011Y, Emergency Class Initial Notification Message

EXAMINEE'S NAME: _____ **SSN:** _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time** _____ **Total Time** _____

SIGNED: _____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- On June 8, 2003 at 0400 Unit 2 upgraded to a General Emergency based upon EAL 1.7, Loss of or Challenge to All 3 Fission Product Barriers, due to the following:
    - "A" Steam Generator tube rupture with an on going steam release (a main steam safety valve on the "A" SG header failed open) and a Nuclear Chemistry RCS sample results of 478 µCi/gm.
- The following information has been determined for the classification:
    - Wind speed is at 5 mph from a direction of 275^{o}.
    - PAR 1 and 2 have been recommended due to EPA Guidelines at the site boundary projected to exceed 1 REM TEDE.
- The recommendation to the State is to evacuate the following Zones:
    - G H I J K L N O R U and Zone T as recommended by the Dose Assessment Team with the remainder of the EPZ to go indoors.
    - 10 minutes following the upgrade the Unit 1 Shift Engineer provides you with Form 1903.011Y, Emergency Class Initial Notification Message, for your review and approval.

TASK STANDARD: The examinee has reviewed Form 1903.011Y, Emergency Class Initial Notification Message and has identified four of the five mistakes within 5 minutes:

- Unit 1 is checked instead of Unit 2
- The EAL is listed as 1.9 and should be listed as 1.7
- Wind direction is listed as being from 257^{o} and should be from 275^{o}.
- No Release is checked and Release should be checked (must be one of the four)
- Zones to evacuate does not include Zone T (must be one of the four)

TASK PERFORMANCE AIDS:

Form 1903.011Y, Emergency Class Initial Notification Message

Verify the words “For Training Use Only” are on the bottom of the page in large bold type.

Fill out the notification message form with the following information:

Message Number = 2
Communicator’s name = John Doe
Phone number = 5555
Select “AN ACTUAL EVENT”
Select “A GENERAL EMERGENCY was DECLARED”
Select “UNIT 1” **(this is an error)**
Date = 6-8-03
Time = 0400
EAL = 1.9 **(this is an error)**
Description = Loss of or challenge to all 3 fission product barriers
Wind Speed = 5
Wind Direction from = 257 **(this is an error)**
Select “NO GASEOUS RADIOACTIVE RELEASE” **(this is an error)**
Select “EVACUATE ZONES”
Write in the following zones – G H I J K L N O R U **(this is an error)**
Select “Remainder of the EPZ to go indoors.”
Comments = None

INITIATING CUE:

Review the Form 1903.011Y for accuracy and make note of any corrections required to allow transmission of the notification within the required time frame.

CRITICAL ELEMENTS (C)____2_____

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Review Form 1903.011Y.	Examinee reviewed Form 1903.011Y.	N/A SAT UNSAT
(C)	2. Identify accuracy of form.	Examinee identified four of five errors: • Unit 1 is checked instead of Unit 2 • The EAL is listed as 1.9 and should be listed as 1.7 • Wind direction is listed as being from 257^{o} and should be from 275^{o}. • No Release is checked and Release should be checked (must be one of the four) • Zones to evacuate does not include Zone T (must be one of the four)	N/A SAT UNSAT
	3. Take appropriate corrective action.	Examinee discussed informing Shift Engineer of the errors and correcting the form.	N/A SAT UNSAT
END			

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- On June 8, 2003 at 0400 Unit 2 upgraded to a General Emergency based upon EAL 1.7, Loss of or Challenge to All 3 Fission Product Barriers, due to the following:
  - "A" Steam Generator tube rupture with an on going steam release (a main steam safety valve on the "A" SG header failed open) and a Nuclear Chemistry RCS sample results of 478 µCi/gm.
- The following information has been determined for the classification:
  - Wind speed is at 5 mph from a direction of 275^{o}.
  - PAR 1 and 2 have been recommended due to EPA Guidelines at the site boundary projected to exceed 1 REM TEDE.
- The recommendation to the State is to evacuate the following Zones:
  - G H I J K L N O R U and Zone T as recommended by the Dose Assessment Team with the remainder of the EPZ to go indoors.
- 10 minutes following the upgrade the Unit 1 Shift Engineer provides you with Form 1903.011Y, Emergency Class Initial Notification Message, for your review and approval.

INITIATING CUE:

Review the Form 1903.011Y for accuracy and make note of any corrections required to allow transmission of the notification within the required time frame.

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- On June 8, 2003 at 0400 Unit 2 upgraded to a General Emergency based upon EAL 1.7, Loss of or Challenge to All 3 Fission Product Barriers, due to the following:
  - "A" Steam Generator tube rupture with an on going steam release (a main steam safety valve on the "A" SG header failed open) and a Nuclear Chemistry RCS sample results of 478 µCi/gm.
- The following information has been determined for the classification:
  - Wind speed is at 5 mph from a direction of 275^{o}.
  - PAR 1 and 2 have been recommended due to EPA Guidelines at the site boundary projected to exceed 1 REM TEDE.
- The recommendation to the State is to evacuate the following Zones:
  - G H I J K L N O R U and Zone T as recommended by the Dose Assessment Team with the remainder of the EPZ to go indoors.
- 10 minutes following the upgrade the Unit 1 Shift Engineer provides you with Form 1903.011Y, Emergency Class Initial Notification Message, for your review and approval.

INITIATING CUE:

Review the Form 1903.011Y for accuracy and make note of any corrections required to allow transmission of the notification within the required time frame.

This Document Contains 7 Page(s)

INITIAL NOTIFICATION MESSAGE

Use this form for **Emergency Class Declarations, Changes (Upgrade or Downgrade), Protective Action Recommendations (PAR's) or Terminations.**

State and local officials must be notified of the Emergency Class or PAR within **15 minutes** of the emergency class declaration time or PAR Change.

1. **MESSAGE NUMBER**: 2

2. MESSAGE:

This is John Doe (Communicator's name) at Arkansas Nuclear One. My phone number is 5555.

This is ☒ **AN ACTUAL EVENT** ☐ **A DRILL**.

☐ **A NOTIFICATION OF UNUSUAL EVENT was DECLARED**
☐ **An ALERT was DECLARED**
☐ **A SITE AREA EMERGENCY was DECLARED**
☒ **A GENERAL EMERGENCY was DECLARED**
☐ **The Emergency was TERMINATED**

on ☒ **UNIT 1** ☐ **UNIT 2** on 6/8/2003 (date) at 0400 (time) based on

EAL No. 1.9 **Description:** Loss or Challege to All 3 fission product barriers

The **wind** is **AT** 5 **miles per hour** and **FROM** 257 **degrees**.
(Degrees must be between 0 & 360)

☒ There is **NO GASEOUS RADIOACTIVE RELEASE** taking place at this time due to this event.

☐ There is **A GASEOUS RADIOACTIVE RELEASE** due to this event, which
☐ **does** ☐ **does not** exceed federally approved operating limits.

Recommended Protective Actions are:
☐ **NONE AT THIS TIME**
☒ **EVACUATE ZONES:**
G,H,I,J,K,L,N,O,R,U
☐ **SHELTER ZONES:**
☒ **Remainder of the EPZ to go indoors.**

Comments:

More information will follow shortly.

[3. APPROVED:

☐ **Shift Manager** ☐ **TSC Director** ☐ **EOF Director]**

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **003** DATE: _____

SYSTEM/DUTY AREA: **Chemical and Volume Control System**

TASK: **Perform Emergency Boration (Alternate Success Path)**

JTA#: **ANO2-RO-EOPAOP-OFFNORM-193 (Perform Emergency Boration)**

KA VALUE RO: **3.9** SRO: **3.7** KA REFERENCE: **004 A4.07**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: **X** OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: **Perform** LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **7 Minutes**

REFERENCE (S): **OP 2203.032, OP 2103.015**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

Mode 3, A Shutdown Margin is calculated following a reactor trip.

TASK STANDARD:

Greater than or equal to 40 gallons per minute boric acid solution being injected into the RCS using BAM Pumps via Emergency Borate Valve (2CV-4916-2). This is an alternate success path JPM.

TASK PERFORMANCE AIDS:

AOP 2203.032 Steps 2 through 6. Copy of RHOBAL Shutdown margin, OP 2103.015 Worksheet 4, showing SDM not met.

SIMULATOR SETUP:

A Mode 3 IC will be set up for this JPM. Use CASE file JPM01.

The elements of this file are:

Trigger 5 = 2CV-4873-1a = 75%. 2CV-4873-1a (VCT Outlet) malfunction set to 75%;

Then overrides 2HS-4873-2 are set to false and 2HS-4873-3 set to false to turn lights off.

This case file will simulate the VCT Outlet valve tripping its output breaker due to a motor fault as it tries to shut.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Review SDM calculation, OP 2103.015 worksheet 4 and perform actions as required."

CRITICAL ELEMENTS (C): 1, 5, 6

PERFORMANCE CHECKLIST			STANDARD	(Circle One)
(C)	1.	Review SDM calculation and recognize SDM is not met for current conditions.	Recognize that SDM is not met and that emergency boration is required.	N/A SAT UNSAT
EXAMINERS NOTE: **Examinee may review the instruction section of OP 2103.015 and then ask what method of emergency boration the CRS/SM recommends.** **EXAMINERS CUE:** **When asked which method of Emergency boration is recommended, give the following CUE:** **"Borate using the BAM Tank Gravity Feed valves per AOP 2203.032 starting with step 2."**				
	2.	Verify at least one Charging Pump (CCP) running with flow greater than 40 GPM. POSITIVE CUE: Red light(s) ON. Flow is greater than 40 gpm.	On Panel 2C09, verified CCP(s) running. Observed red light ON; green light OFF above at least one of the following handswitch(es): 2HS-4832-1, "A" CCP 2HS-4852-1, "C" CCP (red) 2HS-4853-2, "C" CCP (green) 2HS-4842-2, "B" CCP Observed flow greater than 40 gpm on Charging Header Flow (2FIS-4863).	N/A SAT UNSAT
	3.	Align Boric Acid Supply To CCP Suction. POSITIVE CUE: Red light(s) ON. NEGATIVE CUE: Green light(s) ON.	On Panel 2C09, opened BAMT Gravity Feed Valves 2CV-4920-1 and/or 2CV-4921-1 Observed red light ON and green light OFF above handswitch(es): • 2HS-4920-1 for 2CV-4920-1 • 2HS-4921-1 for 2CV-4921-1	N/A SAT UNSAT
EXAMINER'S NOTE: **In the following step the VCT Outlet Valve will NOT close requiring an alternate success path.**				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARD	(Circle One)
	4.	Close Volume Control Tank (VCT) Outlet Valve (2CV-4873-1). POSITIVE CUE: Green light OFF. Red light OFF. NEGATIVE CUE: Red light ON.	On Panel 2C09, observed that 2CV-4873-1 did NOT go closed. Observed green light OFF; red light OFF above VCT Outlet Valve handswitch (2HS-4873-1).	N/A SAT UNSAT
(C)	5.	Start at least ONE BAM Pump. POSITIVE CUE: Red light ON. NEGATIVE CUE: Green light ON.	On Panel 2C09, start 2P39A **and/or** 2P39B. Observed RED light ON above the BAM pump started, 2HS-4919-2 (2P39A) or 2HS-4910-2 (2P39B).	N/A SAT UNSAT
(C)	6.	Open Emergency Borate From BAM Pumps Valve (2CV-4916-2). POSITIVE CUE: Red light ON. NEGATIVE CUE: Green light ON.	On Panel 2C09, opened 2CV-4916-2. Observed red light ON; green light OFF above Emergency Borate Valve, 2CV-4916-2.	N/A SAT UNSAT
	7.	Verify Boric Acid Makeup Flow Control Valve (2CV-4926) closed. POSITIVE CUE: Green light ON. NEGATIVE CUE: Red light ON.	On Panel 2C09, verified 2CV-4926 closed. Observed green light ON; red light OFF above Boric Acid Makeup Flow Controller (2FIC-4926).	N/A SAT UNSAT
	8.	Check Reactor Makeup Water Flow Control Valve (2CV-4927) or VCT Makeup Isol valve (2CV-4941) closed. POSITIVE CUE: Green light ON. NEGATIVE CUE: Red light ON.	On Panel 2C09, verified 2CV-4927 or 2CV-4941 closed. Observed green light ON; red light OFF above Reactor Makeup Water Flow Controller (2FIC-4927) or above 2CV-4941 handswitch.	N/A SAT UNSAT
	9.	Check Charging Header Flow (2FIS-4863) greater than 40 gpm. POSITIVE CUE: Flow is: 44 gpm (1 CCP) 88 gpm (2 CCP) 132 gpm (3 CCP)	On Panel 2C09 (upright portion), observed flow greater than 40 gpm on Charging Header Flow indicator (2FIS-4863).	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST	STANDARD	(Circle One)
END		

JOB PERFORMANCE MEASURE

EXAMINER COPY

JPM INITIAL TASK CONDITIONS:

Mode 3. A Shutdown Margin is calculated following a reactor trip.

INITIATING CUE:

The SM/CRS directs, "Review SDM calculation, OP 2103.015 worksheet 4 and perform actions as required."

EXAMINEE COPY

JPM INITIAL TASK CONDITIONS:

Mode 3. A Shutdown Margin is calculated following a reactor trip.

INITIATING CUE:

The SM/CRS directs, "Review SDM calculation, OP 2103.015 worksheet 4 and perform actions as required."

INSTRUCTIONS	CONTINGENCY ACTIONS

NOTE

Steps with (*) are continuous action steps.

1. Refer to 1903.010, Emergency Action Level Classification.

2. Verify at least ONE Charging pump running with flow greater than 40 gpm.

2. Perform the following:

A. IF in Mode 1 or 2, THEN perform the following:

1) Trip Reactor.

2) **GO TO** 2202.001, Standard Post Trip Actions.

B. IF in Mode 3, 4, 5, or 6, THEN perform the following:

1) Verify TCBs open.

2) **GO TO** Step 8.

INSTRUCTIONS	CONTINGENCY ACTIONS

3. Align Charging pump suction to at least ONE of the following sources:

A. Gravity Feed:

1) Open at least ONE BAM Tank Gravity Feed valve:

- 2CV-4920-1
- 2CV-4921-1

B. Boric Acid Makeup:

1) Start at least ONE BAM pump.

2) Open Emergency Borate From BAM Pumps valve (2CV-4916-2).

3) Verify Boric Acid Makeup Flow Control valve (2CV-4926) closed.

C. RWT to Charging pumps:

1) Open Charging Pump Suction Source From RWT valve (2CV-4950-2).

4. Close VCT Outlet valve (2CV-4873-1).

4. IF VCT Outlet valve does NOT close, THEN perform the following:

A. Start at least ONE BAM pump.

B. Open Emergency Borate From BAM Pumps valve (2CV-4916-2).

C. Verify Boric Acid Makeup Flow Control valve (2CV-4926) closed.

5. Check Reactor Makeup Water Flow Control valve (2CV-4927) closed.

5. IF 2CV-4927 NOT closed, THEN close VCT Make Up Isolation valve (2CV-4941-2).

INSTRUCTIONS	CONTINGENCY ACTIONS
6. Check Charging Header Flow indicator (2FIS-4863) greater than 40 gpm.	**6. GO TO Step 2.**
7. GO TO Step 15.	
8. Check RCS pressure less than 1265 psia.	**8. IF RCS pressure greater than 1265 psia, THEN reduce RCS pressure as follows:** A. Reset Low PZR Press Setpoints during pressure reduction. B. Commence RCS pressure reduction to less than 1265 psia as follows: 1) IF RCPs running, THEN use Normal PZR spray. 2) IF ALL RCPs stopped, THEN open PZR High Point Vent To Quench Tank valves: • 2SV-4636-1 • 2SV-4636-2 • 2SV-4669-1 C. Place ALL PZR Heaters in OFF. D. Maintain RCS MTS greater than 30°F.
9. Align ONE HPSI Train as follows: A. Verify RWT level greater than 7.5%. B. Verify associated RWT Outlet valve open: • 2CV-5630-1 • 2CV-5631-2 C. Start HPSI pump on recirc, refer to 2104.039, HPSI System Operation.	

1.0 PURPOSE

To provide a methodology for the calculation of critical configuration estimation and shutdown margin.

2.0 SCOPE

Procedure includes calculation methodology for determining critical Boron concentration, critical CEA position, shutdown margin (Modes 1, 2, 3, 4, 5 and 6), and Boron concentration required to maintain shutdown margin (Modes 3, 4, 5 and 6). The cycle specific data, curves and tables, needed to perform the calculations at any specified time during the cycle have been relocated to a Cycle specific Engineering Report (Plant Data Book).

Procedure satisfies Unit 2 Technical Specification surveillances 4.1.1.1.1.a, b, d & e and 4.1.1.2.a & b and ensures compliance with Limiting Condition for Operation 3.9.1.

3.0 DESCRIPTION

This procedure contains instructions and worksheets to perform reactivity balance calculations. Using the worksheets and cycle specific data provided in the current cycle’s Plant Data Book, operators can calculate estimated critical configurations, shutdown margin, and needed Boron additions and subtractions at power and during cool downs and heatups. Additional information to assist the operators during operation in Mode 1 is included.

4.0 REFERENCES

4.1 References Used In Procedure Preparation

- ANO-2 Tech Specs 3.1.1.1, 3.1.1.2, 3.1.3.6 and 3.9.1
- Plant Heat up (2102.002)
- Power Operation (2102.004)
- Plant Cool down (2102.010)
- Reactor Startup (2102.016)
- Soluble Poison Concentration Control (2103.004)
- CEDM Control System Operation (2105.009)
- Reactivity Anomaly Check Surveillance (2302.002)
- RHOBAL Updates for the Current Cycle of ANO-2
- ANO-2 Physics Data Book for the Current Cycle
- Core Operating Limits Report for the Current Cycle
- Reload Analysis Report for the Current Cycle
- CR-2-88-0355 items 3 and 5, Conservatism in SDM Calculations

4.2 References Used In Conjunction With This Procedure

- RHOBAL Updates for the Current Cycle of ANO-2
- ANO-2 Physics Data Book for the Current Cycle
- 1000.104, Condition Reporting and Corrective Actions
- 2102.002, Plant Heat up
- 2102.016, Reactor Startup
- 2302.002, Reactivity Anomaly Check Surveillance
- 2103.004, Soluble Poison Concentration Control
- ANO-2 Plant Data Book for the Current Cycle

4.3 NRC Commitments

- Step 5.7 and the projected block that can be checked on the worksheets of this procedure satisfy a commitment stated in 0CANO78012, Response to Inspection Report 80-10, Shutdown Margin Worksheet require specific notification to signify projected value, dated 7-29-80 (Commitment P11265).

5.0 LIMITS AND PRECAUTIONS

5.1 CEA worth figures A5A, A5B, A5C, B3, and Tables A5 and B3 of the Plant Data Book assume Groups and Banks other than those specified are fully withdrawn. Positions and associated worths for Groups 5 (figure/table A5), 6 and P are specified on the figures and tables.

5.2 The CEA group positions shall be maintained above the transient insertion limits of Technical Specification 3.1.3.6 during operation in modes 1 and 2. This ensures the shutdown margin required by Technical Specification 3.1.1.1 is maintained.

If the above requirement is not met, initiate and continue boration at $\geq$40 gpm of 2500 ppm boric acid solution or equivalent until the required shutdown margin is restored.

5.3 In modes 1, 2, 3, 4, and 5, a shutdown margin of -5.5%Δk/k (-6.0%Δk/k when <60 EFPD) or more negative shall be maintained at all times. If a calculation indicates that the appropriate margin is not in effect, measures should be initiated immediately to restore the margin by boration.

These shutdown margin requirements include a 0.5%Δk/k margin to allow for error in the curves and operating data enclosed in this procedure. An additional 0.5%Δk/k conservatism is added to the shutdown margin requirements above until after startup tests have shown good agreement with predictions. This extra conservatism may be removed following completion of startup physics tests for a cycle.

5.4 While shutdown (in modes 3, 4, and 5) CEA Shutdown Groups A and B should be fully withdrawn at all times if possible. If it is not possible to have Shutdown Groups A and B withdrawn, at least one boron dilution monitor and alarm should be operable. (Reference Cycle 11 Reload Analysis Report, Section 7.1.1.1)

5.5 While at refueling shutdown (<l40°F with the vessel head unbolted or removed), the boron concentration shall be maintained at all times to ensure that Keff $\leq$0.95. To accomplish this, and account for uncertainty, Keff is required to be $\leq$0.941 when <60 EFPD or Keff $\leq$0.945 when $\geq$60 EFPD. Also verify that the RCS (and refueling canal boron) concentration is greater than or equal to 2500 ppm. The more restrictive of these conditions must be met and is referred to as the refueling boron concentration in Worksheets 5 and 6. If the more restrictive of the above conditions is not in effect (i.e. the refueling boron concentration), measures shall be initiated immediately to restore the boron concentration to the required value.

5.6 Use the conservative data supplied in Table B4 (CEA worth less the worth of the worst stuck rod pair) for an inoperable CEA. For the purposes of shutdown margin calculations a CEA is considered inoperable only when it is untrippable and not fully inserted.

5.7 If shutdown margin worksheets are employed to project shutdown margin for other modes (such as during heat ups or cool downs), the "PROJECTED" block should be checked at the top of the worksheet to preclude confusing such projected values with actual values. Typically Worksheet 5 is to be used for such projected shutdown margin. (Commitment P11265)

5.8 A computer program, RHOBAL, exists to perform the calculations of all Worksheets in this procedure. Contact Reactor Engineering if assistance is needed in performing these worksheets.

5.9 Figures C1 through C5 of the Plant Data Book include additional boron to account for Sm buildup to the equilibrium Sm value at the beginning of a cycle.

5.10 When using Worksheets 4, 5, 6 and 8, and a CEA has been declared inoperable per TS, it is only necessary to assume that it is inoperable under the scope of these worksheets if it is untrippable and not fully inserted.

6.0 SETPOINTS

None

7.0 INSTRUCTIONS

7.1 General

7.1.1 The equation used for calculating a reactivity balance is:

$\rho(net) = \rho(fuel) + \rho(boron) + \rho(CEAs) + \rho(temp) + \rho(power) + \rho(xenon) + \rho(Net\ Sm)$

where it is understood that the values for ρ above are added algebraically (i.e. poisons are negative values).

7.1.2 When ρ(samarium) is called for in this procedure, the net samarium worth as defined by RHOBAL is the samarium worth which should be used.

7.1.3 The xenon reactivity worth is obtained from the RHOBAL computer program, which is accessible on the personal computers in the control room.

7.1.4 The samarium reactivity worth can be obtained from the RHOBAL computer program, which is accessible on the personal computers in the control room.

7.1.5 When running a Rhobal power history, power must be stable for a minimum of 72 hrs and burn up must be >30 EFPD prior to using the Equilibrium Concentrations initialization option. Otherwise, for > 30 EFPD, the power history must begin from the last time equilibrium conditions existed and the transient must be modeled in the program. For < 30 EFPD, the BOC conditions initialization option must be used and the entire power history from BOC must be modeled. As an alternative, the input concentrations option may be used and the concentrations from a previous power history starting from the above conditions would be the input.

7.1.6 Shutdown margin is the instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all control element assemblies are fully inserted except for the single assembly of highest reactivity worth which is assumed to be fully withdrawn.

7.1.7 Keff is defined as $100/(100-\rho)$ where ρ is a negative reactivity value when shutdown, in units of $\%\Delta k/k$.

7.1.8 When using values from figures or tables, either interpolate values between curves or data points, calculate the values if equations are provided, or use RHOBAL to determine the values.

7.1.9 Where worksheets call for a value from a figure, the table used to calculate the figure can be used to provide a more accurate value.

7.1.10 Select the appropriate worksheet from Step 7.2 or obtain the equivalent output from RHOBAL. Follow the instructions as given on the worksheet. Contact Reactor Engineering for assistance with reactivity problems which the Operations staff cannot expeditiously resolve.

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **000** DATE: _____

SYSTEM/DUTY AREA: **A. C. Electrical Distribution**

TASK: **Perform Synchronized Cross Connect of 480 VAC load-centers 2B1 and 2B2**

JTA#: **ANO2-RO-480VAC-NORM-15**

KA VALUE RO: **3.3** SRO: **3.1** KA REFERENCE: **062 A4.01**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: **X** OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: **Perform** LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **10 Minutes**

REFERENCE (S): **OP 2107.001**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

Non-Vital 4160VAC busses energized. 2B1 and 2B2 are energized.

TASK STANDARD:

Cross connect 480VAC non-vital busses 2B1 and 2B2 with 2B1 supplying and 2B2 feeder breaker open. Maintain 2B1 amperage less than 130 amps.

TASK PERFORMANCE AIDS:

OP 2107.001 Section 12.0.

SIMULATOR SETUP:

Any power level or mode.
All Non-Vital 4160VAC and 480VAC Busses energized.
Summed 2B1 and 2B2 bus currents are greater than 130 amps (REMOTE malfunctions 480CURR2B1 And 480CURR2B2).

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and open 2B2 feeder breaker from 2A2 using OP 2107.001 section 12.0."

CRITICAL ELEMENTS (C): 2, 3, 4, 6, 8

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
Examiner's note: **If the initial plant conditions are in Mode 3, 4 or 5, then the first step is N/A.**				
	1.	Check that Operations Manager approval obtained. EXAMINER'S CUE: "The Operations Manager has given permission to perform Cross Connect of 2B1 and 2B2."	Ask if Operations Manager has given approval to cross connect 2B1 and 2B2 at power. **Only required if in MODE 1 or 2, optional if in other than mode 1 or 2**	N/A SAT UNSAT
Examiner's note: **The following two steps may be completed after cross-connecting the busses. The resolution on the meters is low at the low end.**				
(C)	2.	Determine combined load of 2B1 an 2B2.	On Panel 2C10, summed the current reading of 2B1 and 2B2. Observed that the summed load is greater than 130 amps.	N/A SAT UNSAT
(C)	3.	Reduce loads on 2B1 and 2B2 so that combined loading is less than 130 amps when cross connected. EXAMINERS CUE: "AO has been directed to secure non-essential loads on 2B1 and 2B2 to reduce loading on 2B1 and 2B2 to less than 130 amps." **EXAMINERS NOTE:** **Direct operator in simulator instructor's station to reduce loading on 2B1 and 2B2 so that loading is less than 130 amps (use REMOTE malfunctions 480CURR2B1 and 480CURR2B2).** **Then Report to examinee that AO has reduced loading.**	Informs CRS of need to reduce non-essential loads on 2B1 and 2B2 so that combined loading is less than 130 amps.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4.	Synchroscope switch inserted in 2B1/2B2 cross-tie slot and placed in ON.	On Panel 2C10, Placed Synchroscope switch into 2B1/2B2 cross-tie slot and rotated clockwise to the ON position.	N/A SAT UNSAT
	5.	Observed that the Synchroscope is at the 12 o'clock position.	On Panel 2C10, Observed that the Synchroscope is at the 12 o'clock position with the Synchroscope switch in the ON position.	N/A SAT UNSAT
(C)	6.	Close the 2B1/2B2 Cross Tie breaker.	On panel 2C10, rotate the Cross Tie handswitch for 2B1/2B2 clockwise. Observed that the Green light turns OFF and the Red light turns ON above the Cross Tie handswitch.	N/A SAT UNSAT
	7.	Verify that the amperage indicated on 2B1 is less than 130 amps.	On panel 2C10, observe that the current is less than 130 amps on 2B1.	N/A SAT UNSAT
(C)	8.	Open normal supply breaker on 2B2. AND Open Transformer feeder breaker from 2A2 to 2B2.	On Panel 2C10, rotate the normal feeder supply breaker on 2B2 counter clockwise to the open position. Observed that the RED light went OFF and the GREEN light went ON. On Panel 2C10, rotate the transformer feeder breaker on 2A2 to 2B2 counter clockwise to the open position. Observed that the RED light went OFF and the GREEN light went ON.	N/A SAT UNSAT
	9.	Turn sync switch to OFF.	On Panel 2C10, turn sync switch counter clockwise to the OFF position.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	9.	Notified AO to monitor 2B1 transformer during cross connected operation and maintain temperature less than 220°C. EXAMINER'S CUE: "AO has been notified to monitor 2B1 transformer and notify the control room if temperature exceeds 220°C during cross connected operations."	Notify AO to monitor 2B1 transformer during cross connected operation and maintain temperature less than 220°C.	N/A SAT UNSAT
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

Non-Vital 4160VAC busses are energized. 2B1 and 2B2 are energized.

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and open 2B2 feeder breaker from 2A2 using OP 2107.001 section 12.0."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

Non-Vital 4160VAC busses are energized. 2B1 and 2B2 are energized.

INITIATING CUE:

The SM/CRS directs, "Cross Connect 2B1 and 2B2 and open 2B2 feeder breaker from 2A2 using OP 2107.001 section 12.0."

12. CROSS CONNECTING 480V NON-ESF BUSES

CAUTION

- Time dependent over current relays exist on all 480V Load Center feeder breakers. They are set at 1600 amps (equates to 185 amps on 4160V AC side). Bus load should not exceed 173 amps (including 7% tolerance).
- Transformer continuous amperage rating at 4160V is 139 amps. Continuous operation > 139 amps will eventually degrade transformer. (130 amp limit based on 7% instrument error)

12.1. IF in Modes 1 OR 2,
AND cross connecting for non-emergency conditions,
THEN obtain Operations Manager concurrence.

12.2. IF BOTH buses energized,
AND combined load > 130 amps,
THEN adjust load as necessary to achieve < 130 amps combined load.

12.3. IF cross connecting to energize a de-energized bus,
THEN strip all loads from de-energized Load Center.

12.4. Place Synchroscope switch for appropriate Cross Tie breaker to ON.

12.5. IF cross connecting energized buses,
THEN check synchroscope at 12 o'clock position.

12.6. Close selected Cross Tie breaker.

12.7. IF desired to separate 480V bus from 4160V AC bus,
THEN open the following breakers:

12.7.1. Normal Supply breaker on 480V bus.

12.7.2. Transformer Feeder breaker on 2A1 OR 2A2.

12.8. Verify < 130 amps on supplying transformer.

12.9. Turn Sync switch to OFF.

12.10. IF EITHER Load center has been stripped,
THEN energize loads as directed by S/M.

12.11. Monitor supplying transformer to ensure temperature remains < 220°C while buses are cross-connected.

12.12. Maintain < 130 amps on supplying transformer while buses are cross-connected.

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **001** DATE: _____

SYSTEM/DUTY AREA: **Safety Injection System**

TASK: **Perform a high pressure fill of a SIT (SIT "A") (Alternate Success Path)**

JTA#: **ANO2-RO-ECCS-NORM-2 (Perform filling SIT's (RCS pressure >1500psia))**

KA VALUE RO: **3.3** SRO: **3.7** KA REFERENCE: **006 A2.03**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: **X** OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: **Perform** LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **10 Minutes**

REFERENCE (S): **OP 2104.001**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

HPSI Pump (2P89A) is running on minimum recirculation and "A" SIT (2T2A) header from "A" train has been flushed

TASK STANDARD:

Safety Injection Tank (2T2A) level has been raised ~ 0.3% and fill is secured.

This is an ALTERNATE SUCCESS PATH JPM.

TASK PERFORMANCE AIDS:

OP 2104.001 Section 8.0.

SIMULATOR SETUP:

Setup override to de-energize the red and green lights for 2CV-5015-1 when the handswitch is taken to the open position and have the valve open 1%. Safety Injection Tank (2T2A) pressure is <608 psig. Safety Injection Tank (2T2A) level ~ 82.5%.

HPSI Pump (2P89A) is running on minimum recirculation.

RCS Pressure is > 1500 psia.

Run CASE file JPM04. It will do the following:

Set T4=sitfill (triggered when 2HS5015-1 red light energized).

T4 Set 2CV5015_a = 0.1

T4 Set 2HS-5015-1_G = FALSE (green light off)

T4 Set 2HS-5015-2_R = FALSE (red light off)

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Raise Safety Injection Tank (2T2A) level 0.3% using OP 2104.001, beginning with step 8.3."

CRITICAL ELEMENTS (C): **1, 2, 4, 5, 6**

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	1.	Open SIT (2T2A) Drain Valve (2SV-5001-1). POSITIVE CUE: Red light ON. NEGATIVE CUE: Green light ON.	On Panel 2C17, placed handswitch for 2SV-5001-1 to OPEN. Observed red light ON above handswitch.	N/A SAT UNSAT
(C)	2.	Open SIT (2T2A) Check Valve Bypass (2SV-5004). POSITIVE CUE: Red light ON. NEGATIVE CUE: Green light ON.	On Panel 2C33, placed handswitch for 2SV-5004 to OPEN. Observed red light ON above handswitch.	N/A SAT UNSAT
	3.	Monitor SIT level and pressure during fill.	While filling SIT A, monitored level to ensure level maintained < 87.9%. While filling SIT A, monitored SIT pressure closely to ensure pressure maintained < 624 psig.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4.	Throttle open HPSI Header 1 Injection to RCP A Discharge (2CV-5015-1). POSITIVE CUE: Both lights ON. NEGATIVE CUE: Only green light ON.	On Panel 2C17, throttled 2CV-5015-1 OPEN by placing handswitch to OPEN momentarily as required to establish an SIT fill rate. Observed red and green lights ON above handswitch. Observed SIT (2T2A) control board level instrument(s): 2LIS-5008 (2C17) 2LI-5010 (2C17) 2LIS-5009 (2C16) OR Observed SIT (2T2A) level on PMS, or SPDS computer point/trend display.	N/A SAT UNSAT
(C)	5.	Attempts to close HPSI Header 1 Injection to RCP A Discharge valve prior to exceeding 87.9%. NEGATIVE CUE: Red light ON.	On Panel 2C17, placed handswitch for 2CV-5015-1 to CLOSE. Recognized that 2CV-5015-1 would NOT close and both red and green lights are deenergized.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6.	Stop the level increase in 2T2A SIT. POSITIVE CUE: 2P-89A is secured OR Closed SIT A Drain Valve (2SV-5001-1). POSITIVE CUE: 2SV-5001-1 green light is ON red light is OFF. OR Closed SIT A Check Valve Bypass (2SV-5004). POSITIVE CUE: 2SV-5004 green light is ON red light is OFF.	On panel 2C17, placed handswitch for A HPSI Pump (2P-89A) in stop Observed 2P89A stopped. OR On Panel 2C17 placed handswitch for SIT A Drain Valve (2SV-5001-1) to CLOSED. Observed green light ON above handswitch. OR On Panel 2C33, placed handswitch for SIT A Check Valve Bypass (2SV-5004) to CLOSED. Observed green light ON above handswitch.	N/A SAT UNSAT
	7.	Inform CRS of failure of 2CV-5015-1 to close. POSITIVE CUE: Acknowledge communication as CRS. Direct Examinee to secure from filling A SIT.	Informed CRS that 2CV-5015-1 failed to close.	N/A SAT UNSAT
	8.	Close SIT (2T2A) Drain Valve. (if not closed previously.) POSITIVE CUE: Green light ON.	On Panel 2C17, placed handswitch for SIT A Drain Valve (2SV-5001-1) to CLOSE. Observed green light ON above handswitch.	N/A SAT UNSAT
	9.	Close SIT (2T2A) Check Valve Bypass. (if not closed previously.) POSITIVE CUE: Green light ON.	On Panel 2C33, placed handswitch for SIT A Check Valve Bypass (2SV-5004) to CLOSE. Observed green light ON above handswitch.	N/A SAT UNSAT
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

HPSI pump (2P89A) is running on minimum recirculation and "A" SIT (2T2A) header from "A" train has been flushed.

INITIATING CUE:

The SM/CRS directs, "Raise Safety Injection Tank (2T2A) level 0.3% using OP 2104.001, beginning with step 8.3."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

HPSI pump (2P89A) is running on minimum recirculation and "A" SIT (2T2A) header from "A" train has been flushed.

INITIATING CUE:

The SM/CRS directs, "Raise Safety Injection Tank (2T2A) level 0.3% using OP 2104.001, beginning with step 8.3."

8.0 FILLING SITS (RCS PRESSURE ≥ 1500 PSIA

8.1 IF leakage is indicated past associated 2SI-15 check valve THEN GO TO Injection Header Flush and SIT Fill, Attachment C of this procedure to fill SIT(s).

8.2 Place HPSI pump (2P-89A/B/C) in service on minimum recirculation mode using applicable section of HPSI System Operation (2104.039).

NOTE

- Steps marked with an * are continuous action steps.
- SIT pressure will rapidly drop 2-5 psi when opening drain valve if SIT drain header has been depressurized.

*8.3 WHEN closing HPSI valves,
THEN maintain handswitch in close position for ~ 2 seconds after red light out.

*8.4 Closely monitor SIT parameters as SIT pressure will rise rapidly during fill operations.

8.5 IF filling A SIT,
THEN perform the following:

8.5.1 Verify open:

- SIT A Drain valve (2SV-5001-1)
- SIT A Check Valve Bypass (2SV-5004)

8.5.2 Throttle open selected HPSI Pump Injection MOV:

- HPSI Header 1 Injection to RCP A Discharge (2CV-5015-1)
- HPSI Header 2 Injection to RCP A Discharge (2CV-5016-2)

8.5.3 WHEN desired level reached,
THEN close the following:

A. HPSI valve opened in previous step

B. 2SV-5001-1

C. 2SV-5004

8.6 IF filling B SIT,
THEN perform the following:

8.6.1 Verify open:

- SIT B Drain valve (2SV-5021-1)
- SIT B Check Valve Bypass (2SV-5024)

8.6.2 Throttle open selected HPSI Pump Injection MOV:

- HPSI Header 1 Injection to RCP B Discharge (2CV-5035-1)
- HPSI Header 2 Injection to RCP B Discharge (2CV-5036-2)

8.6.3 WHEN desired level reached,
THEN close the following:

A. HPSI valve opened in previous step

B. 2SV-5021-1

C. 2SV-5024

8.7 IF filling C SIT,
THEN perform the following:

8.7.1 Verify open:

- SIT C Drain valve (2SV-5041-2)
- SIT C Check Valve Bypass (2SV-5044)

8.7.2 Throttle open selected HPSI Pump Injection MOV:

- HPSI Header 1 Injection to RCP C Discharge (2CV-5055-1)
- HPSI Header 2 Injection to RCP C Discharge (2CV-5056-2)

8.7.3 WHEN desired level reached,
THEN close the following:

A. HPSI valve opened in previous step

B. 2SV-5041-2

C. 2SV-5044

8.8 IF filling D SIT,
THEN perform the following:

8.8.1 Verify open:

- SIT D Drain valve (2SV-5061-2)
- SIT D Check Valve Bypass (2SV-5064)

8.8.2 Throttle open selected HPSI Pump Injection MOV:

- HPSI Header 1 Injection to RCP D Discharge (2CV-5075-1)
- HPSI Header 2 Injection to RCP D Discharge (2CV-5076-2)

8.8.3 WHEN desired level reached,
THEN close the following:

A. HPSI valve opened in previous step

B. 2SV-5061-2

C. 2SV-5064

8.9 WHEN all SIT filling operations are complete,
THEN secure HPSI pump using HPSI System Operation (2104.039).

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 6 **DATE:** **14 July 2003**

SYSTEM/DUTY AREA: **Abnormal/Emergency Operations**

TASK: **Secure Containment Spray following inadvertent actuation**

JTA#: **20265140101**

KA VALUE RO: **3.2** **SRO:** **3.7** **KA REFERENCE:** **026 020 A2.03**

APPROVED FOR ADMINISTRATION TO: RO: **X** **SRO:** **X**

TASK LOCATION: INSIDE CR: **X** **OUTSIDE CR: BOTH:**

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: SIMULATOR: **Perform** **LAB:** ____

POSITION EVALUATED: RO: ___ **SRO:**__

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ **PLANT SITE:** ____ **LAB:**___

TESTING METHOD: SIMULATE: ___ **PERFORM:** ___

APPROXIMATE COMPLETION TIME IN MINUTES: **15 minutes**

REFERENCE (S): **EOP 2202.003**

EXAMINEE'S NAME: _____ **SSN:**_____ -_____ -_____

EVALUATOR'S NAME:_____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ **Stop Time**_____ **Total Time** _____

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: CSS termination criteria are satisfied.

OP 2203.012D D-1 is completed through step 2.3.

TASK STANDARD: CSAS is reset and CSAS actuated components are secured.

TASK PERFORMANCE AIDS: OP 2203.12 D-1, Step 2.4

SIMULATOR SETUP: An inadvertent actuation of the containment spray system has occurred. Containment Temperature. < 140 ° F, Containment Pressure is < 22.5 psia, AND ALL Containment cooling fans running in emergency mode. Both CSAS pumps in PTL.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Reset CSAS and secure Containment Spray beginning with OP 2203.012 D1 beginning with step 2.4."

CRITICAL ELEMENTS (C): 1, 2, 3

	PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
EXAMINERS NOTE: The following step may be simulated for each of the other three trip paths.			
(C) 1.	Reset CSAS. POSITIVE CUE: All trip paths reset. Pretrip/trip indicators are reset. NEGATIVE CUE: One/all trip paths NOT reset.	On panel 2C23B, obtained key and placed it in trip path to be reset. On panel 2C23B, placed trip path to UNLK. On panel 2C23B depressed CSAS pushbutton for trip path. On panel 2C40, depressed CSAS lockout reset pushbutton. On panel 2C23B, reset pretrip/trip indicators after all CSAS trip paths are reset. OR On PPS inserts, reset pretrip/trip indicators after all CSAS trip paths are reset.	N/A SAT UNSAT
(C) 2.	Remove Containment Spray Pump hand switches from Pull to Lock. POSITIVE CUE: Green lights ON. NEGATIVE CUE: Red light(s) ON.	On panels 2C16/17, Removed hand switches for Containment Spray Pumps (2P35A and 2P35B) from Pull to lock. Observed green lights ON above handswitches.	N/A SAT UNSAT
(C) 3.	Close Containment Spray Header Isolation Valves. POSITIVE CUE: Green lights ON. NEGATIVE CUE: Red light(s) ON.	On panels 2C16/17, placed handswitches for Containment Spray Header Isolation valves (2CV-5612-1 and 2CV-5613-2) in CLOSE. Observed green lights ON above handswitches.	N/A SAT UNSAT
END			

JOB PERFORMANCE MEASURE

EXAMINER's COPY

JPM INITIAL TASK CONDITIONS:

An inadvertent actuation of the containment spray system has occurred. You have been directed to secure containment spray. CSS termination criteria are satisfied. OP 2203.012D D-1 is completed through step 2.3.

INITIATING CUE:

The SM/CRS directs, "Reset CSAS and secure Containment Spray beginning with OP 2203.012D D-1 Step 2.4."

JOB PERFORMANCE MEASURE

EXAMINEE's COPY

JPM INITIAL TASK CONDITIONS:

An inadvertent actuation of the containment spray system has occurred. You have been directed to secure containment spray. CSS termination criteria are satisfied. OP 2203.012D D-1 is completed through step 2.3.

INITIATING CUE:

The SM/CRS directs, "Reset CSAS and secure Containment Spray beginning with OP 2203.012D D-1 Step 2.4."

ANNUNCIATOR 2K04

D-1

CSAS ACT

1.0 CAUSES

1.1 CSAS Channel 2 actuated due to one of the following:

1.1.1 CNTMT pressure ≥ 23.3 psia (2 out of 4 channels).

1.1.2 PPS Monthly Test.

1.1.3 PPS Relay failure.

2.0 ACTION REQUIRED

2.1 Determine validity of alarm by checking CNTMT pressure.

2.2 IF CSAS valid,
THEN GO TO the appropriate Emergency Operating Procedure.

2.3 IF CSAS inadvertent,
THEN perform the following:

- Verify BOTH CNTMT Spray pumps (2P35A/B) in PTL
- Record time CNTMT Spray pumps placed PTL in Station log.
- Refer to TS 3.0.3

2.4 WHEN desired to reset CSAS,
THEN perform the following:

2.4.1 Verify Trip paths reset by performing the following as necessary at 2C23 for each channel:

A. Use Key 15 to place LK/UNLK switch to UNLK.

B. Depress CSAS pushbutton on 2C23.

C. Return LK/UNLK switch to LK and remove key 15.

2.4.2 Reset Actuation Paths as follows:

A. Depress CSAS Lockout Reset pushbutton on 2C40 AND verify Reset light on.

B. Depress CSAS Lockout Reset pushbutton on 2C39 AND verify Reset light on.

(D-1 Continued on next page)

ANNUNCIATOR 2K04

D-1

CSAS ACT
(Continued)

2.4.3 Verify the following component restorations:

A. Close CNTMT Spray Header Isolation valves

- 2CV-5612-1
- 2CV-5613-2

B. Remove CNTMT SPRAY PMPs from PTL

- 2P-35A
- 2P-35B

C. Exit TS 3.0.3 if applicable

2.5 IF authorized testing in progress,
THEN no action required.

2.6 IF a failed relay is the cause,
THEN refer to Tech Spec 3.3.2.1 and submit MAI.

3.0 TO CLEAR ALARM

3.1 Lower Containment Pressure < 21 psia.

3.2 Reset the CSAS trip path in 2C40.

3.3 Replace failed relay.

4.0 REFERENCES

4.1 E-2454-1

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **000** DATE: _____

SYSTEM/DUTY AREA: **Incore Instrumentation System**

TASK: **Remove An Incore Detector From Scan**

JTA#: **ANO-2-RO-PMS-NORM-4**

KA VALUE RO: **3.9** SRO: **3.9** KA REFERENCE: **015 A2.02**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: **X** OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: _____ SIMULATOR: **Perform** LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: **X**

APPROXIMATE COMPLETION TIME IN MINUTES: **10 Minutes**

REFERENCE(S): **OP 2105.013**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The board operator has noticed that ASI has been spiking and has determined the Incore detector E02-1 needs to be removed from service.

TASK STANDARD:

Remove incore detector E02-1 from scan and verified compliance with SAR requirements.

TASK PERFORMANCE AIDS:

PMS terminal, OP 2105.013B with Section 1 completed, OP 2105.013C, Incore Printouts from COLSS and SAR 7.7.1.1.7.

SIMULATOR SETUP:

100% Power, steady state. Disconnect PMS printer so printouts will not be printed outside security envelope.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The Control Room Supervisor directs you to remove spiking Incore Detector E02-1 from scan using OP2105.013B at PMS terminal on Panel 2C03.

CRITICAL ELEMENTS (C): **2, 3, 5, 6**

		PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
NOTES: 1. Examinee is directed to utilize PMS screen located on Panel 2C03 to perform this function. • Keyboard for PMS screen located on Panel 2C03 is located on Panel 2C04. • Touch screen capability exists for PMS screen located on 2C03. 2. If keyboard used, an <ENTER> must follow the Turn-On-Code (TOC) entry 3. Examinee may elect to go directly to step by typing the appropriate TOC (Turn-On-Code) in from PMS screen, bypassing Main Menu(s). 4. Form 2105.013B section 1.1 already filled out by CRS				
	1.	Enter detector core location and level at Step 1.2.1 of 2105.013B.	Using 2105.013B at Step 1.2.1 examinee entered "E02-1" and initialed step.	N/A SAT UNSAT
(C)	2.	Perform CHECK program using N9 function. CUE: When examinee gets to the point of selecting the printer, give N9 report printed on "Salmon" colored paper to examinee. DO NOT ALLOW EXAMINEE TO PRINT REPORT!	At PMS screen/keyboard on 2C03 examinee performed the following evolutions to obtain CHECK program printout using COLSS N9 function: Touched "COLSS" button on PMS touch screen OR typed "COLSS" <Enter> on keyboard on 2C04. Touched "N9" button on PMS touch screen OR typed "N9" <Enter> on keyboard on 2C04. Selected "F4(Run/Prt)" on keyboard on Panel 2C04. Examinee could also select F3(Run Dis) or F5 (Run/Dis/Prt) Enter Job Number "1" (CHECK) <ENTER> from keyboard on Panel 2C04. Obtained CHECK program printout and initialed Step 1.2.2 of 2105.013B.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
EXAMINER'S NOTE Examinee may discuss the COLSS Operability requirements of SAR Section 7.7.1.1.7 such as: 1. 193 of 220 Incore detectors are operable which meets the requirement of at least 75% of all incore detectors operable (165 detectors) with at least one incore detector in each quadrant at each level. 2. 40 Incore detector locations are operable which meets the requirement of at least 75% of all incore detector locations operable (33 locations). 3. There are 36 good tilt estimates at 5 out of 5 levels which meets the requirements for at least 6 good tilt estimates, with at least 1 tilt estimate at each of 3 levels. Examinee should use this information to determine that if detector E02-1 is removed from service that the Operability of the COLSS system is not affected and that the requirements of SAR Section 7.7.1.1.7 are still meet.				
(C)	3.	Using N9 report verify compliance with SAR section 7.7.1.1.7 assuming the detector will be removed from scan. EXAMINERS CUE: If examinee requests to look at SAR Section 7.7.1.1.7, give SAR handout to examinee.	Examinee used the N9 report and from the heading and analysis of the report determined that the loss of detector E02-1 for Symmetric Spnd Set #1 at level 1 results in the loss of one detector from the total number of detectors and the loss of one tilt estimate. Examinee initialed 2105.013B Step 1.2.3 to signify that SAR Section 7.7.1.1.7 will be satisfied and proceeded to 2105.013C.	N/A SAT UNSAT
	4.	Place NA in 2105.013C Step 1.1.	Placed NA in initial block of 2105.013C Step 1.1	N/A SAT UNSAT
(C)	5.	Use RIS function to select E02-1 for removal from scan	At PMS terminal/screen examinee performed the following evolution using touchscreen on Panel 2C03 AND/OR typing in TOCs using keyboard on Panel 2C04 COLSS (Ensure page 1) ↓ RIS1 (Raw Incore Signal (1/2) Initialed Step 1.2 of 2105.013C.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6.	Use RID function to remove E02-1 from scan	At PMS terminal/screen examinee performed the following evolution using touchscreen on 2C03 AND/OR typing in TOCs at keyboard on Panel 2C04. RID (Delete) ↓ E02-1 (Enter Grid Loc-Level) <ENTER> ↓ Yes (Are you sure DEL is REQ'D (Y/N)) <ENTER> Initialed Step 1.3 of 2105.013C.	N/A SAT UNSAT
	7.	Perform CHECK program using N9 function CUE: When examinee gets to N9 screen, give N9 report printed on "Yellow" paper to examinee. The steps to obtain N9 CHECK report were performed in Step 2. DO NOT ALLOW EXAMINEE TO PRINT REPORT!	At PMS terminal/screen/keyboard on 2C03 examinee performed the following evolutions to obtain CHECK program printout using COLSS N9 function: Touched COLSS button on PMS touch screen OR typed COLSS <Enter> on keyboard on 2C04. Touched N9 button on PMS touch screen OR typed N9 <Enter> on keyboard on 2C04. Obtained CHECK program printout and initialed Step 1.4 of 2105.013C.	N/A SAT UNSAT
	8.	Using N9 report verify detector E02-1 has been removed from scan and compliance with SAR section 7.7.1.1.7 is still being met.	Examinee used the N9 report to determine that: Incore detector E02-1 has been removed from scan **AND** The requirements of SAR 7.7.1.1.7 are still being met. Examinee initialed 2105.013C Step 1.4.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	9.	Perform Independent Verification that Incore detector E02-1 is removed from scan. CUE: Inform Examinee that Independent Verification of deleted incore point has been completed.	Notified CRS/SM that Independent Verification of deleted incore point is required by procedure.	N/A SAT UNSAT
	10.	Submit MAI (Work Request) for deleted incore and entered MAI (Work Request) number. CUE: Inform examinee that the P&S liason has submitted Work Request WR 12345 on Incore detector E02-1.	Discussed need to submit MAI (Work Request) for deleted incore. Examinee will write MAI (Work Request) Number at Step 1.6 of 2105.013C and initial step.	N/A SAT UNSAT
END				

JOB PERFORMANCE MEASURE

EXAMINERS COPY:

INITIAL CONDITIONS:

The board operator has noticed that ASI has been spiking and has determined that Incore Detector E02-1 needs to be removed from service.

INITIATING CUE:

The Control Room Supervisor directs you to remove spiking Incore Detector E02-1 from scan using OP2105.013B at PMS terminal on Panel 2C03.

JOB PERFORMANCE MEASURE

EXAMINEES COPY:

INITIAL CONDITIONS:

The board operator has noticed that ASI has been spiking and has determined that Incore Detector E02-1 needs to be removed from service.

INITIATING CUE:

The Control Room Supervisor directs you to remove spiking Incore Detector E02-1 from scan using OP2105.013B at PMS terminal on Panel 2C03.

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **000** DATE: _____

SYSTEM/DUTY AREA: **Heat removal from core, EFW system**

TASK: **Manual start of Turbine driven EFW pump**

JTA#: _____

KA VALUE RO: **3.5** SRO: **3.9** KA REFERENCE: **001 A4.10**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: **X** OUTSIDE CR: _____ BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: **X** SIMULATOR: _____ LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: **X** LAB: _____

TESTING METHOD: SIMULATE: **X** PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **15 Minutes**

REFERENCE (S): **OP 2106.006**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The plant is performing a plant startup and is in hot standby.

2P75, Auxiliary Feedwater Pump is tagged out for maintenance.

2P7B, 'B' Emergency Feedwater Pump has tripped due to a breaker fault.

'A' SG level is 55% and 'B' SG level is 57%.

TASK STANDARD:

Start 2P7A and align emergency feed water to both SG's.

TASK PERFORMANCE AIDS:

OP 2106.006

SIMULATOR SETUP:

A Mode 3 IC will be set up for this JPM

SG levels approximately 55%.

2P7B breaker trip.

2P75 is tagged out.

JOB PERFORMANCE MEASURE

INITIATING CUE:
The SM/CRS directs, "Feed Steam Generators using 2P-7A, 'A' EFW pump, using Procedure 2106.006 section 9.0. Attachments A and C of Procedure 2106.006 have been completed"

CRITICAL ELEMENTS (C): 4, 8, 9

		PERFORMANCE CHECKLIST	STANDARDS	(Circle One)
1.		Verify 2P-7A aligned using Section 7.0 of this procedure	Performs checks IAW section 7.0 (steps a through l)	
Examiner Note: Cue: Use of use of SU/BD DI Cond Return Header as suction source is not desired				
	a.	Verify EFW pump 2P7A suction flowpath available. **CUE:** Red light ON; green light OFF over handswitch for 2CV-0795-2. Red light ON; green light OFF over handswitch for 2CV-0707.	On panel 2C16, verified Pump Suction Source From CST (2CV-0795-2) OPEN; Observed red light ON; green light OFF over handswitch for 2CV-0795-2. AND On panel 2C33, verifed 2CV 0707, CST suction isolation to 2P7A/2P7B, OPEN. Observed red light ON; green light OFF over handswitch for 2CV-0707-2.	N/A SAT UNSAT
	b.	Verify Service Water Suction valve 2CV-0711-2 closed. **CUE:** Red light ON; green light OFF over handswitch for 2CV-0711-2.	On 2C16, verified Pump Suction Source From Service Water (2CV-0711-2) Closed. Observed red light OFF; green light ON over handswitch for 2CV0711-2.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

	b.	Verify EFW Discharge valve 2CV-1037-1 and 2CV 1039-1 OPEN **CUES:** Red light ON; green light OFF over handswitch for 2CV-1037-1. Red light ON; green light OFF over handswitch for 2CV-1039-1.	On panel 2C16, verified 2CV-1037-1 OPEN; Observed red light ON; green light OFF over handswitch for 2CV-1037-1. On panel 2C16, verified 2CV-1039-1 OPEN; Observed red light ON; green light OFF over handswitch for 2CV-1039-1.	N/A SAT UNSAT
	d.	Verify EFW Discharge valve 2CV-1026-2 and 2CV 1076-2 CLOSED. **CUES:** Red light OFF; green light ON over hand switch for 2CV-1026-2. Red light OFF; green light ON over hand switch for 2CV-1076-2.	On panel 2C16, verified 2CV-1026-2 CLOSED; Observed red light OFF; green light ON over hand switch for 2CV-1026-2. On panel 2C16, verified 2CV-1076-2 CLOSED; Observed red light OFF; green light ON over hand switch for 2CV-1076-2.	N/A SAT UNSAT
Examiner's NOTE: The steps for 2P7B should not be completed. CUE: If asked, report that only 2P7A should be aligned per step 7.0.				
	e.	Verify 2P-7A Speed controller (2HIC-0336-2) set at 100%. **CUE:** 2HIC-0366-2 is set at 100%.	On 2C16, Verify 2P-7A Speed controller (2HIC-0336-2) set at 100%.	N/A SAT UNSAT
	f.	Verify EFW pump 2P-7A oil levels. **CUE:** WCO reports that 2P7A bearing oil levels are within 1/4 inch of line on Oil Level indicating plate.	Contact WCO to verify that EFW pump 2P-7A bearing oil levels are within 1/4 inch of line on Oil Level indicating plate.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

	g.	Check EFW pump Turbine (2K-3) inboard bearing oil level between low and high marks on 2LI-0315. **CUE:** WCO reports that EFW pump Turbine (2K-3) inboard bearing oil level between low and high marks on 2LI-0315.	Contact WCO to verify that the EFW pump Turbine (2K-3) inboard bearing oil level is between low and high marks on 2LI-0315.	N/A SAT UNSAT
This completes the system alignment. Transition to section 9.0 in 2106.006.				
2.		Notify Chemistry to perform samples. **CUE:** Chemistry acknowledges that they need to do the following: • Take required EFW samples. • Sample Main Steam as needed to accommodate effluent release calculations.	Contact chemistry to perform the following: • Take required EFW samples. (CR-ANO-2-1999-0324) • Sample Main Steam as needed to accommodate effluent release calculations. (CR-ANO-2-1999-0324	N/A SAT UNSAT
3.		Verify that EFW Suction (2EFW-0706) is open. **Cue:** Red light ON; green light OFF over handswitch for 2EFW-0706.	Checks plant power and on 2C33 verifies that 2EFW 0706 is open by observing that the Red light is ON and Green Light is OFF above handswitch for 2EFW-0706.	N/A SAT UNSAT
Examiner's note: The examinee should explain the starting sequence when 2CV 0340-2 is taken to open: 2SV-0205 will open, then after about 15 seconds and 2P7A speed about 800 RPM, 2CV0340-2 will ramp open and 2P7A speed will ramp up to set speed. At about 35 seconds 2CV-0340-2 is 100% open and 2P7A speed is ~ 3800RPM, 2SV-0205 will close.				

JOB PERFORMANCE MEASURE

4. (C)	Open Steam Supply valve (2CV-0340-2). **CUE:** When the examinee reports expected response give the following cues: • The red light on Green light off for 2SV 0205. • 2P7A speed about 800 RPM. • 2CV-0340-2 opening Green light ON and RED light on. • 2P7A speed about 3800RPM. • 2CV 0340-2 Red light ON and Green Light OFF. • 2SV 0205 Red Light OFF and Green light ON.	On 2C16, Steam Supply valve (2CV-0340-2) handswitch is taken to the clockwise direction and the following is reported: • The red light on Green light off for 2SV 0205. • 2P7A speed about 800 RPM. • 2CV-0340-2 opening Green light ON and RED light on. • 2P7A speed about 3800RPM. • 2CV 0340-2 Red light ON and Green Light OFF. • 2SV 0205 Red Light OFF and Green light ON.	N/A SAT UNSAT
5.	Record time 2CV-0340-2 opened in Control Room log. **CUE:** Present time is recorded in station log for opening 2CV-0340-2.	Present time 2CV-0340-2 opened recorded in Control Room log.	N/A SAT UNSAT
6.	Check Turbine Bearing Cooling Water Supply valve (2SV-0317-2) opens. **CUE:** Red light is ON and Green light is OFF for 2SV-0317-2. WCO reports that 2SV-0317-2 is open and water is flowing into drain. (NOTE this is not required).	On 2C16, verifed that Turbine Bearing Cooling Water Supply valve (2SV-0317-2) red light is ON and Green light is OFF. Contacted WCO to verify that Turbine bearing cooling water valve 2SV0317-2 is OPEN.	N/A SAT UNSAT
7.	Check normal discharge pressure indicated for 2P7A. **CUE:** 2P7A discharge pressure is reading 1400 psig.	On 2C16, verified normal discharge pressure for 2P7A on 2PIS0713-2.	N/A SAT UNSAT
Examiners note: the examinee should recognize that placing the 2P7A speed controller out of 100% demand will place the plant in TS 3.0.3 and is therefore NOT recommended.			

JOB PERFORMANCE MEASURE

8. (C)	Feed SG levels. **CUE:** NOTE: if candidate attempts to move speed controller off of 100% demand, then report what is requested. This is UNSAT. Red light on and green light off for 2CV 1026-2. Red light on and green light off for 2CV 1076-2.	On 2C16, take hand switches for 2CV 1026-2 and 2CV-1076-2 to the clockwise direction and observed that the Red light is ON and Green light OFF above each hand switch.	N/A SAT UNSAT
Examiner's Note: The examinee should discuss the affects that feed rates will have on RCS temperature and SDBCS response. After about 2 minutes, provide the following CUE: 'A' SG level is 63 % and 'B' SG level is 65%.			
9. (C)	Secure Feed to SG. **CUE:** NOTE: if candidate attempts to move speed controller off of 100% demand, then report what is requested. This is **UNSAT**. Red light OFF and green light ON for 2CV 1026-2. Red light OFF and green light ON for 2CV 1076-2.	On 2C16, take hand switches for 2CV 1026-2 and 2CV-1076-2 to the counter-clockwise direction and observed that the Red light is off and Green light ON above each hand switch.	N/A SAT UNSAT
END			

JOB PERFORMANCE MEASURE

EXAMINER's COPY

INITIAL CONDITIONS:

The plant is performing a plant startup and is in hot standby.

2P75, Auxiliary Feedwater Pump is tagged out for maintenance.

2P7B, 'B' Emergency Feedwater Pump has tripped due to a breaker fault.

'A' SG level is 55% and 'B' SG level is 57%.

INITIATING CUE:

The SM/CRS directs, "Feed Steam Generators using 2P-7A, 'A' EFW pump, using Procedure 2106.006 section 9.0. Attachments A and C of Procedure 2106.006 have been completed"

JOB PERFORMANCE MEASURE

EXAMINEE's COPY

INITIAL CONDITIONS:

The plant is performing a plant startup and is in hot standby.

2P75, Auxiliary Feedwater Pump is tagged out for maintenance.

2P7B, 'B' Emergency Feedwater Pump has tripped due to a breaker fault.

'A' SG level is 55% and 'B' SG level is 57%.

INITIATING CUE:

The SM/CRS directs, "Feed Steam Generators using 2P-7A, 'A' EFW pump, using Procedure 2106.006 section 9.0. Attachments A and C of Procedure 2106.006 have been completed"

JPM- ANO-2-JPM-RO-RCP02

JOB PERFORMANCE MEASURE

UNIT: 2 **REV #:** 6 **DATE:**_____
SYSTEM/DUTY AREA: Abnormal/Emergency Operations

TASK: Restore component cooling water to reactor coolant pumps (Alternate Success Path)

JTA#: 20085180401

KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 008 A4.01

APPROVED FOR ADMINISTRATION TO: RO: X SRO: X

TASK LOCATION: INSIDE CR: X OUTSIDE CR: _____ BOTH:_____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: SIMULATOR: Perform LAB:

POSITION EVALUATED: RO: _____ SRO:_____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: PLANT SITE: LAB:

TESTING METHOD: SIMULATE: PERFORM:

APPROXIMATE COMPLETION TIME IN MINUTES: 5 minutes

REFERENCE(S): EOP 2202.010

EXAMINEE'S NAME: _____ **SSN:**_____ -_____ -_____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: UNSATISFACTORY:

PERFORMANCE CHECKLIST COMMENTS:

Start Time _____ **Stop Time**_____ **Total Time** _____

SIGNED_____ **DATE:** _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JPM- ANO-2-JPM-RO-RCP02

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS: 2A1, 2A2, 2H1 & 2H2 re-energized following a degraded power situation. Power to CCW pumps has been restored. Seal temperatures are > 180°F and < 300°F.

TASK STANDARD: Controlled bled off isolated to VCT and CBO relief valve isolated.

TASK PERFORMANCE AIDS: EOP 2202.010 Attachment 21

SIMULATOR INITIAL CONDITIONS: Set up CCW valves per EOP 2202.010 Attachment 29 "STARTUP XFM# 2 USAGE" perform actions through step 1.n. Close RCP CCW RETURN valve, 2CV-5255-1, 2CV-5254-2 and 2CV-5236-1. NO SIAS actuation.
Run case file JPM07 This will do the following:
Set T4 = ccwrcp (this will trigger T4 when 2CV 5255 red light is energized).
When 2CV 5255-1 is taken to open position, it will trip the breaker
T4=2HS-5255-1_R false (override)
T4=2HS-5255-1_G false (override)
T4=2CV5255-1_a = 0.0% (component malfunction)

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SS/CRS directs, "Restore CCW to the RCP's using EOP 2202.010 Attachment 21."

CRITICAL ELEMENTS (C): 3, 4, 5 , 6, 7, 11, 12

PERFORMANCE CHECKLIST		**STANDARDS**	(Circle One)
1.	Verify RCP bleedoff to VCT valves open. POSITIVE CUE: For 2CV-4846-1 red light ON and For 2CV-4847-2 red light ON.	On panel 2C16 verified 2CV-4847-2 red light on; control switch in OPEN. On panel 2C17, verified 2CV-4846-1 red light on; control switch in OPEN.	N/A SAT UNSAT
2.	Verify RCP Bleedoff Relief Isolation to Quench Tank open. POSITIVE CUE: For 2CV-4856 red light ON	On panel 2C09, verified 2CV-4856 red light on; keyswitch in LOCKED OPEN.	N/A SAT UNSAT
3. (C)	Determine RCP seal temperature and status of Loop II CCW pump. POSITIVE CUE: RCP seal temperatures are > 180°F and one CCW pump is running on Loop II.	On panel 2C14 or on PMS computer, determined RCP seal temperatures. On panel 2C14, observed running indication for one Loop II CCW pump and Loop II flow.	N/A SAT UNSAT
4. (C)	Close RCP CCW Return valve (2CV-5255-1). POSITIVE CUE: Green light ON.	On panel 2C17, held handswitch for 2CV-5255-1 in "CLOSE". Observed green light ON; red light OFF above handswitch. Released handswitch for 2CV-5255-1.	N/A SAT UNSAT
5. (C)	5. Open RCP CCW Supply valve (2CV-5236-1). POSITIVE CUE: Red light ON.	On panel 2C17, placed handswitch for 2CV-5236-1 in “OPEN”. Observed green light OFF; red light ON.	N/A SAT UNSAT
6. (C)	Open RCP CCW Return valve (2CV-5254-2). POSITIVE CUE: Red light ON. (2CV-5254-2).	On panel 2C16, placed handswitch for 2CV-5254-2 in "OPEN". Observed green light OFF; red light ON.	N/A SAT UNSAT

EXAMINER’S NOTE:

When 2CV-5255-1 is taken to OPEN, the breaker will trip and cannot be reset.
AO **can not** operate valve manually. The valve will be stuck closed.

7. (C)	Modulate RCP CCW Return valve (2CV-5255-1) OPEN. **CUES:** Red and green lights OFF. If WCO sent to the valve; 2CV-5255-1 cannot be opened. If AO sent to the breaker, 2B53-G4; the breaker for 2CV-5255-1 cannot be reset.	On panel 2C17, took handswitch for 2CV-5255-1 to "OPEN" for one (1) second then released. Observed red and green lights OFF. EXAMINEE may ask to dispatch a NLO to the valve and or breaker.	N/A SAT UNSAT
EXAMINER'S NOTE: The examinee may elect to monitor RCP seal cooldown before making the decision that CCW cannot be restored. This monitoring of RCP seal cooldown may take 10 minutes to validate that 2CV-5255-1 did not open. The examinee should go to step 4 of Attachment 21.			
8	Verify ALL RCP's secured POSITIVE CUE: Green light ON and Red light OFF for 2P32 A, B, C, D.	On panel 2C04, observed 2P32A, B, C, and D RCP handswitches in STOP or PTL. Observed handswitch is green flagged; green light ON and red light OFF.	N/A SAT UNSAT
9	Close 2CV-5254-2 POSITIVE CUE: Green light ON.	On panel 2C16, placed handswitch for 2CV-5254-2 to "CLOSE" Observed green light ON; red light OFF.	N/A SAT UNSAT
10.	Close 2CV-5236-1. POSITIVE CUE: Green light ON.	On panel 2C17, placed handswitch for 2CV-5236-1 to "CLOSE" Observed green light ON; red light OFF.	N/A SAT UNSAT
11. (C)	Close RCP bleedoff to VCT valves. POSITIVE CUE: For 2CV-4846-1 green light ON And For 2CV-4847-2 green light ON.	On panel 2C17, placed handswitch for 2CV-4846-1 to "CLOSE." On panel 2C16, placed handswitch for 2CV-4847-2 to "CLOSE." For each valve, observed green light ON; red light OFF.	N/A SAT UNSAT
12. (C)	Close RCP bleedoff relief isolation to quench tank valve (2CV-4856). POSITIVE CUE: Green light ON.	On panel 2C09, placed handswitch for 2CV-4856 to "CLOSE" Observed green light ON; red light OFF.	N/A SAT UNSAT
END			

JOB PERFORMANCE MEASURE

Examiner Copy

JPM INITIAL TASK CONDITIONS:

2A1, 2A2, 2H1 & 2H2 re-energized following a degraded power situation. Power to CCW pumps has been restored. Seal temperatures are > 180°F and < 300°F.

INITIATING CUE:

The SS/CRS directs, "Restore CCW to the RCP's using EOP 2202.010 Attachment 21."

JOB PERFORMANCE MEASURE

Examinee Copy

JPM INITIAL TASK CONDITIONS:

2A1, 2A2, 2H1 & 2H2 re-energized following a degraded power situation. Power to CCW pumps has been restored. Seal temperatures are > 180°F and < 300°F.

INITIATING CUE:

The SS/CRS directs, "Restore CCW to the RCP's using EOP 2202.010 Attachment 21."

2 REV #: **000** DATE: _____

SYSTEM/DUTY AREA: **AC Electrical Distribution**

TASK: **Perform A Startup Of 2Y2224, Swing Inverter For 2RS4**

JTA#: **ANO2AO120ACNORM5**

KA VALUE RO: **3.4** SRO: **3.9** KA REFERENCE: **062 A2.01**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: _____ OUTSIDE CR: **X** BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: **Simulate** SIMULATOR: _____ LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **20 Minutes**

REFERENCE (S): **2107.003 and 2107.001 Supplement 4.**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. Unit is in Mode 1.

2. 2Y2224 is shut down.

3. 2RS4 is being supplied by Inverter 2Y24 Normal Source.

TASK STANDARD:

1. 2Y2224 Alternate Source is supplying 120VAC Vital Bus 2RS4 in accordance with OP 2107.003, Attachment J, Section 1.

TASK PERFORMANCE AIDS:

2107.003 Attachment J, Section 1

2107.001 Supplement 4, Table 11

SIMULATOR SETUP:

NONE

INITIATING CUE:

The SM/CRS directs, "Place 2Y2224 in service with the inverter supplying 2RS4 and Shutdown 2Y24 using OP 2107.003, Attachment J Section 1 and OP 2107.001 Supp 4 Table 11."

CRITICAL ELEMENTS (C): 9, 12, 13, 20, 27, 30, 32, 37, 38, 39, 40,41

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1.	Verify Battery INPUT breaker (B1) OPEN POSITIVE CUE: B1 handle is in the DOWN position	At 2Y2224, verified B1 OPEN Observed B1 handle in the DOWN position	N/A SAT UNSAT
	2.	Verify INVERTER OUTPUT BREAKER (B2) OPEN POSITIVE CUE: B2 handle is in the DOWN position	At 2Y2224, verified B2 OPEN. Observing B2 handle in the DOWN position	N/A SAT UNSAT
	3.	Verify ALTERNATE SOURCE INPUT breaker (B800) OPEN POSITIVE CUE: B800 handle is in the DOWN position	At 2Y2224, verified B800 OPEN Observed B800 handle in the DOWN position	N/A SAT UNSAT
	4.	Verify MANUAL BYPASS SWITCH (2HS9601) in ALTERNATE SOURCE POSITION POSITIVE CUE: MANUAL BYPASS SWITCH (2HS9601) in ALTERNATE SOURCE POSITION	At 2Y2224, observed MANUAL BYPASS SWITCH (2HS9601) in ALTERNATE SOURCE POSITION	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	5.	Verify Manual OUTPUT TRANSFER SWITCH (2HS-9504) at top of panel in 2Y2224 to 2RS4 position. POSITIVE CUE: Manual OUTPUT TRANSFER SWITCH (2HS-9504) at top of panel is in 2Y2224 to 2RS4 position.	At 2Y2224, verified Manual OUTPUT TRANSFER SWITCH (2HS-9504) at top of panel in 2Y2224 to 2RS4 position.	N/A SAT UNSAT
	6.	Check 2Y2224 To 2RS4 light on. POSITIVE CUE: 2Y2224 To 2RS4 light on	At 2Y2224, observed 2Y2224 To 2RS4 light on	N/A SAT UNSAT
	7.	Check 2D12 battery bank connected to 2D02 bus. POSITIVE CUE: The 2D12 NOT AVAILABLE alarm is not in.	Called the Control Room to verify the 2D12 NOT AVAILABLE alarm is not in.	N/A SAT UNSAT
	8.	Check the in-service battery charger (2D32A/2D32B) on float. POSITIVE CUE: 1. The float lamp for the in-service battery charger is lit. OR The in-service battery charger DC voltage is ~130 VDC. 2. Battery charger has been on float for 72 hours.	Checked the float lamp illuminated for the in-service battery charger. OR Checked the in-service battery charger DC voltage ~130 VDC. AND Contacted the Control room to verify that battery changer has been on float for greater than 24 hours.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	9.	Close Battery INPUT breaker (B1) POSITIVE CUE: Battery Input breaker (B1) is in the UP position.	At 2Y2224, closed B1 by moving its handle in UP direction Observed B1 operating handle remained in the UP position	N/A SAT UNSAT
	10.	Check 2Y2224 125 VDC INVERTER INPUT (V1) reading ~125 VDC POSITIVE CUE: 2Y2224 125 VDC INVERTER INPUT (V1) reading ~125 VDC	At 2Y2224 checked 2Y2224 125 VDC INVERTER INPUT (V1) reading ~125 VDC	N/A SAT UNSAT
Instructor Note: **Procedure step 1.2.11 will be NA due to voltage being indicated in step 1.2.10.**				
	11.	Wait 60 seconds POSITIVE CUE: 60 seconds has elapsed	At 2Y2224, verified 60 seconds elapsed	N/A SAT UNSAT
(C)	12.	Close 2Y2224 INVERTER OUTPUT breaker (B2) POSITIVE CUE: 2Y2224 INVERTER OUTPUT breaker (B2) handle is in the UP position.	At 2Y2224, closed 2Y2224 INVERTER OUTPUT breaker (B2) by raising its handle in UP direction	N/A SAT UNSAT
(C)	13.	Close 2Y2224 ALTERNATE SOURCE INPUT breaker (B800) POSITIVE CUE: 2Y2224 ALTERNATE SOURCE INPUT breaker (B800) handle is in the UP position	At 2Y2224, closed 2Y2224 ALTERNATE SOURCE INPUT breaker (B800) by raising its handle in the UP direction	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	14.	Check 2Y2224 120 VAC ALTERNATE SOURCE Volt Meter (V3) reading ~120 VAC. POSITIVE CUE: 2Y2224 120 VAC ALTERNATE SOURCE Volt Meter (V3) reads ~120 VAC.	At 2Y2224, observed 2Y2224 120 VAC ALTERNATE SOURCE Volt Meter (V3) reading ~120 VAC.	N/A SAT UNSAT
Instructor Note: **Procedure step 1.2.16 will be NA due to voltage being indicated in step 1.2.15.**				
	15.	Verify 2Y2224 ALTERNATE SOURCE Supplying Load light is on. POSITIVE CUE: Amber 2Y2224 ALTERNATE SOURCE Supplying Load light is on.	At 2Y2224, verified amber 2Y2224 ALTERNATE SOURCE Supplying Load light is on.	N/A SAT UNSAT
	16.	Check 2Y2224 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC. POSITIVE CUE: 2Y2224 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC.	At 2Y2224, observed 2Y2224 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC.	N/A SAT UNSAT
	17.	Check 2Y2224 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz. POSITIVE CUE: 2Y2224 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz.	At 2Y2224, observed 2Y2224 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz.	N/A SAT UNSAT
Instructor Note: ♦ **Examinee is now switching to another inverter, 2Y24** ♦ **Examinee will transfer this inverter to Alternate Source**				

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	18.	Check 2Y24 INVERTER IN SYNC light is on. POSITIVE CUE: The green 2Y24 INVERTER IN SYNC light is on.	AT 2Y24 observed the green 2Y24 INVERTER IN SYNC light is on.	N/A SAT UNSAT
Instructor Note: **Procedure step 1.3.2 will be NA due to Inverter In Syc lamp being lit in step 1.3.1.**				
	19.	Enter 24 hour administrative time clock per Supplement 4 of Electrical System Operations (2107.001) for operation with 2RS4 panel powered from alternate source. POSITIVE CUE: Acknowledge 24 hour administrative time clock per Supplement 4 of Electrical System Operations	Operator overtly demonstrates the acknowledgement of the 24 hour administrative time clock per Supplement 4 of Electrical System Operations (2107.001) for operation with 2RS4 panel powered from alternate source.	N/A SAT UNSAT
(C)	20.	Depress 2Y24 ALTERNATE SOURCE TO LOAD pushbutton (2PB-9402). POSITIVE CUE: 2Y24 ALTERNATE SOURCE TO LOAD pushbutton (2PB-9402) is depressed.	At 2Y24, depressed 2Y24 ALTERNATE SOURCE TO LOAD pushbutton (2PB-9402).	N/A SAT UNSAT
	21.	Check 2Y24 ALTERNATE SOURCE SUPPLYING LOAD light comes ON. POSITIVE CUE: The amber 2Y24 ALTERNATE SOURCE SUPPLYING LOAD light comes ON.	At 2Y24, observed the amber 2Y24 ALTERNATE SOURCE SUPPLYING LOAD light comes ON.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	22.	Check 2Y24 INVERTER SUPPLYING LOAD light is OFF. POSITIVE CUE: The green 2Y24 INVERTER SUPPLYING LOAD light is OFF.	At 2Y24, observed the green 2Y24 INVERTER SUPPLYING LOAD light is OFF	N/A SAT UNSAT
	23.	Place the 2Y24 MANUAL BYPASS SWITCH (2HS-9801) in the ALTERNATE SOURCE position. POSITIVE CUE: The 2Y24 MANUAL BYPASS SWITCH (2HS-9801) is in the ALTERNATE SOURCE position.	At 2Y24, rotated the 2Y24 MANUAL BYPASS SWITCH (2HS-9801) to the ALTERNATE SOURCE position.	N/A SAT UNSAT
	24.	Check 2Y24 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC. POSITIVE CUE: 2Y24 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC.	At 2Y24, observed 2Y24 120 VAC OUTPUT Volt Meter (V2) reading ~120 VAC.	N/A SAT UNSAT
	25.	Check 2Y24 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz. POSITIVE CUE: 2Y24 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz.	At 2Y24, observed 2Y24 OUTPUT FREQUENCY Meter (E1) reading ~60 Hertz.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	26.	Verify the STATIC SWITCH TRANSFERRED alarm is IN alarm. POSITIVE CUE: The STATIC SWITCH TRANSFERRED alarm is IN alarm on 2Y2224.	At 2Y2224, verify the STATIC SWITCH TRANSFERRED alarm is IN alarm.	N/A SAT UNSAT
(C)	27.	At 2Y24, place manual 2RS4 TRANSFER SWITCH (2HS-9602) at top of panel in the 2Y2224 To 2RS4 position. POSITIVE CUE: Manual 2RS4 TRANSFER SWITCH (2HS-9602) at top of panel is in the 2Y2224 To 2RS4 position.	At 2Y24, rotated the Manual 2RS4 TRANSFER SWITCH (2HS-9602) at top of panel to the 2Y2224 To 2RS4 position.	N/A SAT UNSAT
	28.	Check the 2Y2224 To 2RS4 light comes on. POSITIVE CUE: The 2Y2224 To 2RS4 light is on.	At 2Y24, observed the 2Y2224 To 2RS4 light comes on.	N/A SAT UNSAT
Instructor Note: ♦ **Examinee is now switching to another inverter, 2Y2224.** ♦ **Examinee will take steps to transfer this inverter to NORMAL SOURCE.**				
	29.	Check 2Y2224 INVERTER IN SYNC light is on. POSITIVE CUE: The green 2Y2224 INVERTER IN SYNC light is on.	AT 2Y2224 observed the green 2Y2224 INVERTER IN SYNC light is on.	N/A SAT UNSAT
Instructor Note: **Procedure step 1.4.2 will be NA due to INVERTER IN SYNC lamp being lit in step 1.4.1.**				

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	30.	Place the Inverter 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in the NORMAL SOURCE position. POSITIVE CUE: The Inverter 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in the NORMAL SOURCE position.	At 2Y2224, rotated the Inverter 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in the NORMAL SOURCE position.	N/A SAT UNSAT
	31.	Check all alarms clear except the Static Switch Transfer alarm. POSITIVE CUE: The Static Switch Transfer alarm is still in.	At 2Y2224, observed the Static Switch Transfer alarm is still in.	N/A SAT UNSAT
(C)	32.	Depress 2Y2224 INVERTER To Load pushbutton (PB-9502). POSITIVE CUE: 2Y2224 INVERTER To Load pushbutton (PB-9502) is depressed	At 2Y2224, depressed 2Y2224 INVERTER To Load pushbutton (PB-9502).	N/A SAT UNSAT
	33.	Check 2Y2224 Inverter Supplying Load light comes on. POSITIVE CUE: The green 2Y2224 Inverter Supplying Load light comes on.	At 2Y2224, observed the green 2Y2224 Inverter Supplying Load light comes on	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	34	Check 2Y2224 Alternate Source Supplying Load light goes off. POSITIVE CUE: The amber 2Y2224 Alternate Source Supplying Load light goes off	At 2Y2224, observed the amber 2Y2224 Alternate Source Supplying Load light goes off	N/A SAT UNSAT
	35.	Reset 2Y2224 local alarm panel POSITIVE CUE: All local alarms clear.	Operator pushed the R button on the local alarm panel to clear the local alarms for 2Y2224	N/A SAT UNSAT
	36.	Check 2RS4 Inverter Trouble (2K01-G11) is cleared. POSITIVE CUE: 2RS4 Inverter Trouble (2K01-G11) is clear.	Operator checks with the Control Room to verify that the 2RS4 Inverter Trouble (2K01-G11) is clear.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	37.	Verify the 2RS4 Inverter is operable by performing the necessary portions of Electrical System Alignment & Power Availability Check (2107.001, Supplement 4). POSITIVE CUE: • Breaker B1 is closed • Breaker B2 is closed • Manual Bypass Switch is in Normal • Inverter supplying load lamp is illuminated • 120 VAC Output is 120 VAC • SPDS point reads 120 VAC • SPDS point reads NORMAL The 2RS4 Inverter is operable as per Table 11 of Electrical System Alignment & Power Availability Check (2107.001, Supplement 4).	Evaluated the 2RS4 Inverter operability by using Table 11 of Electrical System Alignment & Power Availability Check (2107.001, Supplement 4).	N/A SAT UNSAT
(C)	38	Exit the 24 hour administrative time clock per Supplement 4 of Electrical System Operations (2107.001) for operation with 2RS4 panel powered from alternate source. POSITIVE CUE: Acknowledge exiting the 24 hour administrative time clock per Supplement 4 of Electrical System Operations	Operator overtly demonstrates the acknowledgement of exiting the 24 hour administrative time clock per Supplement 4 of Electrical System Operations (2107.001) for operation with 2RS4 panel powered from alternate source.	N/A SAT UNSAT
(C)	39.	Open 2Y24 Alternate Source Input breaker (B800) POSITIVE CUE: The 2Y24 Alternate Source Input breaker (B800) handle points down	The operator lowered the operating handle for the 2Y24 Alternate Source Input breaker (B800).	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	40.	Open 2Y24 Inverter 120 VAC Output breaker (B2) POSITIVE CUE: The 2Y24 Inverter 120 VAC Output breaker (B2)handle points down	The operator lowered the operating handle for the 2Y24 Inverter 120 VAC Output breaker (B2)	N/A SAT UNSAT
(C)	41.	Open 2Y24 125 VDC Input breaker (B1) POSITIVE CUE: The 2Y24 125 VDC Input breaker (B1)	The operator lowered the operating handle for the 2Y24 125 VDC Input breaker (B1)	N/A SAT UNSAT
END				

STOP TIME: _____

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

Mode 1
2Y2224 is shut down.
2RS4 is being supplied by Inverter 2Y24 Normal Source.

INITIATING CUE:

The SM/CRS directs, "Place 2Y2224 in service supplying 2RS4 and shutdown 2Y24 using OP 2107.003, Attachment J Section 1 and OP 2107.001 Supp. 4 Table 11."

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

Mode 1
2Y2224 is shut down.
2RS4 is being supplied by Inverter 2Y24 Normal Source.

INITIATING CUE:

The SM/CRS directs, "Place 2Y2224 in service supplying 2RS4 and shutdown 2Y24 using OP 2107.003, Attachment J Section 1 and OP 2107.001 Supp. 4 Table 11."

ATTACHMENT J

INVERTER 2Y24 OPERATION

This Attachment is used to transfer 2RS4 power supply between 2Y24 and 2Y2224 with instructions to startup and shutdown the inverters. When transferring 2RS4 power both inverters MUST be on ALTERNATE SOURCE. GO TO the appropriate section for instructions on performing the task desired.

1.0 SHIFTING 2RS4 POWER FROM 2Y24 TO 2Y2224
2.0 SHIFTING 2RS4 POWER FROM 2Y2224 TO 2Y24
3.0 SHIFTING 2RS4 POWER FROM 2Y24 NORMAL SOURCE TO 2Y24 ALTERNATE SOURCE AND SHUTDOWN OF INVERTER, IF DESIRED
4.0 SHIFTING 2RS4 POWER FROM 2Y24 ALTERNATE SOURCE TO 2Y24 NORMAL SOURCE
5.0 STARTUP OF 2Y24 INVERTER SECTION WITH 2RS4 SUPPLIED FROM 2Y24 ALTERNATE SOURCE AND SHIFTING 2RS4 TO 2Y24 NORMAL SOURCE
6.0 2Y24 STARTUP WITH 2RS4 DE-ENERGIZED

CAUTION

- After startup of a de-energized inverter, "STATIC SWITCH TRANSFERRED" is only expected RIS Unit alarm. DO NOT transfer load to this inverter unless all other RIS Unit alarms are clear.
- After startup of a de-energized inverter, "INVERTER OUTPUT OVERVOLTAGE" alarm may briefly occur. This condition may exist for a few minutes to an hour depending on room temperature conditions. All load transfers SHALL be halted until this condition clears. (CR-ANO-2-2002-1138).

1.0 SHIFTING 2RS4 POWER FROM 2Y24 TO 2Y2224

1.1 IF 2Y2224 is NOT shutdown,
THEN perform the following to align to ALTERNATE SOURCE:

1.1.1 Check 2Y2224 INVERTER IN SYNC light is on.

1.1.2 IF INVERTER IN SYNC light is NOT on,
THEN contact Electrical Maintenance for assistance.

1.1.3 Depress 2Y2224 ALT SOURCE TO LOAD pushbutton (2PB-9504).

1.1.4 Check 2Y2224 ALT SOURCE SUPPLYING LOAD light on.

1.1.5 Check 2Y2224 INVERTER SUPPLYING LOAD light out.

1.1.6 Verify 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in ALTERNATE SOURCE position.

1.1.7 Check 2Y2224 120 VAC OUTPUT voltage (V2) indicates ~ 120 volts.

1.1.8 Check 2Y2224 OUTPUT FREQUENCY (E1) is ~ 60 Hz.

1.1.9 Verify OUTPUT TRANSFER SWITCH (2HS-9504) at top of panel placed in 2Y2224 TO 2RS4 position.

1.1.10 Check 2Y2224 TO 2RS4 light comes on.

1.2 IF Swing Inverter 2Y2224 is shutdown,
THEN start up 2Y2224 on ALTERNATE SOURCE as follows:

1.2.1 Verify 2Y2224 125 VDC INPUT breaker (B1) open.

1.2.2 Verify 2Y2224 120 VAC INVERTER OUTPUT breaker (B2) open.

1.2.3 Verify 2Y2224 ALT SOURCE INPUT breaker (B800) open.

1.2.4 Verify 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in ALTERNATE SOURCE position.

1.2.5 Verify OUTPUT TRANSFER SWITCH (2HS-9504) at top of panel in 2Y2224 TO 2RS4 position.

1.2.6 Check 2Y2224 TO 2RS4 light on.

CAUTION
Energizing off-line inverter, while battery bank is disconnected from the DC bus or in-service battery charger is on equalize, will blow fuses on the on-line inverters.

1.2.7 Check 2D12 battery bank connected to 2D02 bus.

1.2.8 Check in-service battery charger (2D32A/B) as follows:

- Check battery charger on float.
- Check battery charger has been on float > 24 hours.

1.2.9 Close 2Y2224 125 VDC INPUT breaker (B1).

1.2.10 Check 2Y2224 125 VDC INVERTER INPUT (V1) reading ~ 125 volts.

1.2.11 IF no voltage indicated,
THEN verify 2Y2224 DC supply feeder (2D0231) closed AND "Fuse Blown" light NOT lit.

1.2.12 Wait 60 seconds for inverter to stabilize.

1.2.13 Close 2Y2224 120 VAC INVERTER OUTPUT breaker (B2).

1.2.14 Close 2Y2224 ALTERNATE SOURCE INPUT breaker (B800).

1.2.15 Check 2Y2224 120 VAC ALT SOURCE (V3) reading ~ 120 volts.

1.2.16 IF no voltage indicated,
THEN verify 2Y2224 ALTERNATE SOURCE Supply (2B61-N4) closed.

1.2.17 Verify 2Y2224 ALT SOURCE SUPPLYING LOAD light is on.

1.2.18 Check 2Y2224 120 VAC OUTPUT (V2) indicates ~ 120 volts.

1.2.19 Check 2Y2224 OUTPUT FREQUENCY (E1) is ~ 60 Hz.

1.3 IF 2RS4 is supplied from 2Y24 NORMAL SOURCE,
THEN transfer 2RS4 to 2Y24 ALTERNATE SOURCE
AND THEN to 2Y2224 ALTERNATE SOURCE as follows:

1.3.1 Check 2Y24 INVERTER IN SYNC light is on.

1.3.2 IF INVERTER IN SYNC light is NOT on,
THEN contact Electrical Maintenance for assistance.

1.3.3 IF in Mode 1-4,
THEN enter 24-hour administrative time clock per Supplement 4 of Electrical System Operations (2107.001) for operation with 2RS4 panel powered from ALTERNATE SOURCE.

1.3.4 Depress 2Y24 ALT SOURCE TO LOAD pushbutton (2PB-9402).

1.3.5 Check 2Y24 ALT SOURCE SUPPLYING LOAD light comes on.

1.3.6 Check 2Y24 INVERTER SUPPLYING LOAD light goes out.

1.3.7 Place 2Y24 MANUAL BYPASS SWITCH (2HS-9801) in ALTERNATE SOURCE position.

1.3.8 Check 2Y24 120 VAC OUTPUT voltage indicates ~ 120 volts.

1.3.9 Check 2Y24 OUTPUT FREQUENCY (E1) is ~ 60 Hz.

1.3.10 WHEN ONLY “STATIC SWITCH TRANSFERRED” is in alarm on 2Y2224,
THEN continue performance of this section.
(CR-ANO-2-2002-1138)

1.3.11 At 2Y24, place 2RS4 TRANSFER SWITCH (2HS-9602) at top of panel in the 2Y2224 TO 2RS4 position.

1.3.12 At 2Y24, check 2Y2224 TO 2RS4 light comes on.

1.4 IF desired to shift 2RS4 loads to 2Y2224 NORMAL SOURCE, THEN perform the following:

1.4.1 Check 2Y2224 INVERTER IN SYNC light is on.

1.4.2 IF INVERTER IN SYNC light is NOT on, THEN contact Electrical Maintenance for assistance.

1.4.3 Place Inverter 2Y2224 MANUAL BYPASS SWITCH (2HS-9601) in NORMAL SOURCE position.

1.4.4 Check all alarms clear except ST/SW Transfer.

1.4.5 Depress 2Y2224 INVERTER TO LOAD pushbutton (2PB-9502).

1.4.6 Check 2Y2224 INVERTER SUPPLYING LOAD light comes on.

1.4.7 Check 2Y2224 ALT SOURCE SUPPLYING LOAD light goes out.

1.4.8 Reset 2Y2224 local alarm panel.

1.4.9 Check 2RS4 INVERTER TROUBLE (2K01-G11) is cleared.

1.4.10 Verify 2RS4 operable by performing the necessary portions of Supplement 4 of 2107.001.

1.4.11 IF applicable, THEN exit 24-hour administrative time clock per Supplement 4 of 2107.001 for operation with 2RS4 panel powered from ALTERNATE SOURCE.

1.5 IF desired to shutdown 2Y24, THEN perform the following:

1.5.1 Open 2Y24 ALT SOURCE INPUT breaker (B800).

1.5.2 Open 2Y24 120 VAC INVERTER OUTPUT breaker (B2).

1.5.3 Open 2Y24 125 VDC INPUT breaker (B1).

TABLE 10, 2RS2 SUPPLY INVERTER **2Y22** OR **2Y2224** (Circle one)

TEST QUANTITY	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	IS DATA WITHIN ACCEPTABLE NORMAL RANGE?	
125 VDC Input Breaker (B1)	√( ) if closed	Closed	YES NO	
120 VAC Inverter Output (B2)	√( ) if closed	Closed	YES NO	
Manual Bypass switch	√( ) if in Normal Source	Normal Source	YES NO	
Inverter Supplying Load	√( ) if Light On	Light On (1)	YES NO	
120 VAC Output	V	> 117V < 126V	YES NO	(2)
Inverter output voltage E2RS2 OR E2RS2RS4 (SPDS)	V	> 105V < 137.5V	YES NO	(3)
Alt Source Status Z2Y22B OR Z2Y2224 (SPDS)	√( ) if in Normal	Normal	YES NO	

TABLE 11, 2RS4 SUPPLY INVERTER **2Y24** OR **2Y2224** (Circle one)

TEST QUANTITY	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	IS DATA WITHIN ACCEPTABLE NORMAL RANGE?	
125 VDC Input Breaker (B1)	√( ) if closed	Closed	YES NO	
120 VAC Inverter Output (B2)	√( ) if closed	Closed	YES NO	
Manual Bypass switch	√( ) if in Normal Source	Normal Source	YES NO	
Inverter Supplying Load	√( ) if Light On	Light On (1)	YES NO	
120 VAC Output	V	> 117V < 126V	YES NO	(2)
Inverter output voltage E2RS4 OR E2RS2RS4 (SPDS)	V	> 105V < 137.5V	YES NO	(3)
Alt Source Status Z2Y24B OR Z2Y2224 (SPDS)	√( ) if in Normal	Normal	YES NO	

(1) Alternate indications such as remote annunciator (2K01 - "2RSX INVERTER TROUBLE" NOT in alarm) OR local indication ("2YXX ALT SOURCE SUPPLYING LOAD" light out) may be used to verify Inverter supplying load.

(2) Voltage band defines RS Bus operability for steps 3.4.1/3.4.2 of this section (ULD-2-SYS-20, CR-ANO-2-2001-01134).

(3) Voltage band defines DC Input voltage (ULD-2-SYS-03).

JOB PERFORMANCE MEASURE

UNIT: **2** REV #: **001** DATE: _____

SYSTEM/DUTY AREA: **Spent Fuel Pool Cooling System**

TASK: **Add water to the Spent Fuel Pool (Alternate Success Path)**

JTA#: **ANO2WCOSFPEMER1**

KA VALUE RO: **3.1** SRO: **3.5** KA REFERENCE: **033 A2.03**

APPROVED FOR ADMINISTRATION TO: RO: **X** SRO: **X**

TASK LOCATION: INSIDE CR: _____ OUTSIDE CR: **X** BOTH: _____

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: **Simulate** SIMULATOR: _____ LAB: _____

POSITION EVALUATED: RO: _____ SRO: _____

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ PLANT SITE: _____ LAB: _____

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: **20 Minutes**

REFERENCE (S): **OP 2104.006**

EXAMINEE'S NAME: _____ SSN: _____

EVALUATOR'S NAME: _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ UNSATISFACTORY: _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

Start Time _____ Stop Time _____ Total Time _____

SIGNED: _____ DATE: _____

SIGNATURE INDICATES THIS JPM HAS BEEN COMPARED TO ITS APPLICABLE PROCEDURE BY A QUALIFIED INDIVIDUAL (NOT THE EXAMINEE) AND IS CURRENT WITH THAT REVISION.

JOB PERFORMANCE MEASURE

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

The following conditions exist:

1. **Plant is in DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps and 2K11-K5 “FUEL POOL TEMP HI” is in alarm.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

TASK STANDARD:

Emergency Spent Fuel Pool Makeup from Loop 2 Service Water has been initiated.

TASK PERFORMANCE AIDS:

OP 2104.006 Section 10 and 14

SIMULATOR SETUP:

NONE

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006," Section 10.0 beginning with step 10.5"

CRITICAL ELEMENTS (C): 2, 3, 4, 5, 6, 8, 9, 11, 13

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1.	Verified Spent Fuel Pool Purification Pump (2P66) secured. POSITIVE CUE: Green light ON, red light OFF. NEGATIVE CUE: Red light ON, green light OFF.	Locally verified 2P66 handswitch (2HS-5411) in STOP and observed green light ON, red light OFF.	N/A SAT UNSAT
TRANSITION NOTE: **Go to elevation 354' RAB, just north of the elevator, to the SFP valve gallery.**				
(C)	2.	Verify RWT to Fuel Pool Isolation valve (2FP-46) closed. POSITIVE CUE: 2FP-46 stem inserted fully and valve is closed. NEGATIVE CUE: 2FP-46 stem withdrawn fully and valve is open.	Verified 2FP-46 Closed by observing stem fully inserted into the valve and rotating handwheel counterclockwise.	N/A SAT UNSAT
(C)	3.	Verify Borated MU or RWT to 2P-66 (2FP-32) closed. POSITIVE CUE: 2FP-32 stem is fully inserted. NEGATIVE CUE: 2FP-32 stem withdrawn fully.	Verified 2FP-32 CLOSED by observing valve stem fully inserted into the valve and rotating handwheel counterclockwise.	N/A SAT UNSAT
TRANSITION NOTE: **Go to elevation 354' RAB VCT valve gallery.**				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4.	Close Makeup to Charging Pump Suction (2CVC-83). POSITIVE CUE: Resistance to operation indicated; valve position indicator aligned to CLOSE. NEGATIVE CUE: Valve position indicator in OPEN; or in an intermediate position.	Closed 2CVC-83 by pulling on right-hand side of chain (from the chain operator). Observed valve closed position indication on valve reach rod actuator.	N/A SAT UNSAT
(C)	5.	Verify Manual Makeup to VCT (2CVC-68) closed. POSITIVE CUE: Resistance to operation indicated; valve position indicator aligned to CLOSE. NEGATIVE CUE: Valve position indicator in OPEN; or in an intermediate position.	Attempted to rotate reach rod handwheel CW noting resistance to motion. Observed valve closed position indication on valve reach rod actuator.	N/A SAT UNSAT
TRANSITION NOTE: **Go to elevation 354' RAB spent fuel pool valve gallery just off elevator.** **Examiner's NOTE:** **This is the ALTERNATE SUCCESS PATH CUE step. 2CVC-66 will not open and therefore CVCS system cannot be used to makeup to the SPF. A prompt will be given from the control room to use Loop 2 service water as makeup source.**				
(C)	6.	Open MU to SF Pool (2CVC-66). CUE: Valve stem full-in and valve will not move.	Attempted to open 2CVC-66 by rotating handwheel CCW.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	7.	Notify control room of inability to open 2CVC-66. CUE: Control room acknowledges that 2CVC-66 will not open and that section 14 of OP 2104.006, Fuel Pool Systems, should be used to add Loop 2 service water to the SFP starting with step 14.1.	Notified the Control room of inability to open 2CVC-66.	N/A SAT UNSAT
EXAMINER's NOTE: **Purification pump was previously identified as secured in initial conditions (Procedure step 14.1.1).**				
(C)	8.	Close SW Header 2 Telltale Drain (2SW-1211). POSITIVE CUE: 2SW-1211 has stem inserted into hand wheel.	Closed 2SW-1211 by turning hand wheel Clockwise. Observed valve stem fully inserted into the valve.	N/A SAT UNSAT
TRANSITION NOTE: **Go to elevation 335' RAB just off elevator. Valve is chain operated and is located about 20' in overhead in middle of North / South corridor.**				
(C)	9.	Open SW Header 2 Emergency Feed Isolation valve (2SW-67). POSITIVE CUE: 2SW-67 chain will not rotate any more and valve is fully open. NEGATIVE CUE: 2SW-67 is closed.	Opened 2SW-67 by turning chain Counterclockwise until chain stopped rotating.	N/A SAT UNSAT
TRANSITION NOTE: **Go to elevation 354' RAB spent fuel pool valve gallery just off elevator.** **EXAMINER'S NOTE:** **When asked for Category E key, simulate giving examinee key from the control room for valve 2SW 56.**				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	10.	Ensure position of 2SW-56 is logged in Category "E" Log. POSITIVE CUE: Valve position is logged in CAT 'E' log.	Logged position of 2SW-56 by: Using a plant telephone, Gaitronics, OR radio; contacted Control Room and directed entry in Category "E" Log. OR Ensured Category "E" log entry made upon completion of evolution.	N/A SAT UNSAT
(C)	11.	Open SW Header 2 Emergency Feed Isolation valve (2SW-56). POSITIVE CUE: 2SW-56 valve stem is fully extended and valve is open. NEGATIVE CUE: 2SW-56 valve stem is inserted and valve is closed	Unlocked locking device on 2SW-56 using category 'E' valve key. Opened 2SW-56 by turning handwheel CCW. Observed valve stem fully withdrawn out of the valve.	N/A SAT UNSAT
	12.	Verify Operator in SFP to monitor level and is in communication with Operator at SW Header 2 Emergency Feed Isolation to SF Pool (2SW-62) POSITIVE CUE: Operator in SFP responds to radio communications.	Verified that an Operator was stationed to monitor SFP level and is in communication with Operator at SW Header 2 Emergency Feed Isolation to SF Pool (2SW-62)	N/A SAT UNSAT
EXAMINERS NOTE: **- Final valve position is at discretion of examinee to ensure level is raised/maintained.**				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	13.	Throttles open SW Header 2 Emergency Feed Isolation valve to SF Pool (2SW-62). POSITIVE CUE: Operator stationed at SFP reports level rising slowly. NEGATIVE CUE: Operator reports NO change in SFP level.	Throttled open 2SW-62 by turning handwheel CCW. Observed valve stem withdrawn out of the valve commensurate with valves throttling.	N/A SAT UNSAT
END				

STOP TIME:_____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

1. **Plant is in DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

INITIATING CUE:

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006, Section 10.0 beginning with step 10.5"

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

1. **Plant is in DEFUELED and all cask loading operations are secured.**
2. **Power has been lost to both SFP cooling pumps.**
3. **An operator is stationed at the spent fuel pool to monitor Spent Fuel Pool Level.**
4. **SFP purification is out of service for replacement of 2FP-10, SFP purification pump discharge.**
5. **Fuel Pool low level alarm is in and SFP level is lowering.**

INITIATING CUE:

The SM/CRS directs, "Align for makeup water addition to the SFP system from CVCS using OP 2104.006, Section 10.0 beginning with step 10.5"

- When SFP level > 401’7”, water may spill over through pipe chase to 335’ elevation due to starting/stopping SFP Cooling/Purification pumps.
- SFP volume ~ 500 gal/inch.
- SFP/Tilt Pit volume ~ 600 gal/inch (Tilt Pit gate not sealed/not installed).
- SFP/CLP volume ~ 560 gal/inch (CLP gate not sealed/not installed).
- SFP/Tilt Pit/CLP volume ~ 660 gal/inch (Tilt Pit AND CLP gates not sealed/not installed).
- SFP, Tilt Pit and Refueling Canal volume ~ 1650 gal/inch.
- Coordinate with Dry Fuel personnel when making up during Dry Fuel Operations. {4.3.2}
- Steps marked with an * are continuous action steps.

10.1 IF Cask Loading Operations are in progress,
THEN notify DFS Management of intent to add to SFP.

10.2 Calculate amount of boric acid or water needed to achieve desired fuel pool level and concentration using appropriate attachment or Boron 2 Program.

10.3 Verify Chemical Addition portion of CVCS available.

10.4 Verify VCT Makeup Valve (2CV-4941-2) closed.

10.5 IF Purification NOT in service
OR is aligned to RWT,
THEN verify the following:

10.5.1 Fuel Pool Purification Pump (2P-66) off.

10.5.2 RWT to Fuel Pool Isol (2FP-46) closed.

10.5.3 Borated MU or RWT to 2P-66 (2FP-32) closed.

10.6 Verify the following valves closed:

- Manual Makeup to Charging Pump Suction (2CVC-83)
- Manual Makeup to VCT (2CVC-68)

10.7 Verify the following valves open:

- MU to SF Pool (2CVC-66)
- Borated MU to Fuel Pool (2CVC-67)
- Borated MU, RWT, SW to Fuel Pool (2FP-31)

10.8 Station an Operator to monitor SFP level in communication with Control Room.

*10.9 Monitor Reactor Power during makeup to Fuel Pool in case 2CV-4941-2, 2CVC-68, or 2CVC-83 has seat leakage.

10.10 Add calculated amounts of boric acid and water from CVCS by using the Boric Acid MU System in MANUAL as follows:

10.10.1 IF water is to be added,
THEN perform the following:

A. Verify either RMW pump (2P-109A OR 2P-109B) running.

B. Set RMW Flow controller (2FIC-4927) to desired flow.

C. IF NO Boric Acid to be added,
THEN verify Boric Acid MU Flow Controller (2FIC-4926) in MANUAL with OUTPUT DEMAND < zero.

10.10.2 IF Boric Acid is to be added,
THEN perform the following:

A. Select desired BAM Pump (2P-39A OR 2P-39B) for start using BAM Pump Select Switch (2HS-4911-2).

B. Start desired BAM Pump (2P-39A OR 2P-39B).

C. Open associated Recirc (2CV-4903-2 OR 2CV-4915-2).

D. Set Boric Acid MU Flow Controller (2FIC-4926) to desired flow rate.

E. IF NO water to be added,
THEN verify RMW Flow Controller (2FIC-4927) in MANUAL with OUTPUT DEMAND < zero.

10.10.3 Reset Flow totalizers (2FQI-4926 AND 2FQI-4927) to zero.

10.10.4 Place MU Mode Selector switch (2HS-4928) to MANUAL.

10.10.5 Verify 2CV-4926 AND 2CV-4927 respond properly.

10.11 WHEN the calculated amounts of boric acid and water have been added,
THEN perform the following:

10.11.1 Reposition MU Mode Selector Switch (2HS-4928) as desired.

10.11.2 Verify 2CV-4927 closed.

10.11.3 Verify 2CV-4926 closed.

10.11.4 Verify BAM Pumps secured.

10.11.5 Verify BAM Pump Recirc Valves closed.

10.11.6 Close Borated MU, RWT, SW to Fuel Pool (2FP-31).

10.11.7 Close Borated MU to Fuel Pool (2CVC-67).

10.11.8 Close MU to SF Pool (2CVC-66).

10.11.9 Return 2FIC-4927 AND 2FIC-4926 to desired settings.

10.12 Reposition the following as desired:

- 2CV-4941-2
- 2CVC-68
- 2CVC-83

10.13 IF makeup for other than normal evaporation,
THEN request Chemistry to sample SFP.

10.14 Align Purification System as desired using appropriate section of this procedure.

14.0 EMERGENCY FUEL POOL MAKEUP FROM SERVICE WATER

14.1 IF desired to use Loop 2 SW to makeup to Fuel Pool, THEN perform the following:

14.1.1 IF SFP is aligned for Purification, THEN secure Fuel Pool Purification Pump (2P-66) to prevent rapid depletion of Fuel Pool Demineralizer (2T-5).

14.1.2 Close SW Hdr 2 Telltale Drain (2SW-1211).

14.1.3 Open SW Hdr 2 Emerg Feed Isol to Fuel Pool (2SW-67).

14.1.4 Perform the following:

A. Record unlocking of SW Hdr 2 Emerg Feed Isol (2SW-56) in Cat E log.

B. Unlock and open 2SW-56.

14.1.5 Station an Operator to monitor SFP level in communication with Operator at SW Hdr 2 Emerg Feed Isol to SFP (2SW-62).

14.1.6 Throttle 2SW-62 as necessary to maintain Fuel Pool level.

14.1.7 WHEN Service Water makeup no longer required, THEN secure as follows:

A. Close 2SW-62.

B. Close and lock 2SW-56.

C. Close 2SW-67.

D. Open 2SW-1211.

E. Independently verify 2SW-56 locked closed.

JOB PERFORMANCE MEASURE

JPM-#- A2JPM-RO-CCWSB REV. 05 PAGE 1 of 6

SYSTEM/DUTY AREA: Component Cooling Water System

TASK: Raise "B" CCW Surge Tank level

JTA #: ANO2-AO-CCW-NORM-6

KA VALUE RO: 3.2 **SRO:** 3.5 **KA REFERENCE:** 008 A2.02

APPROVED FOR ADMINISTRATION TO: RO: X **SRO:** X .

TASK LOCATION: INSIDE CR: _____ **OUTSIDE CR:** X **BOTH:** _____ .

SUGGESTED TESTING ENVIRONMENT AND METHOD (PERFORM OR SIMULATE):

PLANT SITE: Simulate **SIMULATOR:** _____ **LAB:** _____ .

POSITION EVALUATED: RO: _____ **SRO:** _____.

ACTUAL TESTING ENVIRONMENT: SIMULATOR: _____ **PLANT SITE:** _____ **LAB:** _____ .

TESTING METHOD: SIMULATE: _____ **PERFORM:** _____.

APPROXIMATE COMPLETION TIME IN MINUTES: 12 minutes

REFERENCE(S): OP 2203.012L OP 2104.028

EXAMINEE'S NAME: _____ **SSN:** _____ - _____ - _____

EVALUATOR'S NAME: _____ **DATE:** _____

THE EXAMINEE'S PERFORMANCE WAS EVALUATED AGAINST THE STANDARDS CONTAINED IN THIS JPM AND IS DETERMINED TO BE:

SATISFACTORY: _____ **UNSATISFACTORY:** _____

PERFORMANCE CHECKLIST COMMENTS:

_____

_____

_____

_____

_____Start Time _____ Stop Time _____ Total Time

Signature indicates this JPM has been compared to its applicable procedure by a qualified individual (not the examinee) and is current with that revision.

SIGNED: _____ **DATE:** _____

THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:

The examiner shall review the "Briefing Checklist - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

1. Loop 2 feed and bleed has been secured due to 2K12-C7, “SURGE TK 2T37B LEVEL HI/LO” alarm.
2. The CBO reports 2T37B level is 12%.
3. The Condensate Transfer System has been verified to be in service.

TASK STANDARD: CCW surge tank level has been filled to 50% level and the fill valve (2CV-5214) has been closed.

TASK PERFORMANCE AIDS: OP 2203.012L (2K12-C7), OP 2104.028 Section 12.0

INITIATING CUE:

The SM/CRS directs, "Investigate the "SURGE TK 2T37B LEVEL HI/LO" alarm and fill CCW Surge Tank (2T37B) to 50% using OP 2104.028 section 12.0 if necessary."

CRITICAL ELEMENTS (C): 4, 5, 6

START TIME: _____ .

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1.	Verify proper operation of Makeup Control Valve (2CV-5214). POSITIVE CUE: 2CV-5214 air line is severed. Air flow noise is heard.	At 2CV-5214, observed proper valve alignment for operation as follows: - instrument air aligned to valve operator, - valve manual jacking slug approximately 1" off the bottom stop.	N/A SAT UNSAT
	2.	Isolate severed air line to 2CV-5214. POSITIVE CUE: Stem has moved in and will not turn anymore. Air sounds have ceased	At 2CV-5214 rotated local air isolation valve CW. Observed the stem moving in. Observed the stem will not turn when the valve is full shut.	N/A SAT UNSAT
EXAMINER'S NOTE: If the makeup valve is improperly operated, the jacking slug can be raised high enough to come off the top of the shaft.				
	3.	Check Condensate Makeup to 2T-37A/B (2CT-16) position. POSITIVE CUE: Valve stem full out.	Locally at the CCW expansion tanks, turned 2CT-16 ≈ one turn closed. Returned 2CT-16 to the full open position. Observed valve stem withdrawn fully from the valve handwheel.	N/A SAT UNSAT

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	4.	Establish manual control of 2CV-5214. POSITIVE CUE: Jacking slug moves down and then stem moves up.	Rotated 2CV-5214 handwheel CCW to open valve. Observed downward movement of the jacking slug until it bottoms out and then observed upward motion of the valve stem.	N/A SAT UNSAT
(C)	5.	Monitor 2T37B level for increase. POSITIVE CUE: 2T37B is at 50%.	On 2T37B Level Gage (2LG-5214), monitored 2T37B level. Observed level increasing to 50%.	N/A SAT UNSAT
(C)	6.	Close Makeup to Surge Tank 2T-37B (2CV-5214). POSITIVE CUE: Jacking slug is 1 inch off the bottom stop.	Rotated 2CV-5214 handwheel CW until the valve is closed AND UNTIL Observed the jacking slug approximately 1 inch off the bottom stop.	N/A SAT UNSAT
	7.	Notify the Control Room POSITIVE CUE: CRS reports monitoring 2T-37B level for leak-by.	Notified control room to monitor 2T-37B level for 2CV-5214 leak-by.	N/A SAT UNSAT
END				

STOP TIME: _____.

EXAMINER's COPY

JPM INITIAL TASK CONDITIONS:

1. Loop 2 feed and bleed has been secured due to 2K12-C7, "SURGE TK 2T37B LEVEL HI/LO" alarm.
2. The CBO reports 2T37B level is 12%.
3. The Condensate Transfer System has been verified to be in service.

INITIATING CUE:

The SM/CRS directs, "Investigate the "SURGE TK 2T37B LEVEL HI/LO" alarm and fill CCW Surge Tank (2T37B) to 50% using OP 2104.028 section 12.0 if necessary."

EXAMINEE's COPY

JPM INITIAL TASK CONDITIONS:

4. Loop 2 feed and bleed has been secured due to 2K12-C7, "SURGE TK 2T37B LEVEL HI/LO" alarm.
5. The CBO reports 2T37B level is 12%.
6. The Condensate Transfer System has been verified to be in service.

INITIATING CUE:

The SM/CRS directs, "Investigate the "SURGE TK 2T37B LEVEL HI/LO" alarm and fill CCW Surge Tank (2T37B) to 50% using OP 2104.028 section 12.0 if necessary."