

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: Conduct of Operations (A.1)TASK: Determine volume of boric acid and DI water to makeup to RWTJTA#: ANO2ROCHADDNORM110KA VALUE RO: 3.9 SRO: _____ KA REFERENCE: 2.1.23APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 30 MinutesREFERENCE(S): OP 2104.003 Attachment E REV 032-02-0

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.

ADMINISTRATIVE 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:

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppmb
- Final RWT level 95%
- Final RWT Concentration 2725 ppmb
- 'A' BAMT concentration 5965 ppmb

TASK STANDARD: Determine that the amount of Boric Acid needed is 8516 gallons \pm 85 gallons and the amount of DI water needed is 5848 gallons \pm 58 gallons

TASK PERFORMANCE AIDS: OP 2104.003 Attachment E.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

The CRS directs: "Given the information from initial conditions, determine the boric acid and DI water feed volumes required using OP 2104.003 Attachment E.

CRITICAL ELEMENTS (C) 5, 6, 7, 8

		PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1	Enter initial RWT level.	Entered 92% as initial RWT level.	N/A SAT UNSAT
	2	Calculate initial RWT volume as 466262 gallons	Calculated initial RWT volume and entered 466262 gals.	N/A SAT UNSAT
	3	Enter final RWT level.	Entered 95% as final RWT level.	N/A SAT UNSAT
	4	Calculate final RWT volume as 480626 gallons	Calculated final RWT volume and entered 480626 gals.	N/A SAT UNSAT
(C)	5	Determine total feed volume needed. Entered 14364 gallons \pm 100 gallons.	Calculated feed volume required to be added and entered 14364 gallons.	N/A SAT UNSAT
(C)	6	Calculate concentration of feed volume. Entered 3536 ppm boron \pm 25ppm boron.	Calculated concentration of feed volume and entered 3536 ppm boron.	N/A SAT UNSAT

Examiner's note: On page 2 of Att. E, there is a typographical error. On the line for recording CB (Boron concentration), VB (volume of boron to be added) (VB value is calculated in next equation) has been inserted. Prompt the examinee of the error if questioned.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

		PERFORMANCE CHECKLIST	STANDARD	(Circle One)
(C)	7	Calculate boric acid feed volume. Entered 8516 gal \pm 100 gal.	Calculate boric acid feed volume. Entered 8516 gal.	N/A SAT UNSAT
(C)	8	Calculate DI water feed volume. Entered total feed volume – boric acid feed volume. Entered 5846 gals \pm 100 gal.	Calculated DI water feed volume and entered 5846 gals.	N/A SAT UNSAT
END				

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER'S COPY****JPM INITIAL TASK CONDITIONS:**

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppmb
- Final RWT level 95%
- Final RWT Concentration 2725 ppmb
- 'A' BAMT concentration 5965 ppmb

INITIATING CUE:

Determine the boric acid and DI water feed volumes required to raise the RWT from 92% to 95% and change boron concentration to 2725ppmb using OP 2104.003 Attachment E.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****JPM INITIAL TASK CONDITIONS:**

- Initial RWT Level 92%
- Initial RWT concentration 2700 ppmb
- Final RWT level 95%
- Final RWT Concentration 2725 ppmb
- 'A' BAMT concentration 5965 ppmb

INITIATING CUE:

Determine the boric acid and DI water feed volumes required to raise the RWT from 92% to 95% and change boron concentration to 2725ppmb using OP 2104.003 Attachment E.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 00 DATE: _____SYSTEM/DUTY AREA: A1: Control Element Drive Mechanism Control SystemTASK: Determine CEA#1 Upper Gripper Coil TemperatureJTA#: ANO2-RO-CEDM-NORM-10KA VALUE RO: 3.9 SRO: 4.0 KA REFERENCE: 2.1.23APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2105.009, Rev. 022-01-0

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.

ADMINISTRATIVE 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:

1. Plant is at full power.
2. Both Main Chillers have tripped and cannot be started.
3. I&C is not available to obtain CEDM Coil temperatures.
4. OP 2203.012M, 2K13 ACA, for window C4, CEDM Cooling coils Water Flow Low is in alarm.
5. Readings obtained from the CEDM coil using a calibrated DVM are: 1) Upper Gripper coil voltage, $V_{ug} = 44V$; 2) Upper Gripper Shunt voltage $V_{shunt} = 7.12 \text{ mV}$

TASK STANDARD:

Calculate CEA #01 coil temperature to be $\geq 406.709^{\circ}\text{F}$ but $\leq 420.043^{\circ}\text{F}$.

TASK PERFORMANCE AIDS:

1. OP 2105.009 Exhibit 2
2. Calculator.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

The SM directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, calculate the Upper Gripper temperature for CEA 01 using 2105.009, Exhibit 2."

CRITICAL ELEMENTS (C): 5, 7, 9, 10

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 3.2)	Record Upper Gripper Coil voltage from initial conditions.	Recorded 44V from given data.	N/A SAT UNSAT
	2. (Step 4.3.1)	Record Upper Gripper Coil shunt voltage from initial conditions.	Recorded 7.12 mV from given data.	N/A SAT UNSAT
	3. (step 4.3.1)	Convert Upper Gripper Coil shunt voltage from mV to Volts.	Calculated 0.00712 Volts.	N/A SAT UNSAT
	4. (step 5.1)	Record Upper Gripper Coil shunt voltage (in Volts from previous step).	Recorded 0.00712 Volts.	N/A SAT UNSAT
(C)	5. (step 5.2)	Using OHMS law calculate coil current.	Calculated 3.56 amps. (3.56 amps \pm 0.05 amps)	N/A SAT UNSAT
	6. (step 6.1)	Record coil voltage and coil current.	Recorded coil voltage and coil current.	N/A SAT UNSAT
(C)	7. (step 6.1)	Calculate coil resistance.	Calculated 12.36 ohms. (12.36 \pm 0.1 ohms)	N/A SAT UNSAT
	8. (step 6.2)	Record coil resistance.	Enter resistance from previous step.	N/A SAT UNSAT
(C)	9. (step 6.3)	Calculate accurate coil resistance by subtracting known CEA#01 lead resistance.	Calculated 11.83 ohms. (11.83 \pm 0.1 ohms)	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
Examiner's Cue: Tell examinee that interpolation is not required and to use resistance reading rounded to nearest tenth.				
(C)	10. (step 7.1)	Obtain CEA#01 coil temperature from table resistance vs temperature.	Calculate correct CEA 01 upper gripper coil temperature to be 413.376°F. ($\geq 406.709^\circ\text{F}$ but \leq 420.043°F)	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER's COPY****JPM INITIAL TASK CONDITIONS:**

- Plant is at full power.
- Both Main Chillers have tripped and cannot be started.
- I&C is not available to obtain CEDM Coil temperatures.
- OP 2203.012M, 2K13 ACA, for window C4, CEDM Cooling coils Water Flow Low is in alarm.
- Readings obtained from the CEDM coil using a calibrated DVM are: 1) Upper Gripper coil voltage, $V_{ug} = 44V$; 2) Upper Gripper Shunt voltage $V_{shunt} = 7.12 \text{ mV}$

INITIATING CUE:

The CRS directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, calculate the Upper Gripper temperature for CEA 01 using 2105.009, Exhibit 2."

ADMINISTRATIVE JOB PERFORMANCE MEASURE
EXAMINEE's COPY

JPM INITIAL TASK CONDITIONS:

- Plant is at full power.
- Both Main Chillers have tripped and cannot be started.
- I&C is not available to obtain CEDM Coil temperatures.
- OP 2203.012M, 2K13 ACA, for window C4, CEDM Cooling coils Water Flow Low is in alarm.
- Readings obtained from the CEDM coil using a calibrated DVM are: 1) Upper Gripper coil voltage, $V_{ug} = 44V$; 2) Upper Gripper Shunt voltage $V_{shunt} = 7.12 \text{ mV}$

INITIATING CUE:

The CRS directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, calculate the Upper Gripper temperature for CEA 01 using 2105.009, Exhibit 2."

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	YES NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump ΔP {4.3.1}	2PI-5101 - 2PI-5100	1355.5 psid	N/A	<u>1360.81</u> (1) to 1612.8 psid	YES NO
Motor Running Amps (CR-1-96-0272- 07)	Ammeter at 2A-406	$\emptyset A$ <u>34</u> Amps $\emptyset B$ <u>33</u> Amps $\emptyset C$ <u>35</u> Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	YES NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump ΔP is:

$$1372.9 + 20.41 \text{ (Instrument error)} - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(\underline{90} - 40)/4] = \underline{1360.81} \text{ psid}$$

3.2 Independently verify pump ΔP calculation. _____

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable.
- Refer to Tech Spec 3.5.2 OR 3.5.3.
- Notify Shift Manager.
- Initiate WR/WO as applicable.

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter
OR as directed by IST Coordinator.
- Annotate on status board.
- Annotate in Work Exceptions section of WR/WO.

N/A

N/A

N/A

3.6 Pump Data recorded in database AND reviewed by SRO.

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160).

N/A

Comments _____

Performed By Jimmy Reactor Date TODAY

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 66 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

- 4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO
- 4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA
- 4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:
- Verify Inoperable Equipment Checklist (1015.001, Conduct of Operations) completed. _____
 - Verify Condition Report initiated. _____
- 4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:
- Verify WR/WO has been initiated. _____
 - Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

- 4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: A.3: Radiation ControlTASK: Complete a Containment Purge Gaseous ReleaseJTA#: ANO2ROGRWNORM10KA VALUE RO: 2.5 SRO: 3.4 KA REFERENCE: 2.3.9APPROVED FOR ADMINISTRATION TO: RO: X SRO: _____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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2104.033 Supplement 1 Rev. 043-02-0

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.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL PLANT CONDITIONS

Plant is in Mode 5.

Today's date is 3/15/2005.

Chemistry has completed Containment atmosphere radioactivity analysis.

Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.

Initial count rate on 2RITS-8233, Containment Purge, is 60 cpm.

Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.

Current four hour averaged CAM's Particulate reading is 1142 CPM and Gaseous is 1012 CPM.

Last test reading run-time from engineering programs group is 7532.5 hrs.

Current run-time reading from 2B85-C7 is 8284.9 hrs.

Plant heating is not required to be aligned to containment.

No other Gaseous Release is in progress.

TASK STANDARD:

Correctly complete applicable portions of Supplement 1 of Containment Purge Gaseous Release Permit.

TASK PERFORMANCE AIDS: A partially marked-up copy of Supplement 1 Containment Purge Gaseous Release

Permit through section 4 and chemistry release data.

SIMULATOR SETUP: NA

ADMINISTRATIVE JOB PERFORMANCE MEASURE**Initiating CUE:**

The CRS directs "Complete purge system verification section of OP 2104.033 supplement 1, Containment Purge Gaseous Release Permit. Sections 4.9, 4.10 and 4.11 have already been completed."

CRITICAL STEPS: 5, 11, 14

START TIME: _____

<u>PERFORMANCECHECKLIST</u>			<u>STANDARD</u>	<u>CIRCLE ONE</u>
	1. (Step 4.1.1)	Record last reading from given data.	Records 7532.5 hrs.	N/A SAT UNSAT
	2. (Step 4.1.2)	Record present run-time data from given data.	Records 8284.9 hrs.	N/A SAT UNSAT
	3. (Step 4.1.3)	Record estimated release duration from chemistry release data form.	Records 1.0 hr from page one of chemistry data.	N/A SAT UNSAT
	4. (Step 4.1.4)	Calculate projected filter run-time. (> 720 hours)	Calculates 753.4 hrs.	N/A SAT UNSAT
(C)	5. (Step 4.1.5)	Determine that filter run time is greater than 720 hrs and notify Engineering programs. Examiner's Cue: "Engineering is calculating new initial run-time data. Continue on with form and will provide corrected data before starting release."	Determines calculated filter run-time is >720hrs and contacts Engineering programs or CRS.	N/A SAT UNSAT
Examiner's Note: The following equipment is located outside the control room.				
	6. (Step 4.2)	Verify Purge Exhaust Filter doors closed and dogged. Examiner's Cue: "The Purge Exhaust filter Unit doors are verified closed and dogged by the inside AO."	Tells examiner that filter doors must be verified closed and dogged.	N/A SAT UNSAT
	7. (Step 4.3)	Provide plant heating to containment.	NA step for plant heating per initial conditions.	N/A SAT UNSAT
	8. (Step 4.4)	Verify no other gaseous release is in progress.	Initials step per initial data.	N/A SAT UNSAT
	9. (Step 4.5)	Recorded initial CAM's readings from initial data.	Records Particulate reading is 1084 CPM and Gaseous is 928 CPM from initial data.	N/A SAT UNSAT
	10. (Step 4.6)	Record current CAM's readings from initial data.	Records Particulate reading is 1142 CPM and Gaseous is 1012 CPM from initial data.	N/A SAT UNSAT
(C)	11. (Step 4.7)	Calculate allowable count rate limits (both particulate and gaseous). (Particulate – 1355 CPM Gaseous – 1160CPM ± 15 CPM)	Calculates allowable limits for particulate to be 1355 CPM and for gaseous to be 1160 CPM.	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

<u>PERFORMANCECHECKLIST</u>			<u>STANDARD</u>	<u>CIRCLE ONE</u>
	12. (Step 4.8)	Step is NA since current count rates are less than allowable limits.	Determines that entire step 4.8 is NA'd.	N/A SAT UNSAT
EXAMINER'S NOTE: Steps 4.9, 4.10 and 4.11 have been completed previously.				
	13. (Step 4.12)	Records preliminary report 2RITS-8233 set point to be 150 CPM.	Records 2RITS-8233 set point to be 150 CPM from initial chemistry report (page 3)	N/A SAT UNSAT
(C)	14. (Step 4.12)	Determine 2RITS 8233 potentiometer set point. (1.0 E3 = 3.84)	Determined that since set point was less than 1000CPM, the potentiometer set point was 3.84.	N/A SAT UNSAT
	15. (Step 4.13)	Contact CRS to have independent verifications completed. Examiner's Cue: Independent verification has been completed.	Contacted CRS to designate someone to independently verify steps per 4.13.	N/A SAT UNSAT
	16. (Step 4.14)	Declare 2RITS-8233 operable and give form to shift manager for approval.	Declare 2RITS-8233 operable and give form to shift manager for approval.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Today's date is 3/15/2005 (use 2005 dates given in release permit also).
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.
- Initial count rate on 2RITS-8233, Containment Purge, is 60 cpm.
- Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.
- Current four hour averaged CAM's Particulate reading is 1142 CPM and Gaseous is 1012 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- Plant heating is not required to be aligned to containment.
- No other Gaseous Release is in progress.

Initiating CUE:

The CRS directs "Complete purge system verification section of OP 2104.033 supplement 1, Containment Purge Gaseous Release Permit. Sections 4.9, 4.10 and 4.11 have already been completed."

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Today's date is 3/15/2005 (use 2005 dates given in release permit also).
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.
- Initial count rate on 2RITS-8233, Containment Purge, is 60 cpm.
- Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.
- Current four hour averaged CAM's Particulate reading is 1142 CPM and Gaseous is 1012 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- Plant heating is not required to be aligned to containment.
- No other Gaseous Release is in progress.

Initiating CUE:

The CRS directs "Complete purge system verification section of OP 2104.033 supplement 1, Containment Purge Gaseous Release Permit. Sections 4.9, 4.10 and 4.11 have already been completed."

Entergy Operations Inc.
 Arkansas Nuclear One Unit 2
 Gaseous Radioactive Waste Release Permit
 Post-Release Permit Update

26R2005-Test

PART III: ACTUAL RELEASE DATA

Release Point (44): 2RBPRG RX BUILDING PURGE
 Discharge Point (12): DISC. PT. 12 - 2 CONT. PURGE

Permit Issued: 09-mar-2005 17:25:06 Release Type: Batch

Sample entry number: 28

Average Waste Flow:	4.0000E+04 CFM		
Total Waste Volume:	2.4000E+06 CF		
Actual Release Start:	10-mar-2005 05:41:00	Initial Pressure :	0.00
Actual Release End:	10-mar-2005 06:41:00	Final Pressure :	0.00
Release Duration:	60.0000 MIN		

Performed By: Belant
 Approved By: Spa Supervisor

Date
3/10/05
3/15/05

Entergy Operations Inc.
Arkansas Nuclear One Unit 2
Gaseous Radioactive Waste Release Permit
Post-Release Permit Update

261-205-547

RELEASE ACTIVITY - Unit 2

Isotope		: Pre-Disp. : Measured : uCi/cc	: Pre-Disp. : Measured : Conc/MPC	: Pre-Disp. : Measured : Conc/Total	: Conc/Total: : by : Type	: Release : Rate : uCi/sec	: Curies : Released
H-3	O:	4.37E-07	2.18E+00	3.33E-01	1.00E+00	8.24E+00	2.97E-02
XE-133	N:	8.75E-07	2.92E+00	6.67E-01	1.00E+00	1.65E+01	5.95E-02
Totals :		1.31E-06	5.10E+00	:	:	2.48E+01	8.92E-02

Intergrity Operations Inc.
Arkansas Nuclear One
Gaseous Radioactive Waste Release Permit
Pre-Release Supplementary Data

Unit 2

260205-Test

PART I: PRE-RELEASE DATA

Release Point (44): 2RBPRG RX BUILDING PURGE
Discharge Point (12): DISC. PT. 12 - 2 CONT. PURGE

Permit Issued: 09-mar-2005 17:25:06

Release Type: Batch

Rad Monitor: (8233) 2RE-8233 ✓
Rad Monitor Bckgrnd: 6.0000E+01 CPM

Estim. Waste Flow: 4.0000E+04 CFM
Estim. Waste Volume: 1.2000E+07 CF
Estim. Release Start: 09-mar-2005 17:24:29
Estim. Release End: 09-mar-2005 22:24:29 18:24
Estim. Duration: 300.0000 MIN
3-9-05 60 min

Initial Pressure : 0.00
Final Pressure : 0.00

PART II: PRE-RELEASE CALCULATIONS

Sample Entry # : 28
Gas sample time:

Sampled by:

Gas Monitor Response: 8.44E+01 CPM
Total Body Dose Rate: 2.25E-03 mrem/yr
Skin Dose Rate: ~~5.32E-03 mrem/yr~~
Max Organ Dose Rate: 1.65E-02 mrem/yr

% Limit = 0.0%
% Limit = 0.0%
% Limit = 0.0%

3.17E-2 3-9-05 Jbl

Max Monitor Setpoints: 2RE-8233
CPM

2RX-9820
uCi/cc

Noble Gas : 1.5E+02

5.0E-06

Flag:
Flags: A-Release Curies > Local Limit
S-Release Curies > Site Limit

N-Noble Gas Dose Rate > Limit
O-Organ Dose Rate > Limit

	Analysis Date	Measured Concen.	Est. Curies
Noble Gases		2.07E-07 uCi/cc	7.03E-02
Particulates	09-mar-2005 16:12:49	0.00E+00 uCi/cc	0.00E+00
Radioiodines	09-mar-2005 16:11:57	0.00E+00 uCi/cc	0.00E+00

Performed By:

Approved By:

Date
3/9/05
3/9/05

Enerergy Operations Inc.
Arkansas Nuclear One Unit 2
Gaseous Radioactive Waste Release Permit
Pre-Release Supplementary Data

26R2005-Test

ISOTOPIC IDENTIFICATION - Unit 2

Isotope	: uCi/cc	: Conc/MPC	: Conc/Total:	: Type	: Conc/Total:	: Release Rate	: Estimated Curies Released
H-3	O: 1.03E-07	: 5.16E-01	: 3.33E-01	: 1.00E+00	: 1.95E+00	: 3.51E-02	
XE-133	N: 2.07E-07	: 6.90E-01	: 6.67E-01	: 1.00E+00	: 3.91E+00	: 7.03E-02	
Totals	: 3.10E-07	: 1.21E+00	:	:	: 5.86E+00	: 1.05E-01	

Entergy Operations Inc.
Arkansas Nuclear One
Unit 2
Containment Purge Fan Run Time Report
Pre-Release Report

09-mar-2005

262005-test

Hour	Run Time	Start TOD	Stop TOD	Initialed By
1	1 hrs	<u>0541</u>	<u>0641</u>	<u>BS</u>

Purge considered complete after an additional 0 hours and 0 minutes.

Entergy Operations Inc.
Arkansas Nuclear One
Unit 2
09-mar-2005 17:34:00

26R2005-Test

1. The noble gases Total Body dose rate = $2.251\text{e-}03$ mRem/yr. It must be ≤ 500 mRem/yr per ODCM L-2.4.1.A.1. If exceeding this limit, without delay restore the release rate to comply with this limit. During periods of containment purging the dose rate may be averaged over a one hour interval.
 $3.17\text{E-}2$ 3-9-05 JD
2. The noble gases Skin dose rate = ~~$5.316\text{e-}03$~~ mRem/yr. It must be ≤ 3000 mRem/yr per ODCM L-2.4.1.A.1. If exceeding this limit, without delay restore the release rate to comply with this limit. During periods of containment purging the dose rate may be averaged over a one hour interval.
3. The ITP critical organ dose rate = $1.653\text{e-}02$ mRem/yr. It must be ≤ 1500 mRem/yr per ODCM L-2.4.1.A.2. If exceeding this limit, without delay restore the release rate to comply with this limit. During periods of containment purging the dose rate may be averaged over a one hour interval.
4. The quarterly Gamma Air dose = $2.203\text{e-}06$ mRad. If the dose exceeds 5 mRad per ODCM L-2.4.2.A.1 notify the NRC per ODCM L-2.4.2.A ACTION 1. The total dose limit is 10 mRad per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
5. The quarterly Beta Air dose = $6.554\text{e-}06$ mRad. If the dose exceeds 10 mRad per ODCM L-2.4.2.A.1 notify the NRC per ODCM L-2.4.2.A ACTION 1. The total dose limit is 20 mRad per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
6. The quarterly ITP dose = ~~$1.692\text{e-}03$~~ mRem. If the dose exceeds 7.5 mRem per ODCM L-2.4.3.A.1 notify the NRC per ODCM L-2.4.3.A ACTION 1. The total dose limit is 15 mRem per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
 $2.8149\text{E-}4$ 3-9-05 JD
7. The yearly Gamma Air dose = $2.203\text{e-}06$ mRad. If the dose exceeds 10 mRad per ODCM L-2.4.2.A.2 notify the NRC per ODCM L-2.4.2.A ACTION 1. The total dose limit is 20 mRad per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
8. The yearly Beta Air dose = $6.554\text{e-}06$ mRad. If the dose exceeds 20 mRad per ODCM L-2.4.2.A.2 notify the NRC per ODCM L-2.4.2.A ACTION 1. The total dose limit is 40 mRad per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
9. The yearly ITP dose = ~~$1.692\text{e-}03$~~ mRem. If the dose exceeds 15 mRad per ODCM L-2.4.3.A.2 notify the NRC per ODCM L-2.4.3.A ACTION 1. The total dose limit is 30 mRad per ODCM L-2.5.1.A. The NRC must be notified if this value is exceeded per ODCM L-2.5.1.A ACTIONS 1 and 2.
 $2.8149\text{E-}4$ 3-9-05 JD
10. The projected quarterly Gamma Air Dose = $2.984\text{e-}06$ mRad. If the dose exceeds 0.625 mRad ODCM L-2.4.4.A and ODCM L-2.4.4.B and releases being discharged without treatment notify NRC per ODCM L-2.4.4 ACTION 1. Contact Engineering Programs to verify Treatment System Operability if the projected quarterly dose exceeds 0.625 mRad.

Entergy Operations Inc.

Arkansas Nuclear One
Unit 2
09-mar-2005 17:34:0

2002005-test

11. The projected quarterly Beta Air Dose = $8.875e-06$ mRad. If the dose exceeds 1.25 mRad ODCM L-2.4.4.A and ODCM L-2.4.4.B and releases being discharged without treatment notify NRC per ODCM L-2.4.4 ACTIONS 1&2. Contact Engineering Programs to verify Treatment System Operability if the projected quarterly dose exceeds 1.25 mRad.
12. The projected quarterly ITP Dose = $2.292e-03$ mRem. If the dose exceeds 1.0 mRem ODCM L-2.4.4.A and releases are being discharged without treatment notify the NRC per ODCM L-2.4.4 ACTION 1. Contact Engineering Programs to verify Treatment System Operability if the projected quarterly dose exceeds 1.0 mRem.

13. Additional comments:

Gamma Air Dose for release = $2.203e-06$ mRad
Beta Air Dose for release = $6.554e-06$ mRad
ITP Dose for the release = ~~$2.160e-05$~~ mRem

$3.59E-6$ 3-9-05 JDD

ITP = I-131, H-3, and particulates with halflives > 8 days

Gaseous Release Number 2GR-2005-0028

Release time in minutes: 60

Nuclide	Total		Annual		Product	Gamma	Dose Factor	Product
	release	Curies this	conc pCi/m3	Ground level Skin Dose Factor				
Kr-83m				1.46E-03		1.93E-05		
Kr-85m				1.23E-03				
Kr-85				1.34E-03		1.72E-05		
Kr-87				9.73E-03		6.17E-03		
Kr-88				2.37E-03		1.52E-02		
Kr-89				1.01E-02		1.73E-02		
Kr-90				7.29E-03		1.63E-02		
Xe-131m				4.76E-04		1.56E-04		
Xe-133m				9.94E-04		3.27E-04		
Xe-133	7.03E-02		5.47E+01	3.06E-04	1.67E-02	3.53E-04		1.93E-02
Xe-135m				7.11E-04		3.36E-03		
Xe-135				1.86E-03		1.92E-03		
Xe-137				1.22E-02		1.51E-03		
Xe-138				4.13E-03		9.21E-03		
Ar-41				2.69E-03		9.30E-03		
				Total	1.67E-02	Total		1.50E-02

1.72E-05
1.56E-04
3.27E-04
3.53E-04
1.92E-04

Update date 3/9/2005 18:24
3.17E-02 mRem/yr Skin Dose Rate
3.59E-06 mRem Dose for ITP

Unit 2 Quarterly & Yearly Dose Total
Last updated 03/09/05 18:24

3.8243E-04	mRem Quarterly ITP Dose
7.6613E-04	mRem Quarterly ITP Dose
9.5516E-04	mRem Quarterly ITP Dose
7.6583E-04	mRem Quarterly ITP Dose
2.8614E-03	mRem Yearly ITP Dose
7.2915E-04	mRem Quarterly ITP Dose
4.3032E-04	mRem Quarterly ITP Dose
5.6461E-04	mRem Quarterly ITP Dose
8.4791E-04	mRem Quarterly ITP Dose
2.5720E-03	mRem Yearly ITP Dose
5.9550E-04	mRem Quarterly ITP Dose
1.1152E-03	mRem Quarterly ITP Dose
9.6798E-04	mRem Quarterly ITP Dose
6.2090E-04	mRem Quarterly ITP Dose
3.2997E-03	mRem Yearly ITP Dose
2.8149E-04	mRem Quarterly ITP Dose
0.0000E+00	mRem Quarterly ITP Dose

Unit 1 Quarterly & Yearly Dose Total
Last updated 03/08/05 00:00

Qtr. #1 2002	1.1372E-03	mRem Quarterly ITP Dose
Qtr. #2 2002	8.0344E-04	mRem Quarterly ITP Dose
Qtr. #3 2002	3.5397E-04	mRem Quarterly ITP Dose
Qtr. #4 2002	1.2026E-03	mRem Quarterly ITP Dose
Yearly 2002	3.4017E-03	mRem Yearly ITP Dose
Qtr. #1 2003	1.0948E-03	mRem Quarterly ITP Dose
Qtr. #2 2003	1.0929E-03	mRem Quarterly ITP Dose
Qtr. #3 2003	9.7329E-04	mRem Quarterly ITP Dose
Qtr. #4 2003	7.6463E-04	mRem Quarterly ITP Dose
Yearly 2003	3.9257E-03	mRem Yearly ITP Dose
Qtr. #1 2004	9.2199E-04	mRem Quarterly ITP Dose
Qtr. #2 2004	1.8819E-03	mRem Quarterly ITP Dose
Qtr. #3 2004	1.1674E-03	mRem Quarterly ITP Dose
Qtr. #4 2004	1.0121E-03	mRem Quarterly ITP Dose
Yearly 2004	4.9230E-03	mRem Yearly ITP Dose
Qtr. #1 2005	6.4660E-04	mRem Quarterly ITP Dose
Qtr. #2 2005	0.0000E+00	mRem Quarterly ITP Dose

Entergy Operations : ANO - Nuclear Chemistry Department - 9-MAR-2005 16:24

Main Spectra: 05-02588 Bkg Spectra : 05-02505

Sample date : 9-MAR-2005 15:14:00 Isolation date : 9-MAR-2005 15:14:00
Sample ID : 2REP Gas 2GR- Sample Quantity : 1.65000E+03 mls
Comments :
Geometry : TABLE 222 1L GAS MARINELLI CAVE 2 SHELF 1

Calib date : 8-MAR-2005 18:07:24 Acquisition date : 9-MAR-2005 16:09:35
keV/channel : 4.99636E-01 Elapsed live time: 0 00:15:00.00
offset : 6.10107E-02 Percent deadtime : 0.0%

Decay limit : 8.00000 Peak Sensitivity : 4.66000
Abundance : 30.00000 Energy tolerance : 1.50000
Library : Libark Nuclear Chemist : DMCENTY

Peak Search performed from channel : 100 to 4050

Post-NID Peak Search Report

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	%Err	Fit	Nuclides
1	81.29	111	22	1.02	162.58	158	10	12.6	7.72E-01	XE-133

Nuclide Line Activity Report

Sample ID : 2RBP Gas 2GR- Acquisition date : 9-MAR-2005 16:09:35

Nuclide	Sbhr	Energy	Area	%Abn	Eff	uCi/unit	1 Sig Err
XE-133	FG	81.00	111.	37.10*	2.825E-03	1.934E-06	2.434E-07

Unidentified Energy Lines

None

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of peaks in spectrum 1
Number of peaks identified by NID 1 100.00%

Nuclide	Sbhr	Halflife	Decay	uCi/unit	1 Sig Err
XE-133	FG	5.29D	1.006	1.934E-06	2.434E-07

Interference correction summary

Isotope uCi/cc Corrections applied BPS : below peak sensitivity

XE-133 = 1.934E-06

Xe-133eq= 2.027E-06

Interference report Completed

Monitor Bkg
cpm
2RE-8233 = 60 cpm
Spring#5
chnl5 - 2RX-9820 = 1.29E-6 uCi/cc
3-9-05 @ 1730

Entergy Operations : ANO - Nuclear Chemistry Department - 9-MAR-2005 16:27

Main Spectra: 05-02590

Bkg Spectra : 05-02508

Sample date : 9-MAR-2005 15:20:00 Isolation date : 9-MAR-2005 15:20:00
Sample ID : 2REP Part 2GR- Sample Quantity : 5.00000E+04 ml

Comments :
Geometry : TABLE 317 2 IN PART FLTR CAVE 3 SHELF 1

Calib date : 8-MAR-2005 19:19:26 Acquisition date : 9-MAR-2005 16:12:49
keV/channel : 4.99684E-01 Elapsed live time: 0 00:15:00.00
offset : -8.34717E-02 Percent deadtime : 0.2%

Decay limit : 8.00000 Peak Sensitivity : 4.66000
Abundance : 30.00000 Energy tolerance : 1.50000
Library : Libark Nuclear Chemist : DMCENTY

Peak Search performed from channel : 100 to 4050

Post-NID Peak Search Report
***** No peaks found *****

Nuclide Line Activity Report

Sample ID : 2RBP Part 2GR-

Acquisition date : 9-MAR-2005 16:12:49

Nuclide	Sbhr	Energy	Area	%Abn	Eff	uCi/unit	1 Sig Err
---------	------	--------	------	------	-----	----------	-----------

Unidentified Energy Lines

None

Flags: "T" = Tentatively associated

Summary of Nuclide Activity

Total number of peaks in spectrum	0
Number of peaks identified by NID	0 100.00%

Nuclide	Sbhr	Halflife	Decay	uCi/unit	1 Sig Err
---------	------	----------	-------	----------	-----------

Interference correction summary

Isotope	uCi/cc	Corrections applied BPS : below peak sensitivity
---------	--------	--

Cs-137eq= < 1.631E-10

Xe-133eq= < 1.560E-10

Interference report Completed

Entergy Operations : ANO - Nuclear Chemistry Department - 9-MAR-2005 16:27

Main Spectra: 05-02589

Bkg Spectra : 05-02510

Sample date : 9-MAR-2005 15:20:00 Isolation date : 9-MAR-2005 15:20:00

Sample ID : 2REP Char 2GR- Sample Quantity : 5.00000E+04 ml

Comments :

Geometry : TABLE 427 SPING CHAR CART CAVE 4 SHELF 1

Calib date : 8-MAR-2005 20:09:31 Acquisition date : 9-MAR-2005 16:11:57

keV/channel : 4.99521E-01 Elapsed live time: 0 00:15:00.00

offset : 1.04492E-02 Percent deadtime : 0.0%

Decay limit : 8.00000

Peak Sensitivity : 4.66000

Abundance : 30.00000

Energy tolerance : 1.50000

Library : Libark

Nuclear Chemist : DMCENTY

Peak Search performed from channel : 100 to 4050

```
#####  
#  
# No Peaks Identified #  
#  
#####
```

Interference correction summary

Isotope uCi/cc Corrections applied BPS : below peak sensitivity

Cs-137eq= < 2.628E-10 ✓

Interference report Completed

ANO - Nuclear Chemistry : Gross Beta & Tritium Report : 9-MAR-2005 16:57

Analysis Num: 05-02592

Sample date : 9-MAR-2005 15:26:00

Sample ID : 2RBP H3

Instrument : Packard 2300TR

Background Data

H-3 [cpm] : 13.90
Beta [cpm] : 23.60
Count time [min] : 10.00
QIP [glass bkg] : 380.00
H-3 MDA [uCi/ml] : 3.110E-09
Beta MDA [uCi/ml] : 4.986E-09

Sample Data

H-3 [cpm] : 2016.79
H-3 [dpm] : 5356.98
Count time [min] : 10.00
Beta [cpm] : 0.00
Beta [dpm] : 0.00
Equiv. Volume [ml] : 2500.00
Collected Volume [ml] : 50000.00
Total Dil Volume [ml] : 100.00
Aliquot Volume [ml] : 5.00

Activity

Beta < 4.986E-09

H-3 = 9.652E-07

Error

N/A uCi/ml

+/- 5.118E-09 uCi/ml

Calculated by : DMCENTY

Protocol #: 2 Name: 3 Cnts. 10 Min 09-Mar-2005 16:31

Region A: LL-UL= 0.0-18.6 Lcr= 0 Bkg=13.90 %2 Sigma=0.00

Region B: LL-UL=18.6-2000 Lcr= 0 Bkg=23.60 %2 Sigma=0.00

Region C: LL-UL= 0.0- 0.0 Lcr= 0 Bkg= 0.00 %2 Sigma=0.00

Time = 10.00 QIP = tSIE

ES Terminator = Count

Conventional DPM

Nuclide 1 = 220525

Nuclide 2 = 114953

2 Rx Oldg H-3

S#	TIME	CPMA	DPM1	CPMB	DPM2	tSIE	FLAG
1	10.00	2025.66	5380.06	8.44	8.45	387.	
1	10.00	2020.06	5378.08	7.54	7.54	385.	
1	10.00	2004.64	5312.80	9.56	9.58	388.	
	10.00	2016.79	5356.98	8.51	8.53	387.	A

RBP

Rx Bldg Purge - Completion Time Evaluation			RBP Flowrate*x/q	RB Vol	
✓ RBP cfm	4.00E+04 ✓		5.286E-05	✓ 1.820E+06	U1=1.81E+6 CF Unit 1
Isotope	uCi/cc	Air-ECLs		ECL-fraction	(U2=1.82E+6 CF) Unit 2
✓ H ³	✓ 9.652E-07	1.000E-07	bldg t-1/2, mins.	5.102E-04	Initial ECL Sum
Xe ^{131m}		2.000E-06	22.75	0.000E+00	
Xe ^{133m}		6.000E-07		0.000E+00	
✓ Xe ¹³³	✓ 1.934E-06	5.000E-07		2.045E-04	Time to Purge to 0.00
Xe ¹³⁵		7.000E-08		0.000E+00	After Initial 60 Minute
Kr ⁸⁵		7.000E-07		0.000E+00	Minutes
Kr ^{85m}		1.000E-07		0.000E+00	
Kr ⁸⁷		2.000E-08		0.000E+00	
Kr ⁸⁸		9.000E-09		0.000E+00	hours
Ar ⁴¹		1.000E-08		0.000E+00	minutes
Na24		7.000E-09		0.000E+00	
Cr51		3.000E-08		0.000E+00	
Mn54		1.000E-09		0.000E+00	
Fe59		5.000E-10		0.000E+00	
Co57		9.000E-10		0.000E+00	
Co58		1.000E-09		0.000E+00	
Co60		5.000E-11		0.000E+00	
Rb88		9.000E-08		0.000E+00	
Zr95		4.000E-10		0.000E+00	
Nb95		2.000E-09		0.000E+00	
Ag110m		1.000E-10		0.000E+00	
Sb122		2.000E-09		0.000E+00	
Sb124		3.000E-10		0.000E+00	
Sb125		7.000E-10		0.000E+00	
Te132		9.000E-10		0.000E+00	
I131		2.000E-10		0.000E+00	
I132		2.000E-08		0.000E+00	
I133		1.000E-09		0.000E+00	
I134		6.000E-08		0.000E+00	
I135		6.000E-09		0.000E+00	
Cs134		2.000E-10		0.000E+00	
Cs136		9.000E-10		0.000E+00	
Cs137		2.000E-10		0.000E+00	
Cs138		8.000E-08		0.000E+00	

✓ 3-9-05
JED

RBP

[illegible]

ROC/WORK PLAN NO. 1604.051	PROCEDURE/WORK PLAN TITLE: EBERLINE RADIATION MONITORING SYSTEM	PAGE: 51 of 95 CHANGE: 011-00-0
-------------------------------	--	------------------------------------

ATTACHMENT 5

Page 1 of 5

NOBLE GAS MONITOR SOURCE CHECK

This test demonstrates operability of both Unit 1 and Unit 2 related SPING noble gas monitors by performing a source check of each detector channel and satisfies the source check requirements of ODCM Appendix 1 Surveillance Limitation S2.2.1 and Limitation L2.2.1 and ODCM Appendix 2 Surveillance Limitation S2.2.1 and Limitation L2.2.1. Particulate and iodine monitor channels are tested quarterly in accordance with I&C channel test procedures.

~~1.0~~ INITIAL CONDITIONS

~~1.1~~ Check the purpose of this test:

- ~~___~~ A) Regularly scheduled monthly test. It is not required to perform the surveillance on SPINGs that have been taken out of service for maintenance or calibration and gas channels that are inoperable. However, SPINGs that missed the monthly surveillance shall be source checked upon placing the SPING back in service.
- ~~___~~ B) Operability test following significant maintenance (describe maintenance performed in section 5.0).
Other (describe in section 5.0).

~~1.2~~ Complete the applicable portions of the Inoperable Equipment Checklist (computer generated form) and take the form to the Control Room. (N/A if already performed).

~~1.3~~ Notify Operations just prior to performing source check. Noble gas monitor will be inoperable during source check. It should be noted that a SPING may be taken out of service, with an operating vent, for source check without performing ODCM actions as long as the SPING is not out of service over four hour.

Performed By (Section 1.0) *Joe Chent*

~~2.0~~ TEST METHOD

~~2.1~~ IF SPING 1 and/or SPING 5 is to be source checked and SPING is in "STANDBY ON" mode,
THEN return SPING to "STANDBY OFF" mode and clear alarms.

~~2.2~~ Set Stack Flow rate to zero (off scan) as follows:

~~2.2.1~~ From the Main Menu, select option 8, "Data Acquisition Maintenance".

~~2.2.2~~ From the Data Acquisition Maintenance Menu, select option 1, "Substitute Value".

~~2.2.3~~ Press [F1] for a list of options.

~~2.2.4~~ Select option 1, "SPING Release Channel".

~~2.2.5~~ Select the affected SPING.

~~2.2.6~~ Select option 4, "Flow Rate".

~~2.2.7~~ Select option 1, "Two Minute" time period.

~~2.2.8~~ Enter the manual value of 0.0 for stack flow rate.

ROC/WORK PLAN NO. 1604.051	PROCEDURE/WORK PLAN TITLE: EBERLINE RADIATION MONITORING SYSTEM	PAGE: 52 of 96 CHANGE: 011-00-0
-------------------------------	---	--

ATTACHMENT 5

Page 2 of 5

NOBLE GAS MONITOR SOURCE CHECK

~~2.2.9~~ Press [F2] to update the file.

~~2.2.10~~ Press [F10] to exit OR [F8] to select another SPING (step 2.2.3).

~~2.2.11~~ Ensure manual values have been entered for stack flow on applicable SPINGS as follows:

~~A.~~ From the Main Menu, select option 8, "Data Acquisition Maintenance".

~~B.~~ From the Data Acquisition Maintenance Menu, select option 1, "Substitute Value".

~~C.~~ Press [F1] for a list of options.

~~D.~~ Select option 1, "SPING Release Channel".

~~E.~~ Select affected SPING.

~~F.~~ Select option 4, "Flow Rate".

~~G.~~ Select option 1, "Two Minute" time period.

~~H.~~ Verify the status of the SPING is "Off Scan".

~~I.~~ Press [F10] to exit.

~~2.3~~ Disable RDACS Annunciator Alarm function for applicable SPINGS as follows:

~~2.3.1~~ From the Main Menu, select option 8, "Data Acquisition Maintenance".

~~2.3.2~~ From the Data Acquisition Maintenance Menu, select option 1, "Substitute Value".

~~2.3.3~~ Enter "SPNGX_TBL" for Point ID, where X is the applicable SPING number.

~~2.3.4~~ Enter the manual value of 0.0.

~~2.3.5~~ Press [F2] to update the file.

~~2.3.6~~ Press [F10] to exit OR [F8] to select another SPING (step 2.3.3).

~~2.3.7~~ Verify "ANN OFF" is displayed in the Channel Offscan window of the affected SPING.

~~2.4~~ Perform status check and ensure channels to be tested are normal.

~~2.4.1~~ From the Gaseous Effluent Monitor main menu select option 3, "SPING Status". All data blocks with a normal status condition will appear dark green.

[F1] toggles between Unit 1 and Unit 2 SPINGS.

~~2.4.2~~ Ensure channels 5, 7 and 9 have a status of NORMAL for each SPING for which a source check will be performed. (SPING 11 does not have channel 9.)

ROC/WORK PLAN NO. 1604.051	PROCEDURE/WORK PLAN TITLE: EBERLINE RADIATION MONITORING SYSTEM	PAGE: 53 of 95 CHANGE: 011-00-0
-------------------------------	--	------------------------------------

ATTACHMENT 5

NOBLE GAS MONITOR SOURCE CHECK

Page 3 of 5

2.5 Record initial monitor readings in section 3.0.

NOTE

1. Section 2.6 can be performed in any order and on any channel that possesses a source provided the source is never invoked on channels 7 and 9 at the same time or when the channel is in maintenance.
2. Since channels 5 and 7 share the same source, they are source checked at the same time by invoking the source on channel 7.
3. More than one SPING can be source checked at a time provided Operations is notified prior to beginning.
4. Source will stay exposed to detector until 1530 counts in less than 10 minutes are observed.

2.6 Perform source check and record data in section 3.0.

2.6.1 From the Gaseous Effluent Monitor main menu, select option 2, "SPING Subsystem" followed by option 1, "SPING Control."

2.6.2 Select option 5, "Check Source".

2.6.3 Enter the appropriate SPING number.

2.6.4 Enter channel 7, "Medium Range Noble Gas (gamma)".

2.6.5 Press [F2] to send the command to the SPING. Respond appropriately to the prompts.

2.6.6 Press the up arrow until the cursor moves to the SPING channel window.

2.6.7 Enter channel 9, "High Range Noble Gas (gamma)".

2.6.8 Press [F2] to send the command to the SPING. Respond appropriately to the prompts.

2.6.9 Press [F10] to exit.

2.6.10 From the Gaseous Effluent Monitor Main Menu, select option 3, "SPING Status". The SPING channel data block selected will change to dark blue. Record a reading that reflects the count rate increase in section 3.0.

2.6.11 Repeat steps 2.6.1 through 2.6.10 for the remaining SPINGS that are in service as necessary.

2.6.12 IF this is a monthly surveillance,
THEN record out of service SPINGS in Section 5.0 and in the Work Order work exceptions.

2.6.13 IF a SPING is out of service when performing the monthly noble gas monitor source check,
THEN document that the source check must be done prior to returning the SPING to service on 1604.051A for Unit 1 or 1604.051B for Unit 2.

Performed By (Section 2.0) _____

Joe Chant

ROC/WORK PLAN NO. 1604.051	PROCEDURE/WORK PLAN TITLE: EBERLINE RADIATION MONITORING SYSTEM	PAGE: 54 of 95 CHANGE: 011-00-0
-------------------------------	--	------------------------------------

ATTACHMENT 5

Page 4 of 5

NOBLE GAS MONITOR SOURCE CHECK

3.0 ACCEPTANCE CRITERIA

3.1 Compare measured values observed during SPING testing with "Limiting Range For Operability".

TEST QUANTITY (SPING MONITOR)	CHANNEL #	MEASURED VALUES $\mu\text{Ci/cc}$		LIMITING RANGE FOR OPERABILITY	IS DATA WITHIN LIMITING RANGE (CIRCLE YES OR NO)	
		INITIAL	SOURCE CHECK		YES	NO
001 RX-9820	5	NA	NA	count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Contain. Purge	9				YES	NO
002 RX-9825	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Radwaste Area	9				YES	NO
003 RX-9830	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Fuel Hndlg Area	9				YES	NO
004 RX-9835	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Emerg. Pen. Rm	9				YES	NO
005 2RX-9820	5	1.31E-6	3.40E-4	count rate	YES	NO
	7	1.06E-3	7.39E-2	increases	YES	NO
	9	6.06E-1	1.33E+2		YES	NO
Contain. Purge	9				YES	NO
006 2RX-9825	5	NA	NA	count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Radwaste Area	9				YES	NO
007 2RX-9830	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Fuel Hndlg Area	9				YES	NO
008 2RX-9835	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Emerg. Pen. Rm	9				YES	NO
009 2RX-9840	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
PASS Bldg	9				YES	NO
010 2RX-9845	5			count rate	YES	NO
	7			increases	YES	NO
	9				YES	NO
Aux Bldg Ext	9				YES	NO
011 2RX-9850	5			count rate	YES	NO
	7			increases	YES	NO
Radwst Stg Bldg	7				YES	NO

ROC/WORK PLAN NO. 1604.051	PROCEDURE/WORK PLAN TITLE: EBERLINE RADIATION MONITORING SYSTEM	PAGE: 55 of 95 CHANGE: 011-00-0
-------------------------------	--	------------------------------------

ATTACHMENT 5

Page 5 of 5

NOBLE GAS MONITOR SOURCE CHECK

~~3.1~~ IF "NO" is circled for any listed channel in the above table,
THEN perform the following:

- 3.2.1 Immediately notify the Shift Manager or Control Room Supervisor and a Chemistry Supervisor.
- 3.2.2 Declare the SPING noble gas monitor inoperable.
- 3.2.3 Write a Condition Report and a Work Request.
- 3.2.4 Implement action required in ODCM Appendix 1 Table 2.2-1 Action 3 or 5 and Table 2.4-1 OR ODCM Appendix 2 Table 2.2-1 Action 3 or 6 and Table 2.4-1.

~~3.3~~ IF the source fails to retract,
THEN leave the stack flow set to zero. Write a Work Request and Condition Report. The SPING noble gas channel is inoperable. Implement action required in ODCM Appendix 1 Table 2.2-1 Action 3 or 5 and Table 2.4-1 OR ODCM Appendix 2 Table 2.2-1 Action 3 or 6 and Table 2.4-1.

~~3.4~~ WHEN the channel status for all three detectors have returned to NORMAL,
THEN perform the following:

- ~~3.4.1~~ Restore stack flow rate to normal by performing steps 2.2.1 through 2.2.10 and typing "none" in step 2.2.8 instead of 0.0.
- ~~3.4.2~~ Enable RDACS Annunciator Alarm function by performing steps 2.3.1 through 2.3.6 and typing "none" instead of 0.0.
- ~~3.4.3~~ Verify that the Channel Offscan window on the RDACS terminal has been cleared of the "Chnl Off" and "Ann Off" indicators for the applicable SPING.

~~3.5~~ Verify live, 2 minute average, and 10 minute average stack flow are "Normal" and not in "Manual".

#1 1CP	<input type="checkbox"/>	#4 1EPR	<input type="checkbox"/>	#7 2FHA	<input type="checkbox"/>	#10 ABE	<input type="checkbox"/>
#2 1RWA	<input type="checkbox"/>	#5 2CP	<input checked="" type="checkbox"/>	#8 2EPR	<input type="checkbox"/>	#11 LLRW	<input type="checkbox"/>
#3 1FHA	<input type="checkbox"/>	#6 2RWA	<input type="checkbox"/>	#9 PASS	<input type="checkbox"/>		

~~3.6~~ IF SPING 1 and/or SPING 5 was source checked and containment purge ventilation is secured and no other maintenance is to be performed,
THEN return SPING 1 and/or SPING 5 to "STANDBY ON" mode

Performed By (Section 3.0) John Christ

Independent Verification (Section 3.0) John Christ

~~3.7~~ IF noble gas monitor source check was performed as a result of Step 2.5 of Attachment 10 of this procedure,
THEN N/A Steps 4.0 and 5.0 and proceed to Step 2.8 of Attachment 10.

~~4.0~~ Notify Operations that the SPING is back in service

Performed By (Section 4.0) John Christ

~~5.0~~ COMMENTS ① NGMSC prior to purge.

Supervisor: Kelly Sullivan

12/9/05 1940
(Date & Time)

For the duration of a waste gas tank release, Makeup Tank (MUT) gas space release, or Volume Control Tank (VCT) gas space release, SPING 2 channel 5 or SPING 6 channel 5 high alarm setpoint shall be changed to maintain its validity during the release. After the release, the high alarm setpoint will be changed and the total allocation fraction will be less than or equal to 1.

For the duration of a containment purge, SPING 1 channel 5 or SPING 5 channel 5 high alarm setpoint shall be changed to maintain its validity during these short, high activity releases. During the permit period of the purge, the total of the allocation fractions may be greater than 1, due to fractional hour releases in the early hours of the purge. After the purge, setpoints will be changed and the total allocation fraction will be less than or equal to 1.

☐ Unit 1 ☒ Unit 2
 SPING 5, 2 Containment Purge
 No. Name

PRE-RELEASE SETPOINT CHANGE

1.0 Alarm Setpoint for Channel 5 (from release permit): 5.0E-6 $\mu\text{Ci/cc}$

1.1 IF performing a waste gas decay tank, MUT, or VCT release
 THEN calculate the flow corrected Alarm setpoint as follows:

For Unit 1 releases:

$$\frac{\text{NA}}{\text{Step 1.0}} * \frac{11.5 \text{ cfm}}{11.5 \text{ cfm} + 47000 \text{ cfm}} = \text{NA} \mu\text{Ci/cc}$$

For Unit 2 releases:

$$\frac{\text{NA}}{\text{Step 1.0}} * \frac{20 \text{ cfm}}{20 \text{ cfm} + 49200 \text{ cfm}} = \text{NA} \mu\text{Ci/cc}$$

1.1.1 Line through the SPING Alarm Setpoint on page 1 of the preliminary release report and write in value calculated in Step 1.1 for the applicable unit.

2.0 Determine current Channel 5 and Channel 7 alarm setpoints by performing the following:

2.1 From Main Menu, select Option 2, "SPING Subsystem" followed by Option 2, "Channel Parameter Editor".

2.2 Select appropriate SPING.

2.3 Select appropriate channel and press [F3]. Log indicated values below.

Channel 5 High Alarm 4.4E-3 $\mu\text{Ci/cc}$

Channel 5 Alert Alarm 2.2E-3 $\mu\text{Ci/cc}$

Channel 7 High Alarm 2.23E-1 $\mu\text{Ci/cc}$

Channel 7 Alert Alarm 2.23E-2 $\mu\text{Ci/cc}$

2.4 WHEN alarm values have been logged,
 THEN press [F10] to exit to Main Menu.

FORM TITLE:

DETERMINING SETPOINTS FOR GASEOUS RELEASES

FORM NO.

1604.051E

CHANGE

011-00-0

3.0

IF alarm setpoint in Step 1.0 (for containment purges) or Step 1.1 (for waste gas decay tanks, MUT, & VCT) is less than OR equal to current Channel 5 High Alarm Setpoint listed in Step 2.3, THEN proceed to Line 6.0.

NOTE

The Alert Alarm Setpoint for Channel 5 represents 50% of the High Alarm Value. Should the release exceed the Alert Alarm Setpoint, an alarm will occur locally at the SPING.

- 4.0 IF alarm setpoint in Line 1.0 (for containment purges) or Step 1.1 (for waste gas decay tanks, MUT, & VCT) is greater than current Channel 5 High Alarm Setpoint listed in Step 2.3, THEN perform the following steps:

- 4.1 Complete Form 1604.051D using Line 1.0 alarm setpoint as highest expected activity value.
- 4.2 Enter new SPING setpoints from Form 1604.051D, Column 4 and Column 5 in the indicated channel(s) as follows:

A. AFFECTED SPING

1. IF current Channel 5 alert or high alarm setpoint recorded in Line 2.0 is less than the new Channel 5 setpoint, THEN raise the setpoint to equal the new Channel 5 setpoint.
 - a. From Main Menu, select Option 2, "SPING Subsystem" followed by Option 2, "Channel Parameter Editor".
 - b. Select appropriate SPING.
 - c. Select appropriate channel and press [F3].
 - d. Position cursor in the field to be changed and enter new value. Press [TAB] or [ENTER].
 - e. Press [F2] to update file.
 - f. WHEN all SPING channel parameters have been entered, THEN press [F10] to exit to Main Menu.
2. IF Channel 7 alert or high alarm setpoints recorded in Line 2.0 are less than the new Channel 5 setpoint, THEN raise the setpoint(s) to equal the Channel 5 setpoint in the same manner described in Steps 4.2.A.1.a-f.

B. UNAFFECTED SPINGS

1. Enter new Channel 5 high alarm setpoints from Form 1604.051D and new Channel 5 alert alarm setpoint as 50% of the high alarm setpoint from Form 1604.051D for the remaining SPINGS in the same manner described in Steps 4.2.A.1.a-f.

- 5.0 Ensure the setpoints are correct by generating a printout and comparing the values. DO NOT use the [F9] key to print the screen. Generate the printout by selecting option 2 from the Main Menu, followed by option 3, then select the SPING of interest. Attach the printout to this form.

6.0

Performed by Torchist
Independent Verification Jim Chappell

Date 3-9-05
Date 3/8/05

FORM TITLE:

DETERMINING SETPOINTS FOR GASEOUS RELEASES

FORM NO.

1604.051E

CHANGE

011-00-0

POST-RELEASE SETPOINT RESTORATION

- 7.0 WHEN permit period of release is complete,
THEN record current Channel 5 activity.

2.5 E-6 $\mu\text{Ci/cc}$

- 7.1 IF the AFFECTED SPING's activity is greater than or equal to Channel 5 or Channel 7 setpoint recorded in 1604.051 Attachment 2,
THEN complete 1604.051D to determine new Channel 5 setpoints.

- 7.2 IF the AFFECTED SPING's activity is less than Channel 5 setpoint recorded in Line 2.0,
THEN return all SPING Channel 5 setpoints to 1604.051 Attachment 2 values in the same manner described in Line 4.0.

- 7.3 IF Channel 7 setpoints were changed,
THEN return them to 1604.051 Attachment 2 values in the same manner described in Line 4.0.

- 8.0 Ensure the setpoints are correct by generating a printout and comparing the values. DO NOT use the [F9] key to print the screen. Generate the printout by selecting option 2 from the Main Menu, followed by option 3, then select the SPING of interest. Attach the printout to this form.

- 9.0 Performed by Docent Date 3-10-05
 Independent Verification SonChen Date 3-10-05

FORM TITLE:

DETERMINING SETPOINTS FOR GASEOUS RELEASES

FORM NO.

1604.051E

CHANGE

011-00-0

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 30 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 1 OF 11

CONTAINMENT PURGE GASEOUS RELEASE PERMIT

This Supplement provides instructions for Containment Purge and satisfies Tech Spec 3.3.3.1, Table 4.3-3.2.a.i.a and ODCM App 2, L2.2.1, Table 2.2-2.2.A.

1.0 REQUEST (Operations)

- 1.1 Initiate WR/WO for I&C to perform Channel Functional Test of 2RX-9820 SPING 5 (2304.149). D
- 1.2 Verify valves aligned per Attachment A of this procedure, 2RE-8233 Shed on Top of Aux Bldg Roof section only. D
- 1.3 Start CNTMT Purge (2RITS-8233) Sample pump (2C-49) as follows:
 - 1.3.1 Place local handswitch 2HS-8233 in START. D
 - 1.3.2 Verify flow between 8.0 and 12.0 SCFM (2FIS-8233).
Flow = 8.5 SCFM D
 - 1.3.3 Record count rate on 2RE-8233: 60 cpm D
- 1.4 Record SPING 5, Channel 5 activity: 1.09E-6 μ ci/cc D
- 1.5 Record count rate on running CAMS: D
CAMS 8271-2 Particulate 1064 Gaseous 928
- 1.6 Record CNTMT Building average pressure from PMS/PDS P5601-A or Supplement 4: 14.1 psia D
- 1.7 Submit to Chemistry for sampling and analysis. D

Performed By B. M. O'Connell Date 3/10/05

2.0 ANALYSIS (Chemistry)

- 2.1 Verify plant in Mode 4, 5, or 6. FE
- 2.2 Sample Containment Building atmosphere. FE
Date 3/10/05 Time 0800
Sample flowmeter M&TE number CLO-026 Cal due date 8/17/05
- 2.3 Performed Gamma spectroscopy. FE
- 2.4 Review Gamma spectroscopy report. FE
- 2.5 Generate Preliminary report. FE

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 31 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 2 OF 11

3.0 SPING 5 VALIDATION Prior to Purge (Chemistry)

3.1 Verify SPING 5 Channel Functional Test (2304.149) successfully performed AND sample pump restarted. tc

3.2 Perform the following using Eberline Radiation Monitoring System (1604.051):

- Verify SPING 5 operable by performing source check using Attachment 5. tc
- Verify SPING 5 channels 1, 3, 5, 7, 9, 10, 14, & 15 operable using Attachment 4. tc
- Set new SPING 5 channel 5 and/or channel 7 alarm setpoints using Form 1604.051E. tc
- Edit isotopic distribution using analysis data. tc

3.3 Record activities in step 6.9, column 3 of this Supplement. tc

3.4 Are doses from Gaseous Effluent release projected to exceed 25% of yearly design objectives on quarterly basis? (ODCM App. 2, L 2.4.4.A) YES NO

3.5 Return this Supplement and Permit to Unit 2 Control Room. tc

Performed By Joe Chant Date 3/16/05

4.0 PURGE SYSTEM VERIFICATION (Operations)

4.1 Verify adequate Purge Exhaust filter run-time remaining for duration of purge as follows:

4.1.1 Record Last Test reading from last Air Purification System Surveillance (5120.420) or from Engineering Programs group: _____ hrs

4.1.2 Record present run-time from 2B85-C7: _____ hrs

4.1.3 Record estimated release duration: _____ hrs

4.1.4 Calculate projected filter run-time as follows:

$$\frac{\text{_____}}{(4.1.2)} + \frac{\text{_____}}{(4.1.3)} - \frac{\text{_____}}{(4.1.1)} = \text{_____ hrs}$$

4.1.5 IF projected run-time since last test > 720 hours, THEN notify Engineering Programs. _____

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 32 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 3 OF 11

- 4.2 Verify Purge Exhaust Filter Unit doors closed AND dogged. _____
- 4.3 IF desired to align plant heating to 2VSF-2,
THEN verify plant heating aligned to 2VSF-2 per Attachment A
of Plant Heating Systems (2106.017). _____
- 4.4 Verify NO other Gaseous Release in progress. _____
- 4.5 Record Initial CAMS readings from Section 1.0: _____
Particulate _____ Gaseous _____
- 4.6 Record Current 4 hour averaged count rate on running CAMS: _____
Particulate _____ Gaseous _____
- 4.7 Calculate allowable count rate Limits as follows: _____
Initial Particulate _____ x 1.25 = _____ CPM
Initial Gaseous _____ x 1.25 = _____ CPM
- 4.8 IF Current Gaseous and Particulate averaged count rates greater
than allowable Limits,
THEN perform the following:
 - 4.8.1 Notify Chemistry to obtain Containment Air
Sample and perform Gross Count. _____
 - 4.8.2 Compare activity obtained in above step to previous
Containment Air Sample. _____
 - 4.8.3 IF sample results indicate < 10% rise,
THEN continue with purge. _____
 - 4.8.4 IF sample results indicate > 10% rise,
THEN resubmit Purge Permit. _____

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 33 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 4 OF 11

- 4.9 Perform Source Check on Containment Purge Exhaust Rad Monitor (2RITS-8233) as follows:
- 4.9.1 Hold Selector switch in CHECK SOURCE. Ⓟ
- 4.9.2 IF meter does NOT move up scale,
THEN determine reason for no meter movement
AND obtain SM permission prior to starting release.
SM ✓ NA NA
- 4.9.3 Return Selector switch to OPERATE. Ⓟ
- 4.9.4 Check meter reading returns to initial background reading. Ⓟ
- 4.10 Verify plant in Mode 5 or 6. Ⓟ
- 4.11 Verify alarm and interlock functions of 2RITS-8233 as follows:
- 4.11.1 Open CNTMT Purge Supply Isolation (2CV-8283-1). Ⓟ
- 4.11.2 Open CNTMT Purge Exhaust Isolation (2CV-8285-1). Ⓟ
- 4.11.3 Place 2RITS-8233 to PULSE CAL. Ⓟ
- 4.11.4 IF 2RITS-8233 setpoint higher than Pulse Cal,
THEN release Potentiometer stop
AND lower setpoint. Ⓟ
- 4.11.5 Check the following:
- Alarm on 2RITS-8233 Ⓟ
 - Alarm on 2C14 Ⓟ
 - 2CV-8283-1 closes Ⓟ
 - 2CV-8285-1 closes Ⓟ
- 4.11.6 Reset 2RITS-8233 AND place in OPERATE. Ⓟ

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 34 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 5 OF 11

4.12 Release stop AND adjust 2RITS-8233 potentiometer to dial setpoint in Table below corresponding to setpoint from Preliminary Report. _____

- Preliminary Report Setpoint: _____ CPM
- IF setpoint from Preliminary Report < 1000 cpm, THEN 1E3 should be used as alarm setpoint value.

Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt
10 = 0.00		120 = 2.04		4E2 = 3.10		6E3 = 5.28		8E4 = 7.39	
20 = 0.53		130 = 2.11		5E2 = 3.29		7E3 = 5.39		9E4 = 7.48	
30 = 0.86		140 = 2.18		6E2 = 3.44		8E3 = 5.51		1E5 = 7.55	
40 = 1.13		150 = 2.24		7E2 = 3.55		9E3 = 5.60		2E5 = 8.14	
50 = 1.32		160 = 2.30		8E2 = 3.67		1E4 = 5.68		3E5 = 8.46	
60 = 1.46		170 = 2.35		9E2 = 3.77		2E4 = 6.25		4E5 = 8.70	
70 = 1.61		180 = 2.40		1E3 = 3.84		3E4 = 6.56		5E5 = 8.86	
80 = 1.73		190 = 2.45		2E3 = 4.40		4E4 = 6.85		6E5 = 9.00	
90 = 1.82		200 = 2.50		3E3 = 4.72		5E4 = 7.03		7E5 = 9.14	
100 = 1.88		250 = 2.69		4E3 = 4.95		6E4 = 7.17		8E5 = 9.24	
110 = 1.96		300 = 2.85		5E3 = 5.13		7E4 = 7.29		9E5 = 9.35	
								1E6 = 9.39	

4.13 Perform Independent Verification of the following:

- Preliminary Report setpoint in step 4.12 correct. _____
- 2RITS-8233 dial setpoint correct per Table above. _____
- 2RITS-8233 in OPERATE. _____

I/V Performed by: _____

4.14 Declare 2RITS-8233 operable. _____

RELEASE APPROVAL (SM) _____

KEY

PROC./WORK PLAN NO. 2104.003	PROCEDURE/WORK PLAN TITLE: CHEMICAL ADDITION	PAGE: 40 of 106 CHANGE: 032-02-0
---------------------------------	---	-------------------------------------

ATTACHMENT E

PAGE 2 OF 2

3.0 RWT MAKEUP AND CONCENTRATION ADJUSTMENT

Vi = Initial RWT volume

$$Vi = (\text{Initial level } \underline{92} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \underline{466262} \text{ gal}$$

Vf = Final RWT volume

$$\text{Final desired RWT level} = \underline{95} \%$$

$$Vf = (\text{Final level } \underline{95} \% \times 4788 \text{ gal}/\%) + 25,766 \text{ gal} = \underline{480626} \text{ gal}$$

$$\text{Feed Volume (F)} = \text{Final Volume (Vf)} - \text{Initial Volume (Vi)} = \underline{14364} \text{ gal}$$

$$Ci = \text{Initial RWT Boron concentration} = \underline{2700} \text{ ppm}$$

$$Cf = \text{Final desired RWT Boron concentration} = \underline{2725} \text{ ppm}$$

CF = Concentration of feed solution

$$CF = \frac{(Vf \times Cf) - (Vi \times Ci)}{F}$$

$$CF = \frac{(\underline{480626} \times \underline{2725}) - (\underline{466262} \times \underline{2700})}{(\underline{14364})}$$

$$CF = \underline{3536.51} \text{ ppm Boron}$$

If feed solution will be combination of Boric Acid and DI water:

F = Feed volume (see above)

VB = Volume of Boric Acid to add

VW = Volume of DI water to add

$$CB = \text{Boron concentration of boric acid volume VB} = \underline{5965} \text{ ppm}$$

$$VB = \frac{(F)(CF)}{(CB)} = \frac{(\underline{14364})(\underline{3536.51})}{(\underline{5965})}$$

$$VB = \underline{8516} \text{ gal (Amount of Boric Acid of concentration CB to add)}$$

$$VW = F - VB = (\underline{14364}) - (\underline{8516})$$

$$VW = \underline{5848} \text{ gal (Amount of water to add)}$$

PROC./WORK PLAN NO.
2104.003

PROCEDURE/WORK PLAN TITLE:
CHEMICAL ADDITION

PAGE: 39 of 106
CHANGE: 032-02-0

ATTACHMENT E

PAGE 1 OF 2

RWT MAKEUP AND CONCENTRATION ADJUSTMENT

NOTE

Any procedure change that affects calculations used in this attachment also affects attachments generated by Computer Support Group (CSG). Coordinate with CSG to make appropriate changes to computer generated attachment prior to any procedure change implementation affecting calculations.

1.0 RWT INFORMATION

Bottom of RWT to overflow pipe	44 ft, 9 in
Height of level taps from bottom	2 ft, 4 in
Level transmitter range	42 ft, 5 in (509 in)
1 inch inside diameter	940.7 gal
1 foot inside diameter	11,288.3 gal
509 inches inside diameter	478,814 gal
1% indicated level	4788 gal
Volume below level tap	25,766 gal

2.0 RWT BORATION (CONCENTRATION ADJUSTMENT)

Vi = Initial RWT volume

Vi = (Initial level NA % x 4788 gal/%) + 25,766 gal. = NA gal

Ci = Initial RWT concentration = NA ppm

Cf = Final desired RWT concentration = NA ppm

CF = BAM Tank (2T-6A/B) concentration = NA ppm

VF = BAM Tank (2T-6A/B) feed volume required.

$$VF = \frac{Vi \times (CF - Ci)}{CF - Ci} - Vi$$

$$VF = \frac{(\underline{NA}) \times (\underline{NA} - \underline{NA})}{(\underline{NA} - \underline{NA})} - (\underline{NA})$$

VF = NA gals (Amount of boric acid of concentration CF to add)

KEY

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 10 of 30 CHANGE: 022-01-0
---------------------------------	---	------------------------------------

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 1 OF 2

This exhibit provides Operations the ability to measure and trend CEA-01 upper gripper coil temperature. Other historically hot CEAs (2, 4, 8, 14, 15, 18, 55, 63, and 72) can also be measured by referring to WO# 50654677 CR-ANO-2-1999-0433-004.

- 1.0 Obtain currently calibrated Handheld Digital Voltmeter (DVM) or equivalent multimeter (Refer to 2OPG-012 for DVM usage).

NOTE

- Hold bus voltage prevents obtaining proper temperature readings.
- Record absolute values of voltage readings obtained.

- 2.0 Check CEA #01 NOT on Hold Bus.

- 3.0 Obtain CEA #01 Upper Gripper coil voltage (V_{ug}) as follows:

- 3.1 Locate CEA #1 power cables in panel on TBC4C6, (behind access panel to left of 2C72 door).

- 3.2 With DVM scale set on 200, take voltage reading across "Black" and "White" cables located on TBC4C6, terminals #4 and #5. (A typical reading is 44 VDC).

$$(V_{ug}) = \underline{44} \text{ V}$$

- 4.0 Obtain CEA #01 Upper Gripper shunt voltage (V_{shunt}) as follows:

- 4.1 Locate CEA #01 coil monitor connector on front side of 2C72. (This is a round, capped connector with (#1) located directly above it.

- 4.2 Remove connector cap by unscrewing.

- 4.3 With DVM scale set on 200mV, take voltage reading across pins "C" and "D". (A typical reading is 8 millivolts DC.)

- 4.3.1 Record DVM reading = 7.12 mV

$$\text{Convert mV to Volts: } \underline{7.12} \text{ mV} \times \frac{1 \text{ V}}{1000 \text{ mV}} = \underline{0.00712} \text{ V}$$

$$\text{Record (V}_{shunt}\text{)} = \underline{0.00712} \text{ V}$$

- 4.4 Screw connector cap back on CEA #01 coil monitor connector.

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 11 of 30 CHANGE: 022-01-0
--	--	--

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 2 OF 2

5.0 Utilize ohms law to calculate coil current (Icoil) as follows.

5.1 $(I_{coil}) = (V_{shunt}) \frac{0.00712}{V} \div .002 \text{ ohms.}$

5.2 $(I_{coil}) = \underline{3.56} \text{ amps}$

6.0 Calculate coil resistance (Rcoil₁) as follows:

6.1 $(R_{coil_1}) = (V_{ug}) \frac{44}{V} \div (I_{coil}) \underline{3.56} \text{ amps}$

$(R_{coil_1}) = \underline{12.36} \text{ ohms}$

NOTE

Lead resistance must be subtracted to obtain accurate reading. Lead resistance for CEA #1 is provided in this calculation. However, a lookup table for lead resistance is provided when using WO# 50654677 to calculate other CEA coil temperatures.

6.2 $(R_{coil_2}) = \underline{12.36} (R_{coil_1}) - .525 \text{ ohms (CEA \#01 lead resistance).}$

6.3 $(R_{coil_2}) = \underline{11.83} \text{ ohms}$

7.0 Obtain CEA #01 coil temperature as follows:

7.1 Use the following to obtain CEA #01 coil temperature:

- Coil resistance (Rcoil₂) calculated in step 6.0
- Table below

Resistance	Temp.	Resistance	Temp.	Resistance	Temp.	Resistance	Temp.
5.6	0.022	7.5	126.695	9.4	253.368	11.3	380.041
5.7	6.689	7.6	133.362	9.5	260.035	11.4	386.708
5.8	13.356	7.7	140.029	9.6	266.702	11.5	393.375
5.9	20.023	7.8	146.696	9.7	273.369	11.6	400.042
6	26.69	7.9	153.363	9.8	280.036	11.7	406.709
6.1	33.357	8	160.03	9.9	286.703	11.8	413.376
6.2	40.024	8.1	166.697	10	293.37	11.9	420.043
6.3	46.691	8.2	173.364	10.1	300.037	12	426.71
6.4	53.358	8.3	180.031	10.2	306.704	12.1	433.377
6.5	60.025	8.4	186.698	10.3	313.371	12.2	440.044
6.6	66.692	8.5	193.365	10.4	320.038	12.3	446.711
6.7	73.359	8.6	200.032	10.5	326.705	12.4	453.378
6.8	80.026	8.7	206.699	10.6	333.372	12.5	460.045
6.9	86.693	8.8	213.366	10.7	340.039	12.6	466.705
7	93.36	8.9	220.033	10.8	346.706	12.7	473.365
7.1	100.027	9	226.7	10.9	353.373	12.8	480.025
7.2	106.694	9.1	233.367	11	360.04	12.9	493.345
7.3	113.361	9.2	240.034	11.1	366.707	13	500.050
7.4	120.028	9.3	246.701	11.2	373.374	13.1	506.665

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	YES NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump ΔP {4.3.1}	2PI-5101 - 2PI-5100	1355.5 psid	N/A	1360.81 (1) to 1612.8 psid	YES NO
Motor Running Amps (CR-1-96-0272- 07)	Ammeter at 2A-406	ØA 34 Amps ØB 33 Amps ØC 35 Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	YES NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	YES NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump ΔP is:

$$1372.9 + 20.41 (\text{Instrument error}) - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(90 - 40)/4] = 1360.81 \text{ psid}$$

3.2 Independently verify pump ΔP calculation.

1380.81

Re

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable.
- Refer to Tech Spec 3.5.2 OR 3.5.3.
- Notify Shift Manager.
- Initiate WR/WO as applicable.

NO
NO
NO
NO

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter OR as directed by IST Coordinator.
- Annotate on status board.
- Annotate in Work Exceptions section of WR/WO.

N/A
N/A
N/A

3.6 Pump Data recorded in database AND reviewed by SRO.

NO

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160).

N/A

Comments _____

Performed By Jimmy Reactor *John O. [Signature]* Date TODAY

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 66 of 148 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

- 4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO
- 4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA
- 4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:
- Verify Inoperable Equipment Checklist (1015.001, Conduct of Operations) completed. _____
 - Verify Condition Report initiated. _____
- 4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:
- Verify WR/WO has been initiated. _____
 - Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

- 4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 30 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 1 OF 11

CONTAINMENT PURGE GASEOUS RELEASE PERMIT

This Supplement provides instructions for Containment Purge and satisfies Tech Spec 3.3.3.1, Table 4.3-3.2.a.i.a and ODCM App 2, L2.2.1, Table 2.2-2.2.A.

1.0 REQUEST (Operations)

- 1.1 Initiate WR/WO for I&C to perform Channel Functional Test of 2RX-9820 SPING 5 (2304.149). D
- 1.2 Verify valves aligned per Attachment A of this procedure, 2RE-8233 Shed on Top of Aux Bldg Roof section only. D
- 1.3 Start CNTMT Purge (2RITS-8233) Sample pump (2C-49) as follows:
 - 1.3.1 Place local handswitch 2HS-8233 in START. D
 - 1.3.2 Verify flow between 8.0 and 12.0 SCFM (2FIS-8233).
Flow = 8.5 SCFM 9
 - 1.3.3 Record count rate on 2RE-8233: 60 cpm D
- 1.4 Record SPING 5, Channel 5 activity: 1.09E-6 µci/cc D
- 1.5 Record count rate on running CAMS:

CAMS 8271-2 Particulate 1084 Gaseous 928 D
- 1.6 Record CNTMT Building average pressure from PMS/PDS P5601-A or Supplement 4: 14.1 psia D
- 1.7 Submit to Chemistry for sampling and analysis. D

Performed By Burt Openden Date 3/10/05

2.0 ANALYSIS (Chemistry)

- 2.1 Verify plant in Mode 4, 5, or 6. FE
- 2.2 Sample Containment Building atmosphere. FE

Date 3/10/05 Time 0800

Sample flowmeter M&TE number C40-020 Cal due date 8/17/05
- 2.3 Performed Gamma spectroscopy. FE
- 2.4 Review Gamma spectroscopy report. FE
- 2.5 Generate Preliminary report. D

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 31 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 2 OF 11

3.0 SPING 5 VALIDATION Prior to Purge (Chemistry)

- 3.1 Verify SPING 5 Channel Functional Test (2304.149) successfully tc
performed AND sample pump restarted.
- 3.2 Perform the following using Eberline Radiation Monitoring System (1604.051):
- Verify SPING 5 operable by performing source check using Attachment 5. tc
 - Verify SPING 5 channels 1, 3, 5, 7, 9, 10, 14, & 15 operable using Attachment 4. tc
 - Set new SPING 5 channel 5 and/or channel 7 alarm setpoints using Form 1604.051E. tc
 - Edit isotopic distribution using analysis data. tc
- 3.3 Record activities in step 6.9, column 3 of this Supplement. tc
- 3.4 Are doses from Gaseous Effluent release projected to exceed 25% of yearly design objectives on quarterly basis? (ODCM App. 2, L 2.4.4.A) YES (NO)
- 3.5 Return this Supplement and Permit to Unit 2 Control Room. tc

Performed By Joe Chant Date 3/16/05

4.0 PURGE SYSTEM VERIFICATION (Operations)

- 4.1 Verify adequate Purge Exhaust filter run-time remaining for duration of purge as follows:
- 4.1.1 Record Last Test reading from last Air Purification System Surveillance (5120.420) or from Engineering Programs group: _____ hrs _____
- 4.1.2 Record present run-time from 2B85-C7: _____ hrs _____
- 4.1.3 Record estimated release duration: _____ hrs _____
- 4.1.4 Calculate projected filter run-time as follows: _____
- $$\frac{(4.1.2)}{(4.1.2)} + \frac{(4.1.3)}{(4.1.3)} - \frac{(4.1.1)}{(4.1.1)} = \text{_____ hrs}$$
- 4.1.5 IF projected run-time since last test > 720 hours, THEN notify Engineering Programs. _____

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 32 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 3 OF 11

- 4.2 Verify Purge Exhaust Filter Unit doors closed AND dogged. _____
- 4.3 IF desired to align plant heating to 2VSF-2,
THEN verify plant heating aligned to 2VSF-2 per Attachment A
of Plant Heating Systems (2106.017). _____
- 4.4 Verify NO other Gaseous Release in progress. _____
- 4.5 Record Initial CAMS readings from Section 1.0: _____
Particulate _____ Gaseous _____
- 4.6 Record Current 4 hour averaged count rate on running CAMS: _____
Particulate _____ Gaseous _____
- 4.7 Calculate allowable count rate Limits as follows: _____
Initial Particulate _____ x 1.25 = _____ CPM
Initial Gaseous _____ x 1.25 = _____ CPM
- 4.8 IF Current Gaseous and Particulate averaged count rates greater
than allowable Limits,
THEN perform the following:
 - 4.8.1 Notify Chemistry to obtain Containment Air
Sample and perform Gross Count. _____
 - 4.8.2 Compare activity obtained in above step to previous
Containment Air Sample. _____
 - 4.8.3 IF sample results indicate < 10% rise,
THEN continue with purge. _____
 - 4.8.4 IF sample results indicate > 10% rise,
THEN resubmit Purge Permit. _____

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 33 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 4 OF 11

4.9 Perform Source Check on Containment Purge Exhaust Rad Monitor (2RITS-8233) as follows:

4.9.1 Hold Selector switch in CHECK SOURCE. ①

4.9.2 IF meter does NOT move up scale,
THEN determine reason for no meter movement
AND obtain SM permission prior to starting release.
SM NA NA

4.9.3 Return Selector switch to OPERATE. ①

4.9.4 Check meter reading returns to initial background reading. ①

4.10 Verify plant in Mode 5 or 6. ①

4.11 Verify alarm and interlock functions of 2RITS-8233 as follows:

4.11.1 Open CNTMT Purge Supply Isolation (2CV-8283-1). ①

4.11.2 Open CNTMT Purge Exhaust Isolation (2CV-8285-1). ①

4.11.3 Place 2RITS-8233 to PULSE CAL. ①

4.11.4 IF 2RITS-8233 setpoint higher than Pulse Cal,
THEN release Potentiometer stop
AND lower setpoint. ①

4.11.5 Check the following:

- Alarm on 2RITS-8233
- Alarm on 2C14
- 2CV-8283-1 closes
- 2CV-8285-1 closes

4.11.6 Reset 2RITS-8233 AND place in OPERATE. ①

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 34 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 5 OF 11

4.12 Release stop AND adjust 2RITS-8233 potentiometer to dial setpoint in Table below corresponding to setpoint from Preliminary Report.

- Preliminary Report Setpoint: _____ CPM
- IF setpoint from Preliminary Report < 1000 cpm, THEN 1E3 should be used as alarm setpoint value.

Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt
10 = 0.00		120 = 2.04		4E2 = 3.10		6E3 = 5.28		8E4 = 7.39	
20 = 0.53		130 = 2.11		5E2 = 3.29		7E3 = 5.39		9E4 = 7.48	
30 = 0.86		140 = 2.18		6E2 = 3.44		8E3 = 5.51		1E5 = 7.55	
40 = 1.13		150 = 2.24		7E2 = 3.55		9E3 = 5.60		2E5 = 8.14	
50 = 1.32		160 = 2.30		8E2 = 3.67		1E4 = 5.68		3E5 = 8.46	
60 = 1.46		170 = 2.35		9E2 = 3.77		2E4 = 6.25		4E5 = 8.70	
70 = 1.61		180 = 2.40		1E3 = 3.84		3E4 = 6.56		5E5 = 8.86	
80 = 1.73		190 = 2.45		2E3 = 4.40		4E4 = 6.85		6E5 = 9.00	
90 = 1.82		200 = 2.50		3E3 = 4.72		5E4 = 7.03		7E5 = 9.14	
100 = 1.88		250 = 2.69		4E3 = 4.95		6E4 = 7.17		8E5 = 9.24	
110 = 1.96		300 = 2.85		5E3 = 5.13		7E4 = 7.29		9E5 = 9.35	
								1E6 = 9.39	

4.13 Perform Independent Verification of the following:

- Preliminary Report setpoint in step 4.12 correct.
- 2RITS-8233 dial setpoint correct per Table above.
- 2RITS-8233 in OPERATE.

I/V Performed by: _____

4.14 Declare 2RITS-8233 operable.

RELEASE APPROVAL (SM) _____

Correct form RO

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 30 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 1 OF 11

CONTAINMENT PURGE GASEOUS RELEASE PERMIT

This Supplement provides instructions for Containment Purge and satisfies Tech Spec 3.3.3.1, Table 4.3-3.2.a.1.a and ODCM App 2, L2.2.1, Table 2.2-2.2.A.

1.0 REQUEST (Operations)

- 1.1 Initiate WR/WO for I&C to perform Channel Functional Test of 2RX-9820 SPING 5 (2304.149). P
- 1.2 Verify valves aligned per Attachment A of this procedure, 2RE-8233 Shed on Top of Aux Bldg Roof section only. P
- 1.3 Start CNTMT Purge (2RITS-8233) Sample pump (2C-49) as follows:
 - 1.3.1 Place local handswitch 2HS-8233 in START. P
 - 1.3.2 Verify flow between 8.0 and 12.0 SCFM (2FIS-8233).
Flow = 8.5 SCFM P
 - 1.3.3 Record count rate on 2RE-8233: 60 cpm P
- 1.4 Record SPING 5, Channel 5 activity: 1.09E-6 μ ci/cc P
- 1.5 Record count rate on running CAMS:
CAMS 8271-2 Particulate 1084 Gaseous 928 P
- 1.6 Record CNTMT Building average pressure from PMS/PDS P5601-A or Supplement 4: 14.1 psia P
- 1.7 Submit to Chemistry for sampling and analysis. P

Performed By Blank Operator Date 3/10/05

2.0 ANALYSIS (Chemistry)

- 2.1 Verify plant in Mode 4, 5, or 6. P
- 2.2 Sample Containment Building atmosphere.
Date 3/10/05 Time 0800 P
Sample flowmeter M&TE number CD-026 Cal due date 8/17/05
- 2.3 Performed Gamma spectroscopy. P
- 2.4 Review Gamma spectroscopy report. P
- 2.5 Generate Preliminary report. P

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 31 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 2 OF 11

3.0 SPING 5 VALIDATION Prior to Purge (Chemistry)

- 3.1 Verify SPING 5 Channel Functional Test (2304.149) successfully tc performed AND sample pump restarted.
- 3.2 Perform the following using Eberline Radiation Monitoring System (1604.051):
- Verify SPING 5 operable by performing source check using Attachment 5. tc
 - Verify SPING 5 channels 1, 3, 5, 7, 9, 10, 14, & 15 operable using Attachment 4. tc
 - Set new SPING 5 channel 5 and/or channel 7 alarm setpoints using Form 1604.051E. tc
 - Edit isotopic distribution using analysis data. tc
- 3.3 Record activities in step 6.9, column 3 of this Supplement. tc
- 3.4 Are doses from Gaseous Effluent release projected to exceed 25% of yearly design objectives on quarterly basis? (ODCM App. 2, L 2.4.4.A) YES NO
- 3.5 Return this Supplement and Permit to Unit 2 Control Room. tc

Performed By Joe Chant Date 3/10/05

4.0 PURGE SYSTEM VERIFICATION (Operations)

- 4.1 Verify adequate Purge Exhaust filter run-time remaining for duration of purge as follows:
- 4.1.1 Record Last Test reading from last Air Purification System Surveillance (5120.420) or from Engineering Programs group: 7532.5 hrs BD
- 4.1.2 Record present run-time from 2B85-C7: 8284.9 hrs BD
- 4.1.3 Record estimated release duration: 1.0 hrs BD
- 4.1.4 Calculate projected filter run-time as follows: BD
- $$\frac{8284.9}{(4.1.2)} + \frac{1.0}{(4.1.3)} - \frac{7532.5}{(4.1.1)} = \underline{753.4} \text{ hrs}$$
- 4.1.5 IF projected run-time since last test > 720 hours, BD THEN notify Engineering Programs.

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 32 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 3 OF 11

- 4.2 Verify Purge Exhaust Filter Unit doors closed AND dogged. 10
- 4.3 IF desired to align plant heating to 2VSF-2,
THEN verify plant heating aligned to 2VSF-2 per Attachment A
of Plant Heating Systems (2106.017). 10
- 4.4 Verify NO other Gaseous Release in progress. 10
- 4.5 Record Initial CAMS readings from Section 1.0:
Particulate 1084 Gaseous 928 10
- 4.6 Record Current 4 hour averaged count rate on running CAMS:
Particulate 1142 Gaseous 1012 10
- 4.7 Calculate allowable count rate Limits as follows:
Initial Particulate 1084 x 1.25 = 1355 CPM
Initial Gaseous 928 x 1.25 = 1160 CPM 10
- 4.8 IF Current Gaseous and Particulate averaged count rates greater
than allowable Limits,
THEN perform the following:
- 4.8.1 Notify Chemistry to obtain Containment Air
Sample and perform Gross Count. NA
- 4.8.2 Compare activity obtained in above step to previous
Containment Air Sample. NA
- 4.8.3 IF sample results indicate < 10% rise,
THEN continue with purge. NA
- 4.8.4 IF sample results indicate > 10% rise,
THEN resubmit Purge Permit. NA

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 33 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 4 OF 11

4.9 Perform Source Check on Containment Purge Exhaust Rad Monitor (2RITS-8233) as follows:

4.9.1 Hold Selector switch in CHECK SOURCE.

Ⓚ

4.9.2 IF meter does NOT move up scale,
THEN determine reason for no meter movement
AND obtain SM permission prior to starting release.

NA

SM NA

4.9.3 Return Selector switch to OPERATE.

Ⓚ

4.9.4 Check meter reading returns to initial background reading.

Ⓚ

4.10 Verify plant in Mode 5 or 6.

Ⓚ

4.11 Verify alarm and interlock functions of 2RITS-8233 as follows:

4.11.1 Open CNTMT Purge Supply Isolation (2CV-8283-1).

Ⓚ

4.11.2 Open CNTMT Purge Exhaust Isolation (2CV-8285-1).

Ⓚ

4.11.3 Place 2RITS-8233 to PULSE CAL.

Ⓚ

4.11.4 IF 2RITS-8233 setpoint higher than Pulse Cal,
THEN release Potentiometer stop
AND lower setpoint.

Ⓚ

4.11.5 Check the following:

- Alarm on 2RITS-8233
- Alarm on 2C14
- 2CV-8283-1 closes
- 2CV-8285-1 closes

Ⓚ

Ⓚ

Ⓚ

Ⓚ

4.11.6 Reset 2RITS-8233 AND place in OPERATE.

Ⓚ

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 34 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 5 OF 11

4.12 Release stop AND adjust 2RITS-8233 potentiometer to dial setpoint in Table below corresponding to setpoint from Preliminary Report. 10

• Preliminary Report Setpoint: 150 CPM

- IF setpoint from Preliminary Report < 1000 cpm, THEN 1E3 should be used as alarm setpoint value.

Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt
10 = 0.00		120 = 2.04		4E2 = 3.10		6E3 = 5.28		8E4 = 7.39	
20 = 0.53		130 = 2.11		5E2 = 3.29		7E3 = 5.39		9E4 = 7.48	
30 = 0.86		140 = 2.18		6E2 = 3.44		8E3 = 5.51		1E5 = 7.55	
40 = 1.13		150 = 2.24		7E2 = 3.55		9E3 = 5.60		2E5 = 8.14	
50 = 1.32		160 = 2.30		8E2 = 3.67		1E4 = 5.68		3E5 = 8.46	
60 = 1.46		170 = 2.35		9E2 = 3.77		2E4 = 6.25		4E5 = 8.70	
70 = 1.61		180 = 2.40		1E3 = 3.84		3E4 = 6.56		5E5 = 8.86	
80 = 1.73		190 = 2.45		2E3 = 4.40		4E4 = 6.85		6E5 = 9.00	
90 = 1.82		200 = 2.50		3E3 = 4.72		5E4 = 7.03		7E5 = 9.14	
100 = 1.88		250 = 2.69		4E3 = 4.95		6E4 = 7.17		8E5 = 9.24	
110 = 1.96		300 = 2.85		5E3 = 5.13		7E4 = 7.29		9E5 = 9.35	
								1E6 = 9.39	

4.13 Perform Independent Verification of the following:

- Preliminary Report setpoint in step 4.12 correct.
- 2RITS-8233 dial setpoint correct per Table above.
- 2RITS-8233 in OPERATE.

I/V Performed by: Robert Caplan

4.14 Declare 2RITS-8233 operable. 60

RELEASE APPROVAL (SM) _____

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 001 DATE: _____SYSTEM/DUTY AREA: Conduct of Operations (A.1)TASK: Verify RPS trip set point determination for inoperable MSSVJTA#: ANOROADMINNORM195KA VALUE RO: 3.0 SRO: 3.4 KA REFERENCE: 2.1.3APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: XTASK 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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OPS B46 Rev 3, 1015.016Q Rev 027-00-0, Unit 2 Tech Specs

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 - System Walkthrough" portion of OP 1064.023 Attachment 6 with the examinee.

JPM INITIAL TASK CONDITIONS:

- The plant is at 80% power, 375 EFPD, Steady State.
- MSSV testing is in progress.
- One MSSV, 2PSV-1054 has been declared inoperable just prior to shift turnover.
- The CBOT has completed the Shift Turnover checklist.
- The values for MTC and linear power trip set point determined by CBOT will not be given.

TASK STANDARD: Determine the maximum High Linear Power Level and RPS trip set point to be $\geq 86.5\%$ but $\leq 87.5\%$ to comply with Technical Specification 3.7.1.1.

TASK PERFORMANCE AIDS: Shift Turnover Checklist, OPS B46, Unit 2 Tech Specs, Moderator Temperature Coefficient VS EFPD and Power, form 1015.016Q, and a straight edge.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

Determine the Maximum High Linear Power Level and RPS Trip Set point vs. MTC per Tech Specs using OPS B46, form 1015.016Q and technical specifications.

CRITICAL ELEMENTS (C) 2, 3

	PERFORMANCE CHECKLIST	STANDARD	(Circle One)
	1. Review Shift turnover checklist MSSV(s) operable.	Examinee reviewed applicable step for inoperable MSSVs.	N/A SAT UNSAT
(C)	2. Using form 1015.016Q, determine MTC for 375 EFPD to be -1.30×10^{-4} delta K/K/degree F ($\pm 0.05 \times 10^{-4}$).	Examinee correctly derived from graph or table based on 375 EFPD and 80% power curve that MTC is approximately -1.30×10^{-4} delta K/K/degree F.	N/A SAT UNSAT
(C)	3. Using Tech Spec 3.7.1 figure 3.7-1 determines new maximum power and RPS linear power trip set point to be $\geq 86.5\%$ but $\leq 87.5\%$.	Examinee correctly derived from graph based on MTC of -1.30×10^{-4} delta K/K/degree F and knowing that one MSSV is inoperable determined that maximum power and RPS linear power trip set point should be 87.0%.	N/A SAT UNSAT
EXAMINER's NOTE: Examinee may discuss the Tech Spec applicability at this point stating that Tech Spec 3.7.1.1 LCO to allows power operations to continue provided that within 4 hours power is reduced to the maximum power of 79% or as allowed by figure 3.7-1 (87%) and within 12 hours, the RPS trip set point adjusted to be less than the value of 79% or as allowed in figure 3.7-1 (87%), but this discussion is not required for successful completion of the JPM.			
END			

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 80% power, 375 EFPD, Steady State.
- MSSV testing is in progress.
- One MSSV, 2PSV-1054 has been declared inoperable just prior to shift turnover.
- The CBOT has completed the Shift Turnover checklist.
- The values for MTC and linear power trip set point determined by CBOT will not be given.

INITIATING CUE:

Determine the Maximum High Linear Power Level and RPS Trip Set point vs. MTC per Tech Specs using OPS B46, form 1015.016Q and technical specifications.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

- The plant is at 80% power, 375 EFPD, Steady State.
- MSSV testing is in progress.
- One MSSV, 2PSV-1054 has been declared inoperable just prior to shift turnover.
- The CBOT has completed the Shift Turnover checklist.
- The values for MTC and linear power trip set point determined by CBOT will not be given.

INITIATING CUE:

Determine the Maximum High Linear Power Level and RPS Trip Set point vs. MTC per Tech Specs using OPS B46, form 1015.016Q and technical specifications.

ENTERGY OPERATIONS
ARKANSAS NUCLEAR ONE

U2 SHIFT TURNOVER CHECKLIST

FROM ___/___/___ AT ___:___ TO ___/___/___ AT ___:___

POINTS	CompID	SPECIAL INST.	Min	Max	Units			0800	2000
ALARM REFLASH UNITS 2C-14 2K425	2C14	Alarms acknowledged on reflash unit 2K425 in 2C14?			YES/NO				
ALARM REFLASH UNITS 2C-14 2K426	2C14	Alarms acknowledged on reflash unit 2K426 in 2C14?			YES/NO				
ALARM REFLASH UNITS 2C-14 2K429	2C14	Alarms acknowledged on reflash unit 2K429 in 2C14?			YES/NO				
ALARM REFLASH UNITS 2C-14 2K434	2C14	Alarms acknowledged on reflash unit 2K434 in 2C14?			YES/NO				
ANNUNCIATOR TOGGLE SWITCHES	SWITCHES	ALL annunciator disabling toggle switches ON (UP)?			YES/NO				
ANNUNCIATOR TEST	ANNUNCIATORS	Annunciator test for all Control Room Annunciators completed?			YES/NO				
FIRE BRIGADE ASSIGNED?	FIRE	Qualified Fire Brigade assigned?			YES/NO				
MSSV(s) OPERABLE?	MSSV	ARE ALL MAIN STEAM SAFETY VALVES OPERABLE?			YES/NO				
REFER TO 1015.016Q LIMITING MTC VALUE	1015.016Q	Refer to 1015.016Q (MTC vs EFPD AND POWER) to obtain limiting MTC value.			Deg F		////	////	////
REFER TECH SPECS FOR HIGH PWR TRIP	TECH SPEC	Refer to Tech Spec Figure 3.7.1 (Maximum High Linear Power Level and Trip Setpoint Versus MTC) and use MTC value obtained from 1015.016Q to obtain High Linear Power Level Trip setpoint for 1 MSSV inoperable or 1 MSSV/header inoperable.			%		////	////	////
MAIN FEEDWATER ISOLATION	NOTE	IF a component required for MPW isolation becomes inoperable (i.e., a Condensate, MPW, or Heater Drain pump will not trip on MSIS or CSAS), THEN restore the component within 48 hours or place it in its MSIS or CSAS actuated state. Otherwise be in Hot Standby in 6 hours. (TS 3.3.2.1 Action 12)			NOTE				
VERIFY ALT SD LOCKER PWR AVAIL	ALT SD	VERIFY THAT THE ALT SHUTDOWN LOCKER IN CR EXTENSION HAS POWER BY CHECKING LIGHT IS ON			VERIFY	////	////	////	////
IS RX HEAD REMOVED?	RX	IS THE RX VESSEL HEAD REMOVED? (TS 3.4.12, 4.4.12.2)			YES/NO		////	////	////
ANY SIT PRESSURE >OR=280 PSIG?	SIT	IS ANY SAFETY INJECTION TANK PRESURIZED TO GREATER THAN OR EQUAL TO 280 PSIG?			YES/NO	////	////	////	////
A SIT >OR=280 PSIG?	2T-1A	IS THE A SIT PRESSURE >OR=280 PSIG			YES/NO		////	////	////
B SIT >OR=280 PSIG?	2T-1B	IS THE B SIT PRESSURE >OR=280 PSIG			YES/NO		////	////	////
C SIT >OR=280 PSIG?	2T-1C	IS THE C SIT PRESSURE >OR=280 PSIG			YES/NO		////	////	////
D SIT >OR=280 PSIG?	2T-1D	IS THE D SIT PRESSURE >OR=280 PSIG			YES/NO		////	////	////
2CV-4741-1 OPEN?	2CV-4741-1	IS LTOP RELIEF ISOL 2CV-4741-1 OPEN?			YES/NO	////	////	////	////
IS SG MANWAY REMOVED?	SG	IS RCS DEPRESSURIZED WITH RCS OPEN BY SIG PRIMARY MANWAY REMOVED WITHOUT A NOZZLE DAM INSTALLED?			YES/NO	////	////	////	////
PZR CODE SAFETY REMOVED?	PZR SAFETY	IS RCS DEPRESSURIZED WITH RCS OPEN BY PZR CODE SAFETY VALVE REMOVED?			YES/NO	////	////	////	////
PZR MANWAY REMOVED?	PZR	IS RCS DEPRESSURIZED WITH RCS OPEN BY PZR MANWAY REMOVED?			YES/NO	////	////	////	////

U2 SHIFT TURNOVER CHECKLIST

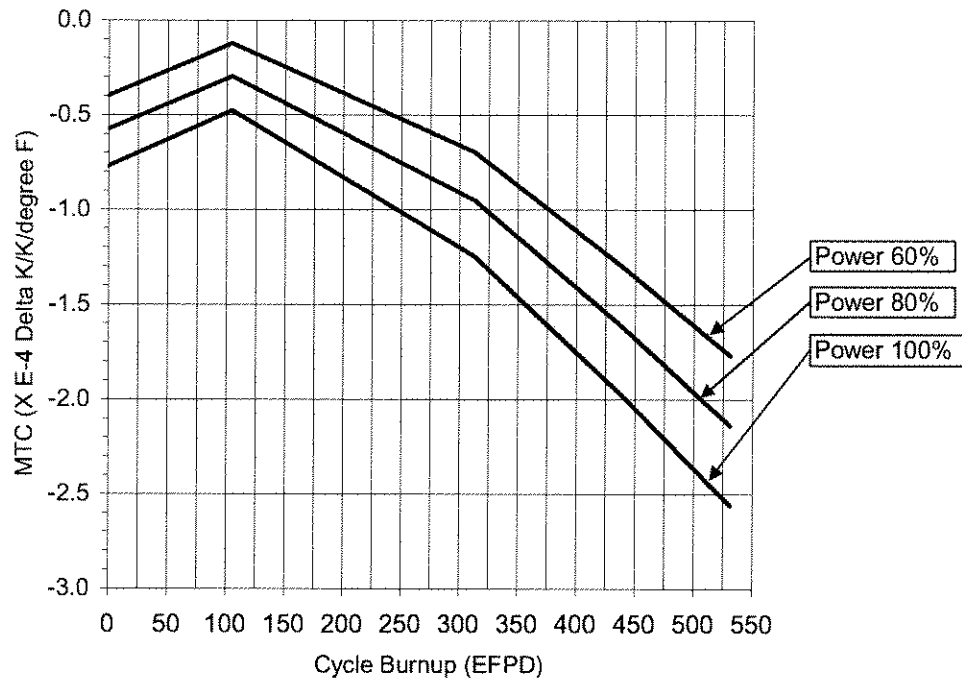
FROM ___/___/___ AT ___:___ TO ___/___/___ AT ___:___

<u>POINTS</u>	<u>CompID</u>	<u>SPECIAL INST.</u>	<u>Min</u>	<u>Max</u>	<u>Units</u>	<u>0800</u>	<u>2000</u>
---------------	---------------	----------------------	------------	------------	--------------	-------------	-------------

NOTES/COMMENTS	
PERFORMED BY _____	DATE/TIME _____/_____/_____
APPROVED BY _____	DATE/TIME _____/_____/_____
SM	
<u>References</u>	<u>FileName</u>

MODERATOR TEMPERATURE COEFFICIENT VS EFPD AND POWER

Westinghouse letter ANO-2 Cycle 18 MTC Data in Support of TS 3/4.7.1,
Enclosure 1 to PCT-05-260



NOTES:

1. Data can be interpolated between power levels and burnups if required.

Data used to
generate graph

TIL	EFPD	MTC100	MTC80	MTC60
BOC	0	-0.771	-0.574	-0.395
MOC1	104.2	-0.479	-0.295	-0.121
MOC2	312.5	-1.245	-0.950	-0.696
MOC3	437.5	-1.969	-1.608	-1.292
EOC	531.1	-2.562	-2.137	-1.771

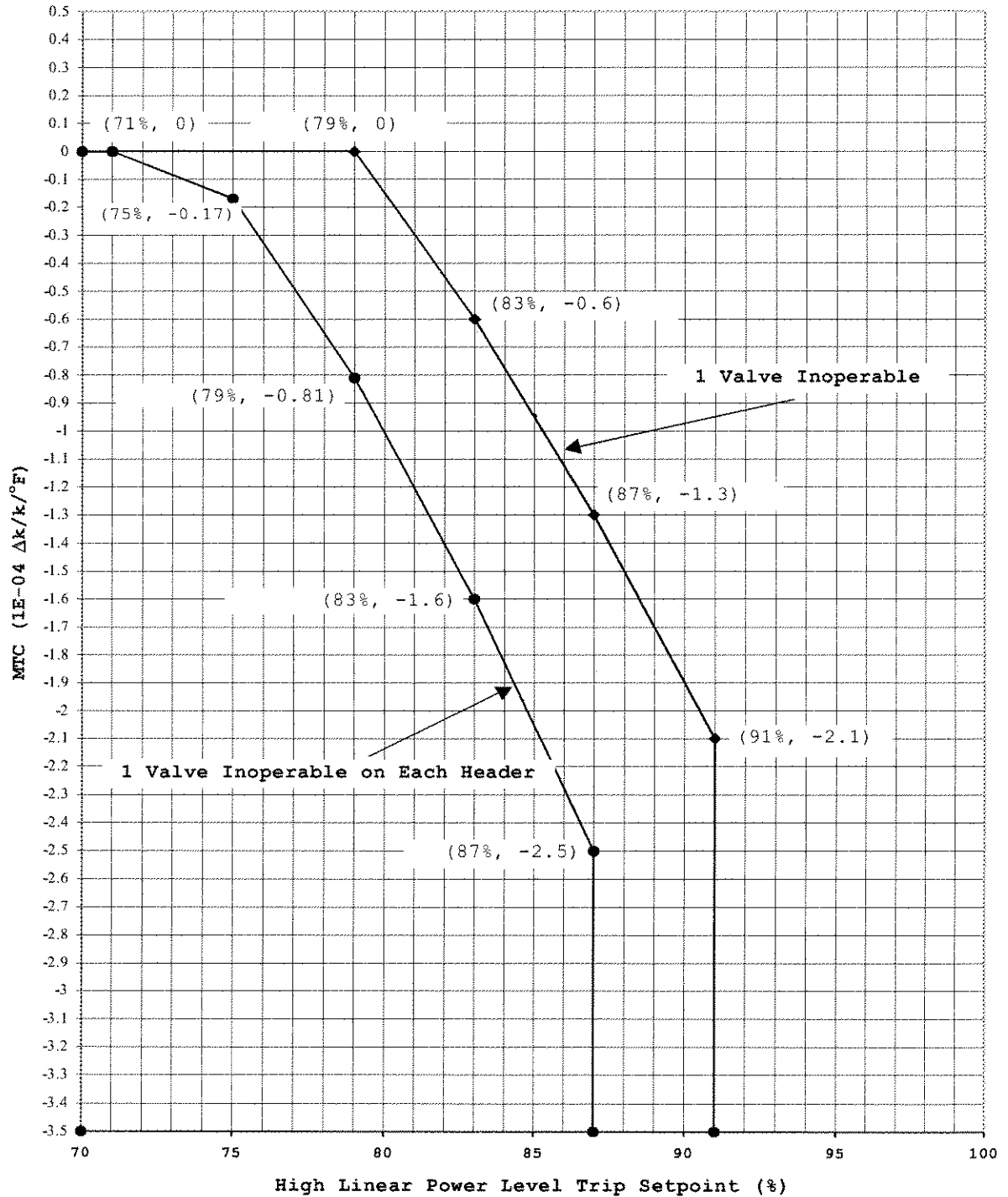
2. The figure should be used only for MSSV inoperable application.

INSTRUCTIONS

1. Use existing EFPD and Power level and perform cross-reference to obtain MTC value.
2. Apply MTC obtained in step 1.0 to TS Figure 3.7-1 to obtain Linear Power level trip setpoint (one MSSV inoperable or 1 MSSV/header inoperable).

FIGURE 3.7-1

Maximum High Linear Power Level And Trip Setpoint Versus MTC



3/4.7 PLANT SYSTEMS

3/4.7.1 TURBINE CYCLE

SAFETY VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.1 All main steam line code safety valves shall be OPERABLE with lift settings as specified in Table 3.7-5.

APPLICABILITY: MODES 1, 2 and 3*

ACTION:

MODES 1 and 2

With one or more main steam line code safety valves inoperable, operation in MODES 1 and 2 may proceed provided that within 4 hours, power is reduced to less than or equal to the applicable percent of RATED THERMAL POWER as listed in Table 3.7-1 and within 12 hours, the Linear Power Level – High trip setpoint is reduced per Table 3.7-1; otherwise, be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 12 hours.

MODE 3

With one or more main steam line code safety valves inoperable, operation in MODE 3 may proceed provided that at least 2 main steam line code safety valves are OPERABLE on each steam generator; otherwise, be in at least HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.1 No additional Surveillance Requirements other than those required by the Inservice Testing Program.

* Except that during hydrostatic testing in Mode 3, eight of the main steam line code safety valves may be gagged and two (one on each header) may be reset for the duration of the test to allow the required pressure for the test to be attained. The Reactor Trip Breakers shall be open for the duration of the test.

TABLE 3.7-1

MAXIMUM ALLOWABLE LINEAR POWER LEVEL AND HIGH TRIP SETPOINT WITH INOPERABLE
STEAM LINE SAFETY VALVES DURING OPERATION WITH BOTH STEAM GENERATORS

Number of Inoperable Safety Valves	Maximum Allowable Linear Power Level And High Trip Setpoint (Percent of RATED THERMAL POWER)
1 Valve Inoperable	79% (except as allowed by Figure 3.7-1)
1 Valve Inoperable on Each Header	71% (except as allowed by Figure 3.7-1)
Maximum of 2 Valves Inoperable on Each Header	43.0
Maximum of 3 Valves Inoperable on Each Header	25.0

FIGURE 3.7-1

Maximum High Linear Power Level And Trip Setpoint Versus MTC

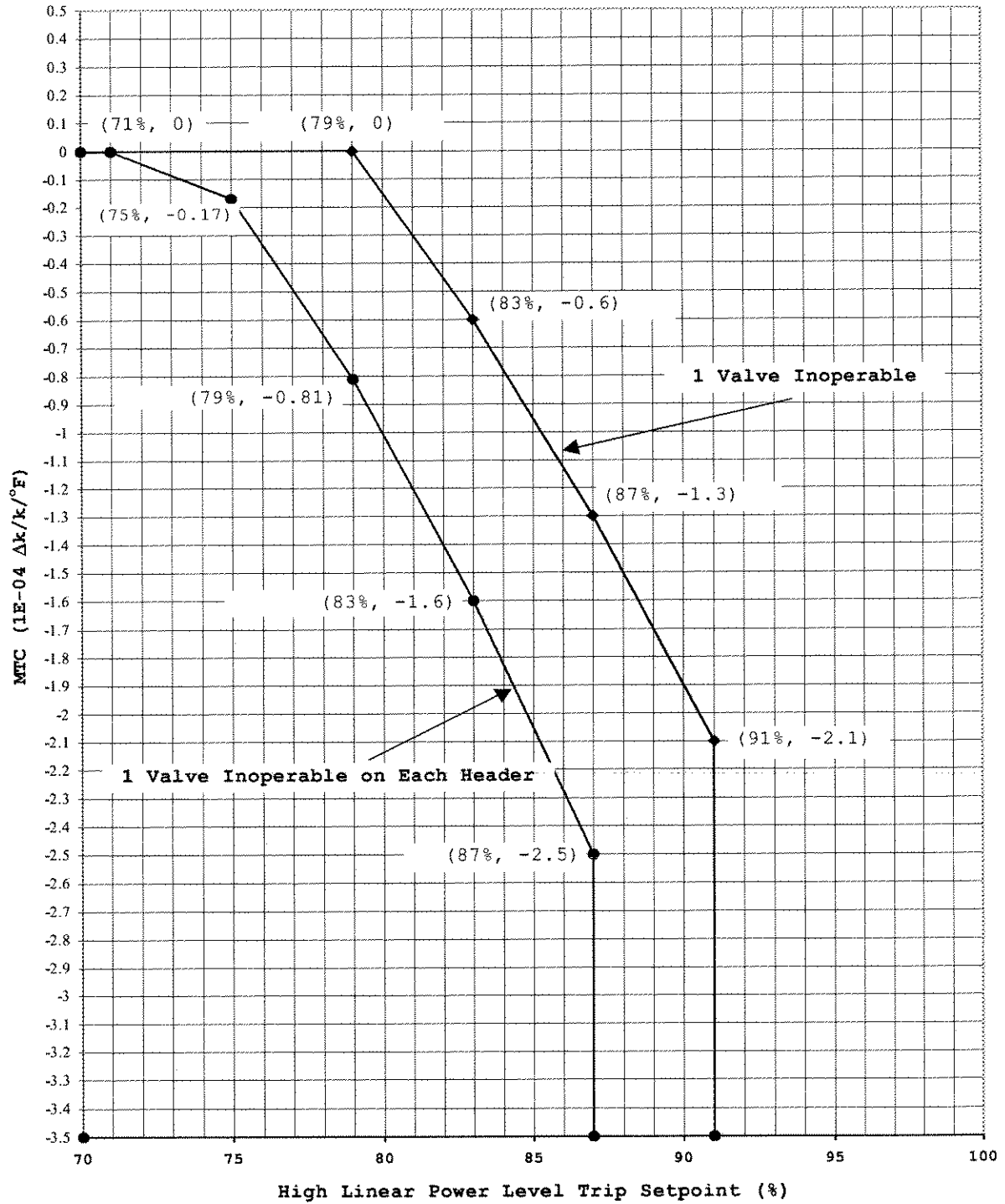


TABLE 3.7-5

STEAM LINE SAFETY VALVES

<u>VALVE NUMBER</u>		<u>LIFT SETTING (± 3%) *</u>
<u>Line No. 1</u>	<u>Line No. 2</u>	
a. 2PSV-1002	2PSV-1052	1078 psig
b. 2PSV-1003	2PSV-1053	1105 psig
c. 2PSV-1004	2PSV-1054	1105 psig
d. 2PSV-1005	2PSV-1055	1132 psig
e. 2PSV-1006	2PSV-1056	1132 psig

* The lift setting pressure shall correspond to ambient conditions of the valve at nominal operating temperature and pressure. If found outside of a ± 1% tolerance band, the setting shall be adjusted to within ± 1% of the lift setting shown.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 00 DATE: _____SYSTEM/DUTY AREA: A1: Control Element Drive Mechanism Control SystemTASK: Verify and determine CEA#1 Upper Gripper Coil TemperatureJTA#: ANO2-RO-CEDM-NORM-10KA VALUE RO: 3.9 SRO: 4.0 KA REFERENCE: 2.1.23APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: XTASK 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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2105.009, Rev. 021-01-0

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.

ADMINISTRATIVE 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:

1. Plant is at full power.
2. Both Main Chillers have tripped and cannot be started.
3. I&C is not available to obtain CEDM Coil temperatures.
4. OP 2203.012M, 2K13 ACA, for window C4, CEDM cooling coils water flow low ACA is in alarm.
5. Readings obtained from the CEDM coil using a calibrated DVM are: 1) Upper Gripper coil voltage, $V_{ug} = 44V$;
2) Upper Gripper Shunt voltage $V_{shunt} = 6.46 \text{ mV}$

TASK STANDARD:

Two of the three errors on the completed Exhibit 2 must be identified:

1. 8.46mV was recorded instead of the 6.46mV in step 4.3.1 and 4.23 Amps instead of 3.23 Amps in step 5.2.
2. 10.4 ohms was recorded instead of 9.88 ohms in step 6.3.
3. Temperature of upper gripper coil was recorded as 353.373°F instead of 320.038°F.

NOTE: It is acceptable to correctly calculate and identify the correct values throughout the exhibit instead of identifying errors in calculation execution in given exhibit. Refer to "Correct Exhibit 2".

And

Correct CEA 01 upper gripper coil temperature of $\geq 500.050^\circ\text{F}$ must be calculated.

TASK PERFORMANCE AIDS:

1. OP 2105.009 Exhibit 2 (completed)
2. Calculator.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

The SM directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, the Upper Gripper temperature for CEA 01 has been calculated using 2105.009, Exhibit 2. Verify and identify all errors in the calculation by circling each error."

CRITICAL ELEMENTS (C): 2, 3

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1.	Review OP 2105.009 Exhibit 2.	Review the completed OP 2105.009 Exhibit 2.	N/A SAT UNSAT
(C)	2.	<p>Specific Errors present on Exhibit 2:</p> <ol style="list-style-type: none"> 8.46mV was recorded instead of the 6.46mV in step 4.3.1 and 4.23 Amps instead of 3.23 Amps in step 5.2. 10.4 ohms was recorded instead of 9.88 ohms in step 6.3. (0.525 should have been subtracted from 10.4.). Temperature of upper gripper coil was recorded as 353.373°F(value for 10.9 ohms) instead of 320.038 (value for 10.4 ohms). <p>It is acceptable to correctly calculate and identify the correct values throughout the exhibit instead of identifying errors in calculation execution in given exhibit. Refer to "Correct Exhibit 2".</p>	Two of the three errors on the completed Exhibit 2 must be identified.	N/A SAT UNSAT
(C)	3.	Calculate correct CEA 01 upper gripper coil temperature to be 506.665°F.	Calculated the correct CEA 01 upper gripper coil temperature as 506.665°F (acceptance criteria is $\geq 500.050^\circ\text{F}$).	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINER's COPY****JPM INITIAL TASK CONDITIONS:**

- Plant is at full power.
- Both Main Chillers have tripped and cannot be started.
- I&C is not available to obtain CEDM Coil temperatures.
- OP 2203.012M, 2K13 ACA, for window C4, CEDM cooling coils water flow low ACA is in alarm.
- Readings obtained from the CEDM coil using a calibrated DVM are:
 - 1) Upper Gripper coil voltage, $V_{ug} = 44V$
 - 2) Upper Gripper Shunt voltage $V_{shunt} = 6.46 \text{ mV}$

INITIATING CUE:

The SM directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, the Upper Gripper temperature for CEA 01 has been calculated using 2105.009, Exhibit 2. Verify and identify all errors in the calculation by circling each error."

ADMINISTRATIVE JOB PERFORMANCE MEASURE**EXAMINEE's COPY****JPM INITIAL TASK CONDITIONS:**

- Plant is at full power.
- Both Main Chillers have tripped and cannot be started.
- I&C is not available to obtain CEDM Coil temperatures.
- OP 2203.012M, 2K13 ACA, for window C4, CEDM cooling coils water flow low ACA is in alarm.
- Readings obtained from the CEDM coil using a calibrated DVM are:
 - 1) Upper Gripper coil voltage, $V_{ug} = 44V$
 - 2) Upper Gripper Shunt voltage $V_{shunt} = 6.46 \text{ mV}$

INITIATING CUE:

The SM directs, "As directed by OP 2203012M, 2K13-C4, CEDM Cooling coils Water Flow Low ACA, the Upper Gripper temperature for CEA 01 has been calculated using 2105.009, Exhibit 2. Verify and identify all errors in the calculation by circling each error."

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 10 of 30 CHANGE: 022-01-0
--	--	--

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 1 OF 2

This exhibit provides Operations the ability to measure and trend CEA-01 upper gripper coil temperature. Other historically hot CEAs (2, 4, 8, 14, 15, 18, 55, 63, and 72) can also be measured by referring to WO# 50654677 CR-ANO-2-1999-0433-004.

- 1.0 Obtain currently calibrated Handheld Digital Voltmeter (DVM) or equivalent multimeter (Refer to ZOPG-012 for DVM usage).

NOTE

- Hold bus voltage prevents obtaining proper temperature readings.
- Record absolute values of voltage readings obtained.

- 2.0 Check CEA #01 NOT on Hold Bus.

- 3.0 Obtain CEA #01 Upper Gripper coil voltage (Vug) as follows:

- 3.1 Locate CEA #1 power cables in panel on TBC4C6, (behind access panel to left of 2C72 door).
- 3.2 With DVM scale set on 200, take voltage reading across "Black" and "White" cables located on TBC4C6, terminals #4 and #5. (A typical reading is 44 VDC).

$$(V_{ug}) = \underline{44} \text{ V}$$

- 4.0 Obtain CEA #01 Upper Gripper shunt voltage (Vshunt) as follows:

- 4.1 Locate CEA #01 coil monitor connector on front side of 2C72. (This is a round, capped connector with (#1) located directly above it.
- 4.2 Remove connector cap by unscrewing.
- 4.3 With DVM scale set on 200mV, take voltage reading across pins "C" and "D". (A typical reading is 8 millivolts DC.)

$$4.3.1 \quad \text{Record DVM reading} = \underline{6.46} \text{ mV}$$

$$\text{Convert mV to Volts: } \underline{8.46} \text{ mV} \times \frac{1 \text{ V}}{1000 \text{ mV}} = \underline{0.00846} \text{ V}$$

$$\text{Record (Vshunt)} = \underline{0.00846} \text{ V}$$

- 4.4 Screw connector cap back on CEA #01 coil monitor connector.

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 11 of 30 CHANGE: 022-01-0
--	--	--

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 2 OF 2

5.0 Utilize ohms law to calculate coil current (Icoil) as follows.

$$5.1 \quad (I_{coil}) = (V_{shunt}) \frac{0.08846}{.002 \text{ ohms.}}$$

$$5.2 \quad (I_{coil}) = \underline{4.23} \text{ amps}$$

6.0 Calculate coil resistance (Rcoil₁) as follows:

$$6.1 \quad (R_{coil_1}) = (V_{ug}) \frac{44 \text{ V}}{(I_{coil}) \underline{4.23} \text{ amps}}$$

$$(R_{coil_1}) = \underline{10.40} \text{ ohms}$$

NOTE

Lead resistance must be subtracted to obtain accurate reading. Lead resistance for CEA #1 is provided in this calculation. However, a lookup table for lead resistance is provided when using WO# 50654677 to calculate other CEA coil temperatures.

$$6.2 \quad (R_{coil_2}) = \underline{10.40} (R_{coil_1}) - .525 \text{ ohms (CEA \#01 lead resistance).}$$

$$6.3 \quad (R_{coil_2}) = \underline{10.40} \text{ ohms}$$

7.0 Obtain CEA #01 coil temperature as follows:

7.1 Use the following to obtain CEA #01 coil temperature:

- Coil resistance (Rcoil₂) calculated in step 6.0
- Table below

Resistance	Temp.	Resistance	Temp.	Resistance	Temp.	Resistance	Temp.
5.6	0.022	7.5	126.695	9.4	253.368	11.3	380.041
5.7	6.689	7.6	133.362	9.5	260.035	11.4	386.708
5.8	13.356	7.7	140.029	9.6	266.702	11.5	393.375
5.9	20.023	7.8	146.696	9.7	273.369	11.6	400.042
6	26.69	7.9	153.363	9.8	280.036	11.7	406.709
6.1	33.357	8	160.03	9.9	286.703	11.8	413.376
6.2	40.024	8.1	166.697	10	293.37	11.9	420.043
6.3	46.691	8.2	173.364	10.1	300.037	12	426.71
6.4	53.358	8.3	180.031	10.2	306.704	12.1	433.377
6.5	60.025	8.4	186.698	10.3	313.371	12.2	440.044
6.6	66.692	8.5	193.365	10.4	320.038	12.3	446.711
6.7	73.359	8.6	200.032	10.5	326.705	12.4	453.378
6.8	80.026	8.7	206.699	10.6	333.372	12.5	460.045
6.9	86.693	8.8	213.366	10.7	340.039	12.6	466.705
7	93.36	8.9	220.033	10.8	346.706	12.7	473.365
7.1	100.027	9	226.7	10.9	353.373	12.8	480.025
7.2	106.694	9.1	233.367	11	360.04	12.9	493.345
7.3	113.361	9.2	240.034	11.1	366.707	13	500.050
7.4	120.028	9.3	246.701	11.2	373.374	13.1	506.665

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 001 DATE: _____SYSTEM/DUTY AREA: A.2: Equipment ControlTASK: Review and approve as a supervisor the completed 2P89B surveillance.JTA#: ANOSROADMINNORM22KA VALUE RO: 3.5 SRO: 3.9 KA REFERENCE: 2.2.12APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: XTASK 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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2104.039 Supplement 2 Rev. 043-03-0

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.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

INITIAL PLANT CONDITIONS

Plant is at 100% power and all ESF equipment is in normal alignment.

2P89C is aligned to the RED side.

The 2P-89B Quarterly test has been completed using OP 2104.039 Supplement 2.

TASK STANDARD:

- 1) Identify that parameters recorded are outside the LIMITING RANGE FOR OPERABILITY in step 4.1.
- 2) Identification of four of the five errors, in Supplement 2, is required and two of the five must be the Pump D/P and the tech spec applicability.

Errors present in OP 2104.036 Supplement 2:

- Pump ΔP is out of LIMITING RANGE FOR OPERABILITY.
- Calculation for determining lower pump ΔP limit is in error.
- Inboard Radial Bearing #1 Vibes is out of LIMITING RANGE FOR OPERABILITY.
- Outboard Bearing AXIAL Vibes is out of LIMITING RANGE FOR OPERABILITY.
- Determine TS 3.5.2 applicability

TASK PERFORMANCE AIDS: marked-up copy of Supplement 2 2P-89B quarterly test

SIMULATOR SETUP: NA

ADMINISTRATIVE JOB PERFORMANCE MEASURE**Initiating CUE:**

The Shift Manager directs “perform a supervisor review and analysis of the ‘B’ HPSI pump, 2P89B, surveillance, by reviewing and identifying all errors by circling each error on the completed surveillance data, OP 2104.039 Supplement 2.”

CRITICAL STEPS: 2, 3

START TIME: _____

<u>PERFORMANCECHECKLIST</u>		<u>STANDARD</u>	<u>CIRCLE ONE</u>
EXAMINER’S NOTE: Provide a marked-up copy of Supplement 2, 2P-89B quarterly test			
	1.	Perform supervisor review of the surveillance procedure results and determine errors.	Reviews the surveillance acceptance criteria provided. N/A
EXAMINER’S NOTE: The following list identify errors in the supplement 2 provided. The acceptance criterion is given in the task standard.			
(C)	2.	<ul style="list-style-type: none"> Pump Δ P is out of LIMITING RANGE FOR OPERABILITY. Calculation for determining lower pump Δ P limit is in error. (This calculation is below the table in supplement 2 section 3 and recorded in the table on the line for pump Δ P.) Inboard Radial Bearing #1 Vibes is out of LIMITING RANGE FOR OPERABILITY. Outboard Bearing AXIAL Vibes is out of LIMITING RANGE FOR OPERABILITY. Identify the technical specification applicability error. 	<ul style="list-style-type: none"> Pump D/P is out of LIMITING RANGE FOR OPERABILITY. Calculation for determining lower pump Δ P limit should be 1380.81 psid. Inboard Radial Bearing #1 Vibes is out of LIMITING RANGE FOR OPERABILITY. Outboard Bearing AXIAL Vibes is out of LIMITING RANGE FOR OPERABILITY. Identifies TS 3.5.2 applicability.
EXAMINER’S NOTE: The examinee will probably require another RO to review the data table before proceeding. Then, provide the following CUE: EXAMINER’S CUE: Direct the examinee to continue on with completing section 4.0 as though that review matched the same errors previously identified.			
(C)	3. (Step 4.1)	In Step 4.1, marked NO to identify all measured values recorded in ACCEPTANCE CRITERIA do not fall within LIMITING RANGE FOR OPERABILITY.	Marked Step 4.1 as NO. N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

<u>PERFORMANCECHECKLIST</u>			<u>STANDARD</u>	<u>CIRCLE ONE</u>
	4. (Step 4.2)	In Step 4.2, marked NA to identify all measured values recorded in ACCEPTANCE CRITERIA are outside both the NORMAL RANGE and the LIMITING RANGE FOR OPERABILITY.	Marked Step 4.2 as NA.	N/A SAT UNSAT
	5. (Step 4.3)	LCO Tracking Record needed. EXAMINER's CUE: The CRS ADMIN will initiate LCO Tracking Record.	Identifies need to initiate LCO Tracking Record.	N/A SAT UNSAT
	6. (Step 4.3)	Condition Report needed. EXAMINER's CUE: The Shift Technical Advisor will initiate the condition report.	Identifies need to generate condition report.	N/A SAT UNSAT
	7. (Step 4.4)	Step 4.4 marked NA since step 4.2 was identified as NA.	Marked Step 4.4 as NA.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER's COPY

INITIAL PLANT CONDITIONS

Plant is at 100% power and all ESF equipment is in normal alignment.
2P89C is aligned to the RED side.

The 2P-89B Quarterly test has been completed using OP 2104.039 Supplement 2.

Initiating CUE:

The Shift Manager directs "perform a supervisor review and analysis of the 'B' HPSI pump, 2P89B, surveillance, by reviewing and identifying all errors by circling each error on the completed surveillance data, OP 2104.039 Supplement 2."

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

Plant is at 100% power and all ESF equipment is in normal alignment.
2P89C is aligned to the RED side.

The 2P-89B Quarterly test has been completed using OP 2104.039 Supplement 2.

Initiating CUE:

The Shift Manager directs "perform a supervisor review and analysis of the 'B' HPSI pump, 2P89B, surveillance, by reviewing and identifying all errors by circling each error on the completed surveillance data, OP 2104.039 Supplement 2."

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 63 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump ΔP { 4.3.1 }	2PI-5101 - 2PI-5100	1355.5 psid	N/A	1360.81 (1) to 1612.8 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-406	$\emptyset A$ <u>34</u> Amps $\emptyset B$ <u>33</u> Amps $\emptyset C$ <u>35</u> Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump ΔP is:

$$1372.9 + 20.41 (\text{Instrument error}) - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(\underline{90} - 40)/4] = \underline{1360.81} \text{ psid}$$

3.2 Independently verify pump ΔP calculation.

JJB

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable. N/A
- Refer to Tech Spec 3.5.2 OR 3.5.3. N/A
- Notify Shift Manager. N/A
- Initiate WR/WO as applicable. N/A

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter OR as directed by IST Coordinator. N/A
- Annotate on status board. N/A
- Annotate in Work Exceptions section of WR/WO. N/A

3.6 Pump Data recorded in database AND reviewed by SRO. SBR

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160). N/A

Comments _____

Performed By Sammy Reactor Date TODAY
Jimmy Reactor

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

- 4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO
- 4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA
- 4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:
- Verify LCO Tracking Record initiated per Conduct of Operations (1015.001). _____
 - Verify Condition Report initiated. _____
- 4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:
- Verify WR/WO has been initiated. _____
 - Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

- 4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 63 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump ΔP {4.3.1}	2PI-5101 - 2PI-5100	1355.5 psid	N/A	1360.81⁽¹⁾ to 1612.8 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-406	ØA <u>34</u> Amps ØB <u>33</u> Amps ØC <u>35</u> Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump ΔP is:

$$1372.9 + 20.41 \text{ (Instrument error)} - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(\underline{90} - 40)/4] = \underline{1360.81} \text{ psid}$$

3.2 Independently verify pump ΔP calculation.

JJB

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable. N/A
- Refer to Tech Spec 3.5.2 OR 3.5.3. N/A
- Notify Shift Manager. N/A
- Initiate WR/WO as applicable. N/A

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter OR as directed by IST Coordinator. N/A
- Annotate on status board. N/A
- Annotate in Work Exceptions section of WR/WO. N/A

3.6 Pump Data recorded in database AND reviewed by SRO. SBR

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160). N/A

Comments _____

Performed By Sammy Reactor Date TODAY
Jimmy Reactor

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

- 4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO
- 4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA
- 4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:
- Verify LCO Tracking Record initiated per Conduct of Operations (1015.001). _____
 - Verify Condition Report initiated. _____
- 4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:
- Verify WR/WO has been initiated. _____
 - Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

- 4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 63 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump Δ P {4.3.1}	2PI-5101 - 2PI-5100	1355.5 psid	N/A	1360.81 (1) to 1612.8 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-406	\varnothing A <u>34</u> Amps \varnothing B <u>33</u> Amps \varnothing C <u>35</u> Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump Δ P is:

$$1372.9 + 20.41 \text{ (Instrument error)} - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(\underline{90} - 40)/4] = \underline{1360.81} \text{ psid}$$

3.2 Independently verify pump Δ P calculation.

JJB

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable. N/A
- Refer to Tech Spec 3.5.2 OR 3.5.3. N/A
- Notify Shift Manager. N/A
- Initiate WR/WO as applicable. N/A

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter OR as directed by IST Coordinator. N/A
- Annotate on status board. N/A
- Annotate in Work Exceptions section of WR/WO. N/A

3.6 Pump Data recorded in database AND reviewed by SRO. SBR

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160). N/A

Comments _____

Performed By Sammy Reactor Date TODAY
Jimmy Reactor

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

- 4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO
- 4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA
- 4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:
- Verify LCO Tracking Record initiated per Conduct of Operations (1015.001). _____
 - Verify Condition Report initiated. _____
- 4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:
- Verify WR/WO has been initiated. _____
 - Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

- 4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: A.3: Radiation ControlTASK: Review and approve Containment Purge Gaseous ReleaseJTA#: ANOSROADMINNORM189KA VALUE RO: 2.5 SRO: 3.4 KA REFERENCE: 2.3.9APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: XTASK 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: _____

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

TESTING METHOD: SIMULATE: _____ PERFORM: _____

APPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2104.033 Supplement 1 Rev. 043-02-0

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.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIAL PLANT CONDITIONS**

Plant is in Mode 5.

Chemistry has completed Containment atmosphere radioactivity analysis.

Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.

Initial count rate on 2RITS-8233, Containment Purge, is 60cpm.

Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.

Current four hour average CAM's Particulate reading is 1532 CPM and Gaseous is 1204 CPM.

Last test reading run-time from engineering programs group is 7532.5 hrs.

Current run-time reading from 2B85-C7 is 8284.9 hrs.

A reactor Operator has completed the containment purge verification section of OP 2104.033 Supplement 1.

TASK STANDARD:

Four of the following Five errors must be identified:

- Since data recorded in step 4.1.4 was incorrect the filter run-time should have been given to Engineering programs for evaluation.
- Step 4.7 calculated count rate limits are wrong.
- Since current CAMS radiation readings are incorrect, the permit should have been resubmitted to chemistry.
- Step 4.12 2RITS-8233 set point is recorded incorrectly.
- Potentiometer dial set point circled is incorrect due to recording the set point incorrectly; this results in a non-conservative trip value for 2RITS-8233.

AND

The release permit must not be approved, but returned to chemistry for reanalysis.

TASK PERFORMANCE AIDS: A marked-up copy of Supplement 1 Containment Purge Gaseous Release Permit through section 4 and chemistry release data.

SIMULATOR SETUP: NA

ADMINISTRATIVE JOB PERFORMANCE MEASURE

Initiating CUE: The Shift Manager directs "Review and approve OP-2104.033 supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors on the supplement by circling each error."

CRITICAL STEPS: 2, 3

START TIME: _____

<u>PERFORMANCECHECKLIST</u>		<u>STANDARD</u>	<u>CIRCLE ONE</u>	
EXAMINER'S NOTE: Provide a marked-up copy of OP 2104.033 Supplement 1.				
	1.	Perform supervisor review for approval of the Containment purge gaseous release permit and determine errors.	Reviews the containment purge gaseous release permit.	N/A
EXAMINER'S NOTE: The following list identify errors in the supplement 1 provided. The acceptance criterion is given in the task standard.				
(C)	2.	<ul style="list-style-type: none"> Data recorded in step 4.1.4 was incorrect the filter run-time should have been given to Engineering programs for evaluation. Step 4.7 calculated count rate limits are wrong. Step 4.8 since current CAMS radiation readings are incorrect, the permit should have been resubmitted to chemistry. Step 4.12 2RITS-8233 set point is recorded incorrectly. Potentiometer dial set point circled is incorrect due to recording the set point incorrectly; this results in a non-conservative trip value for 2RITS-8233. 	<ul style="list-style-type: none"> Filter run-time is beyond 720 hrs; this should be evaluated by engineering programs before proceeding with release. Calculated count rate limits were given to be particulate 2439 CPM and gaseous 2088 CPM but should have been Particulate1355 CPM and gaseous 1166 CPM. The Purge permit should be resubmitted to chemistry but the steps were marked as NA due to incorrect current readings recorded. Set point for 2RITS-8233 is recorded as 15000 CPM not 150 CPM as specified in Chemistry report. Potentiometer dial set point should be 3.84, but 5.68 is circled. 	N/A SAT UNSAT
EXAMINER'S NOTE: The Examinee should discuss that the release will be resubmitted to chemistry and Engineering programs should evaluate the runtime on the exhaust filter.				
(C)	3.	The release should not be approved and should be resubmitted to chemistry.	Would not approve the release to begin.	N/A SAT UNSAT
END				

STOP TIME: _____

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.
- Initial count rate on 2RITS-8233, Containment Purge, is 60 CPM.
- Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.
- Current CAM's Particulate reading is 1532 CPM and Gaseous is 1204 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- A reactor Operator has completed the containment purge verification section of OP 2104.033 Supplement 1.

Initiating CUE:

The Shift Manager directs "Review and approve OP-2104.033 supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors on the supplement by circling each error."

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE's COPY

INITIAL PLANT CONDITIONS

- Plant is in Mode 5.
- Chemistry has completed Containment atmosphere radioactivity analysis.
- Initial flow from 2RITS-8233, Containment Purge, is 8.5 SCFM.
- Initial count rate on 2RITS-8233, Containment Purge, is 60 CPM.
- Initial CAM's Particulate reading is 1084 CPM and Gaseous is 928 CPM.
- Current CAM's Particulate reading is 1532 CPM and Gaseous is 1204 CPM.
- Last test reading run-time from engineering programs group is 7532.5 hrs.
- Current run-time reading from 2B85-C7 is 8284.9 hrs.
- A reactor Operator has completed the containment purge verification section of OP 2104.033 Supplement 1.

Initiating CUE:

The Shift Manager directs "Review and approve OP-2104.033 supplement 1, Containment Purge Gaseous Release Permit using the completed supplement and chemistry report. Identify all errors on the supplement by circling each error."

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 30 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 1 OF 11

CONTAINMENT PURGE GASEOUS RELEASE PERMIT

This Supplement provides instructions for Containment Purge and satisfies Tech Spec 3.3.3.1, Table 4.3-3.2.a.i.a and ODCM App 2, L2.2.1, Table 2.2-2.2.A.

1.0 REQUEST (Operations)

- 1.1 Initiate WR/WO for I&C to perform Channel Functional Test of 2RX-9820 SPING 5 (2304.149). (D)
- 1.2 Verify valves aligned per Attachment A of this procedure, 2RE-8233 Shed on Top of Aux Bldg Roof section only. (D)
- 1.3 Start CNTMT Purge (2RITS-8233) Sample pump (2C-49) as follows:
 - 1.3.1 Place local handswitch 2HS-8233 in START. (D)
 - 1.3.2 Verify flow between 8.0 and 12.0 SCFM (2FIS-8233).
Flow = 8.5 SCFM (D)
 - 1.3.3 Record count rate on 2RE-8233: 60 cpm (D)
- 1.4 Record SPING 5, Channel 5 activity: 1.09E-6 μ ci/cc (D)
- 1.5 Record count rate on running CAMS:
CAMS 8271-2 Particulate 1084 Gaseous 928 (D)
- 1.6 Record CNTMT Building average pressure from PMS/PDS P5601-A or Supplement 4: 14.1 psia (D)
- 1.7 Submit to Chemistry for sampling and analysis. (D)

Performed By Brian Openden Date 3/9/05

2.0 ANALYSIS (Chemistry)

- 2.1 Verify plant in Mode 4, 5, or 6. (D)
- 2.2 Sample Containment Building atmosphere.
Date 3/9/05 Time 1000
Sample flowmeter M&TE number CNO-026 Cal due date 8/17/05 (D)
- 2.3 Performed Gamma spectroscopy. (D)
- 2.4 Review Gamma spectroscopy report. (D)
- 2.5 Generate Preliminary report. (D)

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 31 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 2 OF 11

3.0 SPING 5 VALIDATION Prior to Purge (Chemistry)

- 3.1 Verify SPING 5 Channel Functional Test (2304.149) successfully ✓
performed AND sample pump restarted.
- 3.2 Perform the following using Eberline Radiation Monitoring System (1604.051):
- Verify SPING 5 operable by performing source check using Attachment 5. ✓
 - Verify SPING 5 channels 1, 3, 5, 7, 9, 10, 14, & 15 operable using Attachment 4. ✓
 - Set new SPING 5 channel 5 and/or channel 7 alarm setpoints using Form 1604.051E. ✓
 - Edit isotopic distribution using analysis data. ✓
- 3.3 Record activities in step 6.9, column 3 of this Supplement. ✓
- 3.4 Are doses from Gaseous Effluent release projected to exceed 25% of yearly design objectives on quarterly basis? (ODCM App. 2, L 2.4.4.A) YES NO
- 3.5 Return this Supplement and Permit to Unit 2 Control Room. ✓

Performed By Joe Chemistry Date 3/9/05

4.0 PURGE SYSTEM VERIFICATION (Operations)

- 4.1 Verify adequate Purge Exhaust filter run-time remaining for duration of purge as follows:
- 4.1.1 Record Last Test reading from last Air Purification System Surveillance (5120.420) or from Engineering Programs group: 7532.5 hrs ①
- 4.1.2 Record present run-time from 2B85-C7: 8284.9 hrs ②
- 4.1.3 Record estimated release duration: 1 hrs ③
- 4.1.4 Calculate projected filter run-time as follows: ④
- $$\frac{8284.9}{(4.1.2)} + \frac{1}{(4.1.3)} - \frac{7532.5}{(4.1.1)} = 753.4 \text{ hrs}$$
- 4.1.5 IF projected run-time since last test > 720 hours, THEN notify Engineering Programs. NA

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 32 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 3 OF 11

- 4.2 Verify Purge Exhaust Filter Unit doors closed AND dogged. ⓐ
- 4.3 IF desired to align plant heating to 2VSF-2,
THEN verify plant heating aligned to 2VSF-2 per Attachment A
of Plant Heating Systems (2106.017). NA
- 4.4 Verify NO other Gaseous Release in progress. ⓐ
- 4.5 Record Initial CAMS readings from Section 1.0:
Particulate 1084 Gaseous 928 ⓐ
- 4.6 Record Current 4 hour averaged count rate on running CAMS:
Particulate 1532 Gaseous 1204 ⓐ
- 4.7 Calculate allowable count rate Limits as follows:
Initial Particulate 1084 x 1.25 = 2439 CPM
Initial Gaseous 928 x 1.25 = 2088 CPM ⓐ
- 4.8 IF Current Gaseous and Particulate averaged count rates greater
than allowable Limits,
THEN perform the following:
- 4.8.1 Notify Chemistry to obtain Containment Air
Sample and perform Gross Count. NA
- 4.8.2 Compare activity obtained in above step to previous
Containment Air Sample. NA
- 4.8.3 IF sample results indicate < 10% rise,
THEN continue with purge. NA
- 4.8.4 IF sample results indicate > 10% rise,
THEN resubmit Purge Permit. NA

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 33 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 4 OF 11

4.9 Perform Source Check on Containment Purge Exhaust Rad Monitor (2RITS-8233) as follows:

4.9.1 Hold Selector switch in CHECK SOURCE. ①

4.9.2 IF meter does NOT move up scale,
THEN determine reason for no meter movement
AND obtain SM permission prior to starting release.
SM NA

4.9.3 Return Selector switch to OPERATE. ①

4.9.4 Check meter reading returns to initial background reading. ①

4.10 Verify plant in Mode 5 or 6. ①

4.11 Verify alarm and interlock functions of 2RITS-8233 as follows:

4.11.1 Open CNTMT Purge Supply Isolation (2CV-8283-1). ①

4.11.2 Open CNTMT Purge Exhaust Isolation (2CV-8285-1). ①

4.11.3 Place 2RITS-8233 to PULSE CAL. ①

4.11.4 IF 2RITS-8233 setpoint higher than Pulse Cal,
THEN release Potentiometer stop
AND lower setpoint. NA

4.11.5 Check the following:

- Alarm on 2RITS-8233
- Alarm on 2C14
- 2CV-8283-1 closes
- 2CV-8285-1 closes

4.11.6 Reset 2RITS-8233 AND place in OPERATE. ①

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 34 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 5 OF 11

4.12 Release stop AND adjust 2RITS-8233 potentiometer to dial setpoint in Table below corresponding to setpoint from Preliminary Report.

RO

- Preliminary Report Setpoint: 15000 CPM
- IF setpoint from Preliminary Report < 1000 cpm, THEN 1E3 should be used as alarm setpoint value.

Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt
10	= 0.00	120	= 2.04	4E2	= 3.10	6E3	= 5.28	8E4	= 7.39
20	= 0.53	130	= 2.11	5E2	= 3.29	7E3	= 5.39	9E4	= 7.48
30	= 0.86	140	= 2.18	6E2	= 3.44	8E3	= 5.51	1E5	= 7.55
40	= 1.13	150	= 2.24	7E2	= 3.55	9E3	= 5.60	2E5	= 8.14
50	= 1.32	160	= 2.30	8E2	= 3.67	1E4	= 5.68	3E5	= 8.46
60	= 1.46	170	= 2.35	9E2	= 3.77	2E4	= 6.25	4E5	= 8.70
70	= 1.61	180	= 2.40	1E3	= 3.84	3E4	= 6.56	5E5	= 8.86
80	= 1.73	190	= 2.45	2E3	= 4.40	4E4	= 6.85	6E5	= 9.00
90	= 1.82	200	= 2.50	3E3	= 4.72	5E4	= 7.03	7E5	= 9.14
100	= 1.88	250	= 2.69	4E3	= 4.95	6E4	= 7.17	8E5	= 9.24
110	= 1.96	300	= 2.85	5E3	= 5.13	7E4	= 7.29	9E5	= 9.35
								1E6	= 9.39

4.13 Perform Independent Verification of the following:

- Preliminary Report setpoint in step 4.12 correct.
- 2RITS-8233 dial setpoint correct per Table above.
- 2RITS-8233 in OPERATE.

RO
RO
RO

I/V Performed by: Robert D. Smith

4.14 Declare 2RITS-8233 operable.

RO

RELEASE APPROVAL (SM) _____

ADMINISTRATIVE JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: A4 Emergency PlanTASK: Determine Emergency Action Level and complete formJTA#: ANOSROEPLANEMERG278KA VALUE RO: 2.6 SRO: 4.0 KA REFERENCE: 2.4.29APPROVED FOR ADMINISTRATION TO: RO: _____ SRO: XTASK LOCATION: INSIDE CR: _____ OUTSIDE CR: _____ BOTH: X

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 MinutesREFERENCE(S): OP 1903.010 Rev. 037-00-0 and OP 1903.011 Rev. 032-00-0

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.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

JPM INITIAL TASK CONDITIONS:

- Plant had been operating for 375 days at 100% power.
- A reactor trip occurred one hour ago on 7/17/2006 at 1300.
- The reactor trip was due to a loss of circulating water to the main condenser.
- Both Main Steam Isolation Valves are closed.
- Ten minutes ago, a Steam Generator Tube Rupture on 'A' Steam Generator, SG, was diagnosed with a LKRT calculated to be 75 GPM.
- 'B' SG Upstream Atmospheric Dump Valve will not open (Estimated Time to Completion for repair is 5 hours).
- Chemistry sample of the reactor coolant system reports 34 $\mu\text{Ci/gm}$ I-131 activity on last two samples (~ 20 minutes apart).
- The RDACS projected dose rates at the site boundary is 0.005 Rem/hr TEDE and 0.010 mRem/hr Child Thyroid.
- The RDACS projected dose for the duration of the event is .0025 Rem TEDE and 0.05 Rem Child Thyroid. No PAR's or EAL's are identified by RDACS.
- RDACS reports wind speed of 10 MPH from 240°.
- The communicator's name will be 'Unit 1 STA'.
- No previous EAL has been declared.

TASK STANDARD:

Examinee correctly classifies this event as a SAE per EAL 3.4, LKRT greater than 44 gpm, with ongoing steam release and RCS activity $>1.0 \mu\text{Ci/gm}$ but $< 378 \mu\text{Ci/gm}$ with no protective actions and completes form 1903.010Y correctly.

TASK PERFORMANCE AIDS: OP 1903.010 and 1903.011

SIMULATOR SETUP: N/A.

ADMINISTRATIVE JOB PERFORMANCE MEASURE**INITIATING CUE:**

As Shift Manager, for the given plant conditions, determine the applicable EAL classification and complete form 1903.010Y as a drill.

Critical Steps: 2, 4, 5

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1.	Review E-Plan procedure 1903.010 to determine classification.	Review 1903.010 index and EAL classification tabs.	N/A SAT UNSAT
(C)	2.	Classify event as EAL Site Area Emergency.	Classify event as a SAE based on EAL 3.4, Steam Generator Tube Rupture > 44gpm with an ongoing steam release and RCS Activity >1.0 $\mu\text{Ci/gm}$ but < 378 $\mu\text{Ci/gm}$.	N/A SAT UNSAT
	3.	Begin completion of form 1903.010Y, Emergency Class initial Notification Message. <ul style="list-style-type: none"> • Message number 1. • Communicator's name is Unit 1 STA. • Check drill 	Complete basic information from initial conditions: <ul style="list-style-type: none"> • Message number 1. • Communicator's name is Unit 1 STA. • Check drill 	N/A SAT UNSAT
(C)	4.	Form 1903.010Y, Emergency Class initial Notification Message: <ul style="list-style-type: none"> • Check A SITE AREA EMERGENCY was DECLARED • Check Unit 2 on 7/17/2006 at 1410 • EAL No. 3.4 • Description: "Steam Generator Tube Rupture > 44gpm with an ongoing steam release and RCS Activity >1.0 $\mu\text{Ci/gm}$ but < 378 $\mu\text{Ci/gm}$." 	<ul style="list-style-type: none"> • Check A SITE AREA EMERGENCY was DECLARED • Check Unit 2 on 7/17/2006 at 1410 (NOTE: time written must be no later than 1425) • EAL No. 3.4 • Description: "Steam Generator Tube Rupture > 44gpm with an ongoing steam release and RCS Activity >1.0 $\mu\text{Ci/gm}$ but < 378 $\mu\text{Ci/gm}$." 	N/A SAT UNSAT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	5.	Form 1903.010Y, Emergency Class initial Notification Message. <ul style="list-style-type: none">• Wind speed 10 mph from 240°• Check gaseous radioactive release due to event that does not exceed federally approved operating limits.• No PAR recommended at this time.• Approval signature and check Shift Manager.	<ul style="list-style-type: none">• Wind speed 10 mph from 240°• Check gaseous radioactive release due to event that does not exceed federally approved operating limits.• No PAR recommended at this time.• Approval signature and check Shift Manager.	N/A SAT UNSAT
END				

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINER'S COPY

INITIAL PLANT CONDITIONS

- Plant had been operating for 375 days at 100% power.
- A reactor trip occurred one hour ago on 7/17/2006 at 1300.
- The reactor trip was due to a loss of circulating water to the main condenser.
- Both Main Steam Isolation Valves are closed.
- Ten minutes ago, a Steam Generator Tube Rupture on 'A' Steam Generator, SG, was diagnosed with a LKRT calculated to be 75 GPM.
- 'B' SG Upstream Atmospheric Dump Valve will not open (Estimated Time to Completion for repair is 5 hours).
- Chemistry sample of the reactor coolant system reports 34 $\mu\text{Ci/gm}$ I-131 activity on last two samples (~ 20 minutes apart).
- The RDACS projected dose rates at the site boundary is 0.005 Rem/hr TEDE and 0.010 Rem/hr Child Thyroid.
- The RDACS projected dose for the duration of the event is .0025 Rem TEDE and 0.05 Rem Child Thyroid. No PAR's or EAL's are identified by RDACS.
- RDACS reports wind speed of 10 MPH from 240°.
- The communicator's name will be 'Unit 1 STA'.
- No previous EAL has been declared.

INITIATING CUE:

As Shift Manager, for the given plant conditions, determine the applicable EAL classification and complete form 1903.010Y as a drill.

ADMINISTRATIVE JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

INITIAL PLANT CONDITIONS

- Plant had been operating for 375 days at 100% power.
- A reactor trip occurred one hour ago on 7/17/2006 at 1300.
- The reactor trip was due to a loss of circulating water to the main condenser.
- Both Main Steam Isolation Valves are closed.
- Ten minutes ago, a Steam Generator Tube Rupture on 'A' Steam Generator, SG, was diagnosed with a LKRT calculated to be 75 GPM.
- 'B' SG Upstream Atmospheric Dump Valve will not open (Estimated Time to Completion for repair is 5 hours).
- Chemistry sample of the reactor coolant system reports 34 $\mu\text{Ci/gm}$ I-131 activity on last two samples (~ 20 minutes apart).
- The RDACS projected dose rates at the site boundary is 0.005 Rem/hr TEDE and 0.010 Rem/hr Child Thyroid.
- The RDACS projected dose for the duration of the event is .0025 Rem TEDE and 0.05 Rem Child Thyroid. No PAR's or EAL's are identified by RDACS.
- RDACS reports wind speed of 10 MPH from 240°.
- The communicator's name will be 'Unit 1 STA'.
- No previous EAL has been declared.

INITIATING CUE:

As Shift Manager, for the given plant conditions, determine the applicable EAL classification and complete form 1903.010Y as a drill.

Correct Exhibit 2

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 10 of 30 CHANGE: 022-01-0
--	--	--

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 1 OF 2

This exhibit provides Operations the ability to measure and trend CEA-01 upper gripper coil temperature. Other historically hot CEAs (2, 4, 8, 14, 15, 18, 55, 63, and 72) can also be measured by referring to WO# 50654677 CR-ANO-2-1999-0433-004.

- 1.0 Obtain currently calibrated Handheld Digital Voltmeter (DVM) or equivalent multimeter (Refer to 2OPG-012 for DVM usage).

NOTE

- Hold bus voltage prevents obtaining proper temperature readings.
- Record absolute values of voltage readings obtained.

- 2.0 Check CEA #01 NOT on Hold Bus.

- 3.0 Obtain CEA #01 Upper Gripper coil voltage (V_{ug}) as follows:

- 3.1 Locate CEA #1 power cables in panel on TBC4C6, (behind access panel to left of 2C72 door).

- 3.2 With DVM scale set on 200, take voltage reading across "Black" and "White" cables located on TBC4C6, terminals #4 and #5. (A typical reading is 44 VDC).

$$(V_{ug}) = \underline{44} \text{ V}$$

- 4.0 Obtain CEA #01 Upper Gripper shunt voltage (V_{shunt}) as follows:

- 4.1 Locate CEA #01 coil monitor connector on front side of 2C72. (This is a round, capped connector with (#1) located directly above it.

- 4.2 Remove connector cap by unscrewing.

- 4.3 With DVM scale set on 200mV, take voltage reading across pins "C" and "D". (A typical reading is 8 millivolts DC.)

- 4.3.1 Record DVM reading = 6.46 mV

$$\text{Convert mV to Volts: } \underline{6.46} \text{ mV} \times \frac{1 \text{ V}}{1000 \text{ mV}} = \underline{0.00646 \text{ V}}$$

$$\text{Record (V}_{shunt}\text{)} = \underline{0.00646} \text{ V}$$

- 4.4 Screw connector cap back on CEA #01 coil monitor connector.

PROC./WORK PLAN NO. 2105.009	PROCEDURE/WORK PLAN TITLE: CEDM CONTROL SYSTEM OPERATION	PAGE: 11 of 30 CHANGE: 022-01-0
--	--	--

2105.009

EXHIBIT 2

Revised 09/22/05

CEA #01 UPPER GRIPPER COIL TEMPERATURE MEASUREMENT

PAGE 2 OF 2

5.0 Utilize ohms law to calculate coil current (Icoil) as follows.

$$5.1 \quad (I_{coil}) = (V_{shunt}) \frac{0.00646 \text{ V}}{.002 \text{ ohms.}}$$

$$5.2 \quad (I_{coil}) = \underline{3.23} \text{ amps}$$

6.0 Calculate coil resistance (Rcoil₁) as follows:

$$6.1 \quad (R_{coil_1}) = (V_{ug}) \frac{44 \text{ V}}{(I_{coil}) \underline{3.23} \text{ amps}}$$

$$(R_{coil_1}) = \underline{13.622} \text{ ohms}$$

NOTE

Lead resistance must be subtracted to obtain accurate reading. Lead resistance for CEA #1 is provided in this calculation. However, a lookup table for lead resistance is provided when using WO# 50654677 to calculate other CEA coil temperatures.

$$6.2 \quad (R_{coil_2}) = \underline{13.62} (R_{coil_1}) - .525 \text{ ohms (CEA \#01 lead resistance).}$$

$$6.3 \quad (R_{coil_2}) = \underline{13.1} \text{ ohms}$$

7.0 Obtain CEA #01 coil temperature as follows:

7.1 Use the following to obtain CEA #01 coil temperature:

- Coil resistance (Rcoil₂) calculated in step 6.0
- Table below

Resistance	Temp.	Resistance	Temp.	Resistance	Temp.	Resistance	Temp.
5.6	0.022	7.5	126.695	9.4	253.368	11.3	380.041
5.7	6.689	7.6	133.362	9.5	260.035	11.4	386.708
5.8	13.356	7.7	140.029	9.6	266.702	11.5	393.375
5.9	20.023	7.8	146.696	9.7	273.369	11.6	400.042
6	26.69	7.9	153.363	9.8	280.036	11.7	406.709
6.1	33.357	8	160.03	9.9	286.703	11.8	413.376
6.2	40.024	8.1	166.697	10	293.37	11.9	420.043
6.3	46.691	8.2	173.364	10.1	300.037	12	426.71
6.4	53.358	8.3	180.031	10.2	306.704	12.1	433.377
6.5	60.025	8.4	186.698	10.3	313.371	12.2	440.044
6.6	66.692	8.5	193.365	10.4	320.038	12.3	446.711
6.7	73.359	8.6	200.032	10.5	326.705	12.4	453.378
6.8	80.026	8.7	206.699	10.6	333.372	12.5	460.045
6.9	86.693	8.8	213.366	10.7	340.039	12.6	466.705
7	93.36	8.9	220.033	10.8	346.706	12.7	473.365
7.1	100.027	9	226.7	10.9	353.373	12.8	480.025
7.2	106.694	9.1	233.367	11	360.04	12.9	493.345
7.3	113.361	9.2	240.034	11.1	366.707	13	500.050
7.4	120.028	9.3	246.701	11.2	373.374	13.1	<u>506.665</u>

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: <u>SRO Key</u> HPSI SYSTEM OPERATION	PAGE: 63 of 151 CHANGE: 043-03-0
--	---	---

SUPPLEMENT 2

PAGE 7 OF 9

3.0 ACCEPTANCE CRITERIA

3.1 Record values observed during 2P-89B operation below AND compare with limiting range of values for operability.

TABLE 1					
TEST QUANTITY	INSTRUMENT (INCLUDE TEST INST)	MEASURED VALUE	ACCEPTABLE NORMAL RANGE	LIMITING RANGE FOR OPERABILITY	IS DATA IN LIMITING RANGE?
Running Suct. Pressure	2PI-5100 (local)	33.5 psig	≥ 8 psig	≥ 8 psig	<input checked="" type="radio"/> YES <input type="radio"/> NO
Discharge Pressure	2PI-5101 (local)	1389 psig	N/A	N/A	N/A
	2PI-5109 (2C16)	1379 psig	N/A	N/A	N/A
RWT Temperature	2TIS-5675 (2C17)	90 °F	40 to 110°F	N/A	N/A
Pump ΔP {4.3.1}	2PI-5101 - 2PI-5100	1355.5 psid	N/A	1360.81 (1) to 1612.8 psid	<input checked="" type="radio"/> YES <input type="radio"/> NO
Motor Running Amps (CR-1-96-0272-07)	Ammeter at 2A-406	ØA <u>34</u> Amps ØB <u>33</u> Amps ØC <u>35</u> Amps	N/A	N/A	N/A
Inboard Brg Radial #1 Vibes	VIB001	0.825 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Radial #2 Vibes	VIB001	0.22 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Inboard Brg Axial Vibes	VIB001	0.073 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #1 Vibes	VIB001	0.187 in/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Radial #2 Vibes	VIB001	0.207 In/sec	≤ 0.325 in/sec	≤ 0.700 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO
Outboard Brg Axial Vibes	VIB001	0.610 In/sec	≤ 0.232 in/sec	≤ 0.558 in/sec	<input checked="" type="radio"/> YES <input type="radio"/> NO

Vibration Instrument Cal Due Date 7 Days from TODAY

Vibration Data Collected By Eddy Electrician

Note 1: For RWT temperature (T), minimum acceptable pump ΔP is:

$$1372.9 + 20.41 \text{ (Instrument error)} - [(T-40)/4] \text{ psid}$$

$$\text{Minimum } \Delta P = 1393.31 - [(\underline{90} - 40)/4] = \underline{1360.81} \text{ psid}$$

3.2 Independently verify pump ΔP calculation.

JJB

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 64 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 8 OF 9

3.3 Document observation of check valve stroke in Table 2.

TABLE 2			
CHECK VALVE	TEST DIRECTION	TEST CRITERIA	IS PROPER VALVE STROKE INDICATED?
2SI-10C	Closed	2P-89C NOT rotating	<u>YES</u> NO N/A
2SI-10B	Closed	2P-89B NOT rotating	<u>YES</u> NO N/A

3.4 IF NO circled in Table 1 OR 2,
THEN perform the following:

- Declare affected component inoperable.
- Refer to Tech Spec 3.5.2 OR 3.5.3.
- Notify Shift Manager.
- Initiate WR/WO as applicable.

N/A

N/A

N/A

N/A

NOTE

If HPSI pump 2P-89A OR 2P-89C inoperable, then 2SI-10C/2SI-10B testing may be deferred until inoperable HPSI pump restored to operable as per IST Coordinator.

3.5 IF 2SI-10C AND/OR 2SI-10B NOT tested (N/A circled in Table 2),
THEN perform the following:

- Initiate notification to perform test during current quarter OR as directed by IST Coordinator.
- Annotate on status board.
- Annotate in Work Exceptions section of WR/WO.

N/A

N/A

N/A

3.6 Pump Data recorded in database AND reviewed by SRO.

SBR

3.7 IF this surveillance performed as PMT,
THEN complete Unit 2 IST Data Collection (1015.0160).

N/A

Comments _____

Performed By Sammy Reactor Date TODAY
Jimmy Reactor

PROC./WORK PLAN NO. 2104.039	PROCEDURE/WORK PLAN TITLE: HPSI SYSTEM OPERATION	PAGE: 65 of 151 CHANGE: 043-03-0
--	--	---

SUPPLEMENT 2

PAGE 9 OF 9

4.0 SUPERVISOR REVIEW AND ANALYSIS

4.1 Do all measured values recorded in ACCEPTANCE CRITERIA fall within specified LIMITING RANGE FOR OPERABILITY? YES NO

4.2 Do all measured values recorded in ACCEPTANCE CRITERIA fall within ACCEPTABLE NORMAL RANGE? (N/A if all results outside normal range also outside limiting range.) YES NO NA

4.3 IF NO answered to 4.1,
THEN perform the following corrective actions:

- Verify LCO Tracking Record initiated per Conduct of Operations (1015.001). _____

- Verify Condition Report initiated. _____

4.4 IF NO circled in 4.2,
THEN perform the following corrective actions:

- Verify WR/WO has been initiated. _____
- Complete Surveillance Test Schedule Change Request (1000.009D) to double test frequency. _____

Comments _____

4.5 Are all administrative requirements of this test satisfied? YES NO

Supervisor _____ Date _____

Correct Copy SRO

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 30 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

CONTAINMENT PURGE GASEOUS RELEASE PERMIT

PAGE 1 OF 11

This Supplement provides instructions for Containment Purge and satisfies Tech Spec 3.3.3.1, Table 4.3-3.2.a.i.a and ODCM App 2, L2.2.1, Table 2.2-2.2.A.

1.0 REQUEST (Operations)

- 1.1 Initiate WR/WO for I&C to perform Channel Functional Test of 2RX-9820 SPING 5 (2304.149). D
- 1.2 Verify valves aligned per Attachment A of this procedure, 2RE-8233 Shed on Top of Aux Bldg Roof section only. D
- 1.3 Start CNTMT Purge (2RITS-8233) Sample pump (2C-49) as follows:
 - 1.3.1 Place local handswitch 2HS-8233 in START. D
 - 1.3.2 Verify flow between 8.0 and 12.0 SCFM (2FIS-8233).
Flow = 8.5 SCFM D
 - 1.3.3 Record count rate on 2RE-8233: 60 cpm D
- 1.4 Record SPING 5, Channel 5 activity: 1.09E-6 μ ci/cc D
- 1.5 Record count rate on running CAMS:
CAMS 8271-2 Particulate 1084 Gaseous 928 D
- 1.6 Record CNTMT Building average pressure from PMS/PDS P5601-A or Supplement 4: 14.1 psia D
- 1.7 Submit to Chemistry for sampling and analysis. D

Performed By B. J. O'Connell Date 3/10/88

2.0 ANALYSIS (Chemistry)

- 2.1 Verify plant in Mode 4, 5, or 6. FE
- 2.2 Sample Containment Building atmosphere.
Date 3/10/88 Time 0800 FE
Sample flowmeter M&TE number C20-026 Cal due date 8/17/88
- 2.3 Performed Gamma spectroscopy. FE
- 2.4 Review Gamma spectroscopy report. FE
- 2.5 Generate Preliminary report. D

Correct copy SNO

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 31 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 2 OF 11

3.0 SPING 5 VALIDATION Prior to Purge (Chemistry)

- 3.1 Verify SPING 5 Channel Functional Test (2304.149) successfully performed AND sample pump restarted. tc
- 3.2 Perform the following using Eberline Radiation Monitoring System (1604.051):
- Verify SPING 5 operable by performing source check using Attachment 5. tc
 - Verify SPING 5 channels 1, 3, 5, 7, 9, 10, 14, & 15 operable using Attachment 4. tc
 - Set new SPING 5 channel 5 and/or channel 7 alarm setpoints using Form 1604.051E. tc
 - Edit isotopic distribution using analysis data. tc
- 3.3 Record activities in step 6.9, column 3 of this Supplement. tc
- 3.4 Are doses from Gaseous Effluent release projected to exceed 25% of yearly design objectives on quarterly basis? (ODCM App. 2, L 2.4.4.A) YES (NO)
- 3.5 Return this Supplement and Permit to Unit 2 Control Room. tc

Performed By Steve Chant Date 3/16/05

4.0 PURGE SYSTEM VERIFICATION (Operations)

- 4.1 Verify adequate Purge Exhaust filter run-time remaining for duration of purge as follows:
- 4.1.1 Record Last Test reading from last Air Purification System Surveillance (5120.420) or from Engineering Programs group: 7532.5 hrs B
- 4.1.2 Record present run-time from 2B85-C7: 8284.9 hrs AD
- 4.1.3 Record estimated release duration: 1.0 hrs B
- 4.1.4 Calculate projected filter run-time as follows: B
- $$\frac{8284.9}{(4.1.2)} + \frac{1.0}{(4.1.3)} - \frac{7532.5}{(4.1.1)} = \underline{743.4} \text{ hrs}$$
- 4.1.5 IF projected run-time since last test > 720 hours, AD
THEN notify Engineering Programs.

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 32 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 3 OF 11

- 4.2 Verify Purge Exhaust Filter Unit doors closed AND dogged. ⓐ
- 4.3 IF desired to align plant heating to 2VSF-2,
THEN verify plant heating aligned to 2VSF-2 per Attachment A
of Plant Heating Systems (2106.017). NA
- 4.4 Verify NO other Gaseous Release in progress. ⓐ
- 4.5 Record Initial CAMS readings from Section 1.0:
Particulate 1064 Gaseous 928 ⓐ
- 4.6 Record Current 4 hour averaged count rate on running CAMS:
Particulate 1532 Gaseous 1204 ⓐ
- 4.7 Calculate allowable count rate Limits as follows:
Initial Particulate 1084 x 1.25 = 1355 CPM
Initial Gaseous 928 x 1.25 = 1160 CPM ⓐ
- 4.8 IF Current Gaseous and Particulate averaged count rates greater
than allowable Limits,
THEN perform the following:
- 4.8.1 Notify Chemistry to obtain Containment Air
Sample and perform Gross Count. NA
- 4.8.2 Compare activity obtained in above step to previous
Containment Air Sample. NA
- 4.8.3 IF sample results indicate < 10% rise,
THEN continue with purge. NA
- 4.8.4 IF sample results indicate > 10% rise,
THEN resubmit Purge Permit. NA

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 33 of 55 CHANGE: 043-02-0
---------------------------------	--	------------------------------------

SUPPLEMENT 1

PAGE 4 OF 11

4.9 Perform Source Check on Containment Purge Exhaust Rad Monitor (2RITS-8233) as follows:

4.9.1 Hold Selector switch in CHECK SOURCE. D

4.9.2 IF meter does NOT move up scale,
THEN determine reason for no meter movement
AND obtain SM permission prior to starting release.
SM NA

4.9.3 Return Selector switch to OPERATE. D

4.9.4 Check meter reading returns to initial background reading. D

4.10 Verify plant in Mode 5 or 6. D

4.11 Verify alarm and interlock functions of 2RITS-8233 as follows:

4.11.1 Open CNTMT Purge Supply Isolation (2CV-8283-1). D

4.11.2 Open CNTMT Purge Exhaust Isolation (2CV-8285-1). D

4.11.3 Place 2RITS-8233 to PULSE CAL. D

4.11.4 IF 2RITS-8233 setpoint higher than Pulse Cal,
THEN release Potentiometer stop
AND lower setpoint. D

4.11.5 Check the following:

- Alarm on 2RITS-8233 D
- Alarm on 2C14 D
- 2CV-8283-1 closes D
- 2CV-8285-1 closes D

4.11.6 Reset 2RITS-8233 AND place in OPERATE. D

PROC./WORK PLAN NO. 2104.033	PROCEDURE/WORK PLAN TITLE: CONTAINMENT ATMOSPHERE CONTROL	PAGE: 34 of 55 CHANGE: 043-02-0
--	---	--

SUPPLEMENT 1

PAGE 5 OF 11

4.12 Release stop AND adjust 2RITS-8233 potentiometer to dial setpoint in Table below corresponding to setpoint from Preliminary Report.

- Preliminary Report Setpoint: 150 CPM
- IF setpoint from Preliminary Report < 1000 cpm, THEN 1E3 should be used as alarm setpoint value.

Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt	Alarm Stpt	Dial Stpt
10 = 0.00		120 = 2.04		4E2 = 3.10		6E3 = 5.28		8E4 = 7.39	
20 = 0.53		130 = 2.11		5E2 = 3.29		7E3 = 5.39		9E4 = 7.48	
30 = 0.86		140 = 2.18		6E2 = 3.44		8E3 = 5.51		1E5 = 7.55	
40 = 1.13		150 = 2.24		7E2 = 3.55		9E3 = 5.60		2E5 = 8.14	
50 = 1.32		160 = 2.30		8E2 = 3.67		1E4 = 5.68		3E5 = 8.46	
60 = 1.46		170 = 2.35		9E2 = 3.77		2E4 = 6.25		4E5 = 8.70	
70 = 1.61		180 = 2.40		1E3 = 3.84		3E4 = 6.56		5E5 = 8.86	
80 = 1.73		190 = 2.45		2E3 = 4.40		4E4 = 6.85		6E5 = 9.00	
90 = 1.82		200 = 2.50		3E3 = 4.72		5E4 = 7.03		7E5 = 9.14	
100 = 1.88		250 = 2.69		4E3 = 4.95		6E4 = 7.17		8E5 = 9.24	
110 = 1.96		300 = 2.85		5E3 = 5.13		7E4 = 7.29		9E5 = 9.35	
								1E6 = 9.39	

4.13 Perform Independent Verification of the following:

- Preliminary Report setpoint in step 4.12 correct.
- 2RITS-8233 dial setpoint correct per Table above.
- 2RITS-8233 in OPERATE.

I/V Performed by: [Signature]

4.14 Declare 2RITS-8233 operable.

RELEASE APPROVAL (SM) _____

IU
IU
IU

ARKANSAS NUCLEAR ONE			Page 1
E-DOC TITLE: EMERGENCY CLASS INITIAL NOTIFICATION MESSAGE	E-DOC NO. 1903.011-Y	CHANGE NO. 032-00-0	

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: 1

2. MESSAGE:

This is Unit 1 STA at Arkansas Nuclear One. My
(Communicator's name)
phone number is (479) 858-3201.

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 7/17/2006 at 1410 based on
(Date) (Time)

EAL No. 3.4 Description: SGTR > 44gpm with steam Release and RCS
Activity > 1.0 gpi/gm

The wind is AT 10 miles per hour and FROM 240 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 M N O P Q R S T U
☐ SHELTER ZONES: G H I J K L M N O P Q R S T U
☐ Remainder of the EPZ to go indoors: G H I J K L M N O P Q R S T U
☐ Beyond 10 Mile EPZ. ☐ Evacuate ☐ Shelter sectors _____ out to _____ miles.

Comments: Expected duration of release is 5 hours

More information will follow shortly.

[3. APPROVED: Control Room Supervisor
☒ Shift Manager ☐ TSC Director ☐ EOF Director]

Facility: <u>ANO UNIT 2</u>		Date of Examination: <u>07/17/2006</u>
Exam Level (circle one): RO <input checked="" type="checkbox"/> SRO(I) <input type="checkbox"/> SRO(U) <input type="checkbox"/>		Operating Test No.: <u>1</u>
Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO- U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. ANO-2-JPM-NRC-ELEC EOP 2 062 A4.01 RO-3.3 SRO-3.1 Energize 2A2, non-vital 4160VAC bus following a Loss Of Offsite Power	A/L/N/S	6 Electrical
b. ANO-2-JPM-NRC-SIT006 006 A4.08 RO-4.2 SRO-4.3 Isolate Safety Injection Tank's with Safety Injection Actuation System actuated	A/L/D/S	2 Inventory
c. ANO-2-JPM-NRC-LTOP 010 K4.03 RO-3.8 SRO-4.1 Respond to Annunciator 2K10 C-4 and place low temperature overpressure relief valves inservice	L/N/S	3 Reactor Pressure Control
d. ANO-2-JPM-NRC-RCP03 008 A4.01 RO-3.3 SRO-3.1 Restore Component Cooling Water to Reactor Coolant Pumps	A/L/D/P/S	8 Plant Service Systems
e. ANO-2-JPM-NRC-CEA5 001 A4.03 RO-4.0 SRO-3.7 Exercise a Control Element Assembly	A/M/S	1 Reactivity
f. ANO-2-JPM-NRC-FWCS1 035 A4.01 RO-3.7 SRO- 3.6 Place Feed Water Control System in Automatic	D/S	4 Heat Removal
g. ANO-2-JPM-NRC-H2001 028 A4.01 RO-4.0 SRO-4.0 Manually start Hydrogen analyzer	C/D	5 Containment Integrity
h. ANO-2-JPM-NRC-ICI01 015 A2.02 RO-3.1 SRO-3.5 Remove Incore instrument from scan for Core Operating Limits Supervisory System	D/P/S	7 Instrumentation
In- Plant Systems® (3 for RO; 3 for SRO-I; 3 or 2 for SRO- U)		
i. ANO-2-JPM-NRC-AACGLS 064 A3.06 RO-3.3 SRO-3.4 Local start of Station Blackout Diesel	A/D	6 Electrical
j. ANO-2-JPM-NRC-P36ASD 004 A4.08 RO-3.8 SRO-3.4 Operate Charging Pump 2P36B Locally During Alternate Shutdown	D/E/R	2 Inventory
k. ANO-2-JPM-NRC-PRHTR 006 A2.01 RO-3.3 SRO-3.6 Locally control pressurizer proportional heaters	D/E	3 Reactor Pressure Control
@ All control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.		
Type Codes	Criteria for RO /SRO-I / SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (L)ow-Power (N)ew or (M)odified from bank including 1(A) (P)revious 2 Exams (R)CA (S)imulator	4-6 / 4-6 / 2-3 ≤ 9 / ≤ 8 / ≤ 4 ≥ 1 / ≥ 1 / ≥ 1 ≥ 1 / ≥ 1 / ≥ 1 ≥ 2 / ≥ 2 / ≥ 1 ≤ 3 / ≤ 3 / ≤ 2 (randomly selected) ≥ 1 / ≥ 1 / ≥ 1	

Facility: <u>ANO UNIT 2</u>	Date of Examination: <u>07/17/2006</u>
Exam Level (circle one): RO <input type="checkbox"/> / SRO(I) <input checked="" type="checkbox"/> / SRO(U) <input type="checkbox"/>	Operating Test No.: <u>1</u>

Control Room Systems® (8 for RO; 7 for SRO-I; 2 or 3 for SRO- U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a. ANO-2-JPM-NRC-ELEC EOP 2 062 A4.01 RO-3.3 SRO-3.1 Energize 2A2, non-vital 4160VAC bus following a Loss Of Offsite Power	A/L/N/S	6 Electrical
b. ANO-2-JPM-NRC-SIT006 006 A4.08 RO-4.2 SRO-4.3 Isolate Safety Injection Tank's with Safety Injection Actuation System actuated	A/L/D/S	2 Inventory
c. ANO-2-JPM-NRC-LTOP 010 K4.03 RO-3.8 SRO-4.1 Respond to Annunciator 2K10 C-4 and place low temperature overpressure relief valves inservice	L/N/S	3 Reactor Pressure Control
d. ANO-2-JPM-NRC-RCP03 008 A4.01 RO-3.3 SRO-3.1 Restore Component Cooling Water to Reactor Coolant Pumps	A/L/D/P/S	8 Plant Service Systems
e. ANO-2-JPM-NRC-CEA5 001 A4.03 RO-4.0 SRO-3.7 Exercise a Control Element Assembly	A/M/S	1 Reactivity
f. ANO-2-JPM-NRC-FWCS1 035 A4.01 RO-3.7 SRO- 3.6 Place Feed Water Control System in Automatic	D/S	4 Heat Removal
g. ANO-2-JPM-NRC-H2001 028 A4.01 RO-4.0 SRO-4.0 Manually start Hydrogen analyzer	C/D	5 Containment Integrity
h.		

In- Plant Systems® (3 for RO; 3 for SRO-I; 3 or 2 for SRO- U)		
i. ANO-2-JPM-NRC-AACGLS 064 A3.06 RO-3.3 SRO-3.4 Local start of Station Blackout Diesel	A/D	6 Electrical
j. ANO-2-JPM-NRC-P36ASD 004 A4.08 RO-3.8 SRO-3.4 Operate Charging Pump 2P36B Locally During Alternate Shutdown	D/E/R	2 Inventory
k. ANO-2-JPM-NRC-PRHTR 006 A2.01 RO-3.3 SRO-3.6 Locally control pressurizer proportional heaters	D/E	3 Reactor Pressure Control

@ All control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

Type Codes	Criteria for RO /SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 Exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: <u>ANO UNIT 2</u>	Date of Examination: <u>7/17/2006</u>
Exam Level : RO <input type="checkbox"/> / SRO(I) <input type="checkbox"/> / SRO(U) <input checked="" type="checkbox"/>	Operating Test No.: <u>1</u>

Control Room Systems [®] (8 for RO; 7 for SRO-I; 2 or 3 for SRO- U, including 1 ESF)		
System / JPM Title	Type Code*	Safety Function
a.		
b.		
c. ANO-2-JPM-NRC-LTOP 010 K4.03 RO-3.8 SRO-4.1 Respond to Annunciator 2K10 C-4 and place low temperature overpressure relief valves in service	L/N/S	3 Reactor Pressure Control
d. ANO-2-JPM-NRC-RCP03 008 A4.01 RO-3.3 SRO-3.1 Restore Component Cooling Water to Reactor Coolant Pumps	A/L/D/P/S	8 Plant Service Systems
e. ANO-2-JPM-NRC-CEA5 001 A4.03 RO-4.0 SRO-3.7 Exercise a Control Element Assembly	A/M/S	1 Reactivity
f.		
g.		
h.		

In- Plant Systems [®] (3 for RO; 3 for SRO-I; 3 or 2 for SRO- U)		
i. ANO-2-JPM-NRC-AACGLS 064 A3.06 RO-3.3 SRO-3.4 Local start of Station Blackout Diesel	A/D	6 Electrical
j. ANO-2-JPM-NRC-P36ASD 004 A4.08 RO-3.8 SRO-3.4 Operate Charging Pump 2P36B Locally During Alternate Shutdown	D/E/R	2 Inventory
k.		

@ All control room (and in-plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions; in-plant systems and functions may overlap those tested in the control room.

Type Codes	Criteria for RO /SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(L)ow-Power	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1(A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 Exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: A. C. Electrical DistributionTASK: Energize 2A2 (ALTERNATE SUCCESS PATH)JTA#: ANO2ROEOPAOPEMERG32KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 062 A4.01APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: 20 MinutesREFERENCE(S): OP 2202.010 Rev. 007-03-0

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.

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: This is an alternate success path JPM.

A Reactor Trip has occurred.

A loss of off-site power has occurred.

Vital 4160VAC buses 2A3/2A4 are energized from respective EDG's.

Non-Vital bus 2A1 energized from AACG.

SU XFMR #3 and SU XFMR #2 have been energized from 500KV and 161 ring Busses

TASK STANDARD:

Energize 2A2 from Startup transformer #2.

TASK PERFORMANCE AIDS:

OP 2102.010 Attachment 11 and attachment 29.

SIMULATOR SETUP:

Mode 3.

Loss of Offsite Power but now restored.

2A3 and 2A4 energized from respective EDG.

The AACG is powering 2A1.

SU XFMR#3 voltage is ~22 KV.

SU XFMR#2 voltage is ~160 KV.

Insert remote malfunction:

A213; value = LCK_OP, 2A213, Startup #3 feeder breaker to 2A2 fails to close.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The SM/CRS directs, "Energize 2A2 from SU XFMR #3 using attachment 11.CRITICAL ELEMENTS (C): 9, 10, 13, 17

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Proc step 1)	Verify both vital busses energized.	On 2C33, verified both EDG's are supplying respective vital busses, 2A3, 2B5, 2A4, and 2B6.	N/A SAT UNSAT
	2. (Proc step 2)	Verify instrument air > 65psig.	On 2C14, verified instrument air pressure > 65psig.	N/A SAT UNSAT
	3. (Proc step 3)	Verify Loss of Off Site power occurred from initial conditions.	From initial conditions determined that step should be NA'd.	N/A SAT UNSAT
	4. (Proc step 4)	Verify that SU XFMR #3 voltage is greater than 21.7 KV.	Verified that SU XFMR #3 voltage is greater than 21.7KV using: SPDS E2ST3R PMS E9664	N/A SAT UNSAT
	5. (Proc step 4)	Verify that SU XFMR #2 voltage is greater than 154 KV.	Verified that SU XFMR #2 voltage is greater than 154KV using: SPDS EST2R PMS E4013	N/A SAT UNSAT
	6. (Proc step 5a)	Verify CCW is in service.	On 2C33, verified 'C' CCW pump is running and step should be NA'd.	N/A SAT UNSAT
	7. (Proc step 5b)	Verify that 2A1 is energized.	On 2C10, verified 2A1 is energized and step should be NA'd.	N/A SAT UNSAT
	8. (Proc step 5c)	Verify that 2A2 is not energized.	On 2C10, verified 2A2 is not energized and place hand switches 2B424, 2C5B (on 2C01)and 2B223, 2P33B (on 2C14) in PTL.	N/A SAT UNSAT
Examiner's note: Examinee will attempt to energize 2A2 from SU XFMR #3. The feeder breaker will fail to close.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	9. (Proc step 5d)	Attempt to energize Non-vital bus 2A2 by closing 2A213, SU XFMR #3 Feeder to 2A2. (Note the examinee may place SYNC switch in socket and attempt to close the breaker that way when 2A213 does not close automatically. The breaker will not close)	<p>Took 2A213 out of PTL position and observed that breaker did not close by observing that the Green light remains ON and the Red light remains OFF above the hand switch and no voltage is indicated on the bus.</p> <p>Recognize that 2A213 will not close.</p> <p>Contact CRS or AO to investigate breaker</p>	N/A SAT UNSAT
<p>Examiner cues:</p> <p>Report that AO/Electricians have checked out the feeder breaker 2A213 and will need to repair the breaker with an ETA of 8 hours.</p> <p>Report as CRS to continue with EOP 2202.010 attachment 11 and energize 2A2.</p>				
<p>Examiner's note:</p> <p>Step 6 in attachment 11 tells the examinee to go to attachment 29 to energize 2A2. Hand examinee Attachment 29.</p>				
(C)	10. (Proc. Step Att. 29 flow chart)	<p>Determine that auto-transformer is in service and start at step 1 in attachment 29.</p> <p>Examiner's cue: If contacted as dispatcher, report that the Auto-transformer is in service.</p>	Either call the dispatcher or look at ring bus mimic on 2C10 to determine that the 500KV and 161KV ring busses are intact and the auto-transformer is in service.	N/A SAT UNSAT
	11. (Proc step 1.a)	<p>Verify Unit 1 NOT energizing ANY buses from SU XFMR #2.</p> <p>Examiner's Cue: report as Unit 1 Shift Manager that Unit 1 is not using SU XFMR #2.</p>	Contacted Unit 1 to determine if they are using SU XFMR #2.	N/A SAT UNSAT
	12. (Proc step 1.b)	Verify that 2P75, Auxiliary Feed Water pump is not running.	On Panel 2C02, observed that 2P75 was not running by the Green light ON and Red light OFF above the hand switch.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	13. (Proc step 1.c)	Locally verify SU XFMR #2 load shed circuit enabled. Examiner's cue: Key Lock Switch (143-2H09) at 2H-13 is in NORMAL and Key Lock Switch (143-2A16) at 2A-111 is in NORMAL.	Contact AO to verify that the load shed circuit is enabled.	N/A SAT UNSAT
	14. (Proc step 1.d)	N/A step for 2A1 to be energized.	Determined that 2A1 was already energized and N/A step.	N/A SAT UNSAT
	15. (Proc step 1.e)	Place the following hand switches to PTL position: 2A202 2A2 to 2B2 (on 2C10) 2C-5B (on 2C02) 2P-33B (on 2C14)	On 2C10 placed breaker 2A202 to the PTL position by rotating and pulling hand switch to the left. On 2C01, placed breaker 2A202 to PTL. On 2C02, placed 2C5B to PTL.	N/A SAT UNSAT
	16. (Proc step 1.f.1)	Monitor and coordinate SU XFMR #2 loading to ensure XFMR MVA limits are NOT Exceeded. Examiner's Cue: "SU#2 has forced air and oil cooling"	Make preparations to monitor SU XFMR #2 loading limits by determining Voltage and Current (from Unit 1 on C10) as loads are started using SU XFMR # 2.	N/A SAT UNSAT
Examiner's note: Startup Transformer loading is determined by using thumb-rule amperage limits in Attachment 29 and can manually determined by using voltage (Points SPDS E2ST3R and PMS E9664) and current from Unit 1 C10. $MVA = (Voltage * Current * \sqrt{3})$				
(C)	17. (Proc step 1.f.2)	Close breaker 2A211, SU XFMR #2 to 2A2.	On 2C10, energize 2A2 from SU XFMR #2 by taking hand switch for 2A211 out of PTL and observing the Green light OFF and Red light ON and voltage indicated on 2A2.	N/A SAT UNSAT
Follow-up question that may be asked is "The CRS asks if SU#2 MVA limits are being exceeded and how will they be monitored?" When asked the reading on unit 1 panel C10 for SU#2 amperage provide the following cue: Examiner's Cue: Report that C10 Amp reading on SU#2 is ~ 5.0 Amps.				
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

A Reactor Trip has occurred.

A loss of off-site power has occurred.

Vital 4160VAC buses 2A3/2A4 are energized from respective EDG's.

Non-Vital bus 2A1 energized from AACG.

SU XFMR #3 and SU XFMR #2 have been energized from 500KV and 161 ring Busses

INITIATING CUE:

The SM/CRS directs, "Energize 2A2 from SU XFMR #3 using attachment 11.

EXAMINER's NOTE: give examinee Attachment 11 to begin JPM. Provide Attachment 29 after fault on breaker A213 is discovered.

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

A Reactor Trip has occurred.

A loss of off-site power has occurred.

Vital 4160VAC buses 2A3/2A4 are energized from respective EDG's.

Non-Vital bus 2A1 energized from AACG.

SU XFMR #3 and SU XFMR #2 have been energized from 500KV and 161 ring Busses

INITIATING CUE:

The SM/CRS directs, "Energize 2A2 from SU XFMR #3 using attachment 11.

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 005 DATE: _____SYSTEM/DUTY AREA: Safety Injection TanksTASK: Isolate SITs with SIAS Actuated ALTERNATE SUCCESS PATHJTA#: ANO2ROEOPAOPEMERG13KA VALUE RO: 4.2 SRO: 4.3 KA REFERENCE: 006 A4.08APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: 20 MinutesREFERENCE(S): OP 2202.010 Rev 007-03-0 and OP 2104.001 Rev 27-02-0

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.

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:

A LOCA is in progress.

TASK STANDARD:

SIT A, B, and C outlet valves are closed AND the ability to drain the affected SIT (D) is demonstrated.

This is an alternate success path JPM.

TASK PERFORMANCE AIDS:

OP 2202.010 Attachment 36, Attachment 13 and OP 2104.001 section 7.0

SIMULATOR SETUP:

Mode 3.

LOCA in progress.

RCS pressure is ~ 700 psia and controlled.

Verify RCS pressure is above SIAS set point.

1. SIT outlet valves have had breakers closed.

2. CIAS has been RESET.

3. Safety Injection Tank (2T2D) isolation valve (2CV-5063-2) will not close when required to be closed.

RUN CAE file JPM08. This will accomplish the following:

Attach trigger file 'sitisold' to T4 (this will trigger T4 when 2CV5063-2 is started closed (T4=NE4G0632).

T4=CV50632 =.99

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Isolate the SIT's using Standard Attachment 36, SIT isolation. Adequate SDM has been established."

CRITICAL ELEMENTS (C): 6, 7, 8, 10, 19, 22, 23, 24

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
EXAMINER'S NOTE:				
Hand Examinee Attachment 36, SIT Isolation.				
	1. (Proc step 1.a)	Determine from initial conditions that Attachment 35, Boric Acid Alignment is not required to be performed.	Determine from initial conditions that adequate SDM exists.	N/A SAT UNSAT
	2. (Proc step 1.b)	Verify SIAS is NOT reset.	Look on 2C03 PPS inserts and see that RED ESFAS SIAS actuation lights OFF. OR Verify SIAS alarms are IN on 2K04 and 2K06.	N/A SAT UNSAT
EXAMINER'S NOTE:				
Hand Examinee Attachment 13, SIAS reset.				
	3. (Proc step 1)	Verify CIAS is reset.	Obtain ATTACHMENT 13 AND look on 2C03 PPS inserts and see that RED ESFAS CIAS actuation lights on. OR Verify CIAS alarms are clear on 2K04 and 2K06.	N/A SAT UNSAT
	4. (Proc step 2)	Verify that CCP suction source will be available after SIAS reset. EXAMINERS CUE: CRS directs placing Hand switch for 2CV 4920-1 to OPEN.	Determine that either a CCP suction source needs to be taken to OPEN so that the valve will not close when SIAS is reset. Request preference from CRS. Place Hand Switch on 2C09 for 2CV4920-1 to the OPEN position by rotating switch to the clockwise direction.	N/A SAT UNSAT
	5. (Proc step 3)	Verify RCS pressure is greater than variable set point and CNTMT pressure is less than 17.5psia. Examinee transitions to step 5.	On 2C04, verified RCS pressure is greater than SIAS variable set point on all four channels. Using SPDS, PMS or on 2C33, verified containment pressure is less than 17.5 psia. GO to step 5 in Att. 13.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Proc step 5.A)	Place LK/UNLK switch to UNLK	On panel 2C23-B at the actuation reset panel, inserted key number 15 and rotated key switch Clockwise to UNLK.	N/A SAT UNSAT
(C)	7. (Proc step 5.B)	Depress SIAS pushbutton.	On panel 2C23-B at the actuation reset panel, depressed the SIAS pushbutton.	N/A SAT UNSAT
(C)	8. (Proc step 5.C)	Verify trip path lights reset on local PPS status panel.	On panel above 2C23, observed all four matrix trip lights for SIAS illuminated.	N/A SAT UNSAT
EXAMINERS NOTE: Only "B" channel on 2C23 is simulated.				
	9. (Proc step 5.D)	Place LK/UNLK switch to LK and remove key.	On panel 2C23-B at the actuation reset panel, rotated key switch CCW to LK. Removed key number 15.	N/A SAT UNSAT
EXAMINERS NOTE: Only "2C40" is simulated.				
(C)	10. (Proc step 6)	Reset ESF SIAS actuation.	On panel 2C40-7, depressed the SIAS Lockout Reset pushbutton. Observed the "SIAS ON" light ON on 2C40 and four white trip path lights ON on 2C23. Observed 2K07A1 and 2K04A1 SIAS ACT in slow flash. (Verification of SIAS reset by one indication is satisfactory)	N/A SAT UNSAT
	11. (Proc step 7)	Reset main turbine lift oil pumps.	On panel 2C11, placed the Low Suction Press Reset hand switch to RESET. Over the hand switch for each bearing lift pump, observed amber and green lights OFF; and red light ON.	N/A SAT UNSAT
	12. (Proc step 8)	Verify RCP Bleedoff to VCT Isolation valves open. <u>POSITIVE CUE:</u> Green light OFF; Red light ON.	On panel 2C16, took hand switch for 2CV-4847-2, RCP Bleedoff to VCT to CLOSE then to OPEN and Observed GREEN light OFF and RED light ON. On panel 2C17, took hand switch for 2CV-4846-1, RCP Bleedoff to VCT to CLOSE then to OPEN and Observed GREEN light OFF and RED light ON.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	13. (Proc step 9)	Place Main Turbine on turning gear.	On panel 2C01, observed that Green light OFF; Red light ON for turning gear engaged and Green light OFF; Red light ON for turning gear motor on.	N/A SAT UNSAT
Examiner's Note: Examinee will transition to Attachment 36.				
	14. (Proc step 2)	Contact AO/WCO to remove tags and close breakers for the following: 2B51-F2 - 2CV5003-1 2B51-H1 - 2CV5023-1 2B61-F2 - 2CV5043-2 2B61-H1 - 2CV5063-2 EXAMINER'S CUE: When contacted state that the above tags are removed and breakers are closed.	Contact AO/WCO to remove tags and close breakers for the following: 2B51-F2 - 2CV5003-1 2B51-H1 - 2CV5023-1 2B61-F2 - 2CV5043-2 2B61-H1 - 2CV5063-2	N/A SAT UNSAT
	15. (Proc step 3)	Close SIT 2T2A Outlet valve (2CV-5003-1).	On panel 2C17, placed hand switch for 2CV-5003-1 in "CLOSE". Observed green light ON; red light OFF above hand switch.	N/A SAT UNSAT
	16. (Proc step 3)	Close SIT 2T2B outlet valve (2CV-5023-1).	On panel 2C17, placed hand switch for 2CV-5023-1 in "CLOSE". Observed green light ON; red light OFF above hand switch.	N/A SAT UNSAT
	17. (Proc step 3)	Close SIT 2T2C outlet valve (2CV-5043-2).	On panel 2C16, closed 2CV-5043-2. Observed green light ON; red light OFF above hand switch.	N/A SAT UNSAT
Examiner's Note: The following step is the faulted part of the JPM. The 'D' SIT will not close.				
	18. (Proc step 3)	Close SIT 2T2D outlet valve (2CV-5063-2).	On panel 2C16, placed hand switch for 2CV-5063-2 in "CLOSE". Observed green light ON; red light ON above hand switch. Reported to the SM/CRS that SIT 2T2D outlet valve did NOT close and appears to have tripped the breaker.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
EXAMINER'S CUE: Provide the following cue upon receiving the report that 2T2D outlet valve will NOT close.				
EXAMINER'S NOTE: Step 4 directs using OP 2104.001, provide the following cue:				
EXAMINER'S CUE: The CRS directs, "Drain SIT 2T2D to the RDT using OP 2104.001 section 7.1."				
EXAMINER'S NOTE: Provide Examinee procedure OP 2104.001 section 7.0 when needed. Steps 1 and 2 will be marked as Not Applicable.				
	19. (Proc step 7.1.3)	Monitor SIT levels during draining.	Use PMS, SPDS or Control Board indications on 2C16 and 2C17 to monitor SIT levels.	N/A SAT UNSAT
(C)	19. (Proc step 7.1.4)	Open SIT Drain Header To RDT valve (2CV-5081).	On panel 2C33, opened 2CV-5081. Observed green light OFF; red light ON above handswitch. On panel 2C14, monitored RDT 2T68 Level (2LIS-2200A) while draining 2T2C. Using control board mounted indications OR PMS or SPDS computer points, monitored 2T2D level and pressure while	N/A SAT UNSAT
	20. (Proc step 7.1.5)	N/A step for lowering level < 1/2 %.	N/A step for lowering level < 1/2 %.	N/A SAT UNSAT
	21. (Proc step 7.1.6)	Verified SIT drain header pressure less than 650psig.	On panel 2C16, verified 2PS-5060 is less than 650psig.	N/A SAT UNSAT
(C)	22. (Proc step 7.1.7)	Open 2T2D Drain valve (2SV-5061-2).	On panel 2C16, opened 2SV-5061-2. Observed green light OFF; red light ON above hand switch.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
EXAMINER'S NOTE: After a ~ 10% increase in 2LIS-2200A level indication, RDT (reactor drain tank), provide the following cue: EXAMINER'S CUE: 2T2D has been drained adequately for this JPM. The CRS directs, "Secure draining 2T2D."				
(C)	23. (Proc step 7.1.8)	Close 2T2D Drain valve (2SV-5061-2). <u>POSITIVE CUE:</u> Green light ON; red light OFF.	On panel 2C16, closed 2SV-5061-2. Observed green light ON; red light OFF above hand switch.	N/A SAT UNSAT
EXAMINER'S NOTE: Steps 7.1.9 and 7.1.10 are not applicable.				
(C)	24. (Proc step 7.1.11)	Close SIT Drain Header To RDT valve (2CV-5081). <u>POSITIVE CUE:</u> Green light ON; red light OFF.	On panel 2C33, closed 2CV-5081. Observed green light ON; red light OFF above handswitch.	N/A SAT UNSAT
EXAMINER'S CUE: This ends the JPM.				
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

A LOCA is in progress.

INITIATING CUE:

The CRS directs, "Isolate the SIT's using Standard Attachment 36, SIT isolation. Adequate SDM has been established."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

A LOCA is in progress.

INITIATING CUE:

The CRS directs, "Isolate the SIT's using Standard Attachment 36, SIT isolation. Adequate SDM has been established."

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: Pressurizer Pressure Control SystemTASK: Respond to Annunciator for LTOP valve misalignmentJTA#: ANO2-RO-PZR-OFFNORM-11KA VALUE RO: 3.8 SRO: 4.1 KA REFERENCE: 010 K4.03APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: XAPPROXIMATE COMPLETION TIME IN MINUTES: 10 MinutesREFERENCE(S): OP 2203.012J Rev 31-00-0

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.

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:

Reactor Coolant System and Pressurizer cool down in progress.

**2K10-C4, Loop 1 LTOP Valve Align Incorrect and 2 K10-C5, Loop 2 LTOP Valve Align Incorrect
are in alarm.**

TASK STANDARD:

Place both loop 1 and loop 2 LTOP's in service.

TASK PERFORMANCE AIDS:

OP 2203.012J, Annunciator 2K10 Corrective Action

SIMULATOR SETUP:

RCS and PZR cool down in progress.

RCS pressure less than 400 psia.

Power available to LTOP Isolation valves.

RCS Thot (both 2TIS4614-1 and 2TIS4714-2) indicate < 280°F

Annunciators 2K10 C4 and C5 are in alarm.

JOB PERFORMANCE MEASURE

INITIATING CUE:

The Control Room Supervisor directs you respond to annunciators 2K10-C4 and 2K10-C5 using OP 2203.012J.

CRITICAL ELEMENTS (C): 4, 5, 6, 7

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
Examiner note: Valves may be opened in any order and either alarm window may be mitigated first.				
	1. (Step 2.1)	Determined misalignment not directed by a procedure step. Examiner's cue: CRS reports that alarms are not due to a procedural step in the Cool down procedure.	Determined that the LTOP's should be in service for given conditions.	N/A SAT UNSAT
	2. (Step 2.2)	Determine RCS T-Hot temperature is less than 280°F.	Using PMS, SPDS or 2C04 control board indications determined that 2TIS-4614-1 is less than 280°F and N/A'd step to isolate LTOP's.	N/A SAT UNSAT
	3. (Step 2.3)	Determine RCS T-Hot temperature is less than 280°F.	Using PMS, SPDS or 2C04 control board indications determined that 2TIS-4614-1 is less than 280°F and implemented step.	N/A SAT UNSAT
(C)	4. (Step 2.3)	Opened 2CV-4730-1, LTOP isolation valve.	On 2C09, took hand switch for 2CV-4730-1 to clockwise direction and observed that Green light OFF and Red light ON.	N/A SAT UNSAT
(C)	5. (Step 2.3)	Opened 2CV-4741-1, LTOP isolation valve.	On 2C09, took hand switch for 2CV-4741-1 to clockwise direction and observed that Green light OFF and Red light ON.	N/A SAT UNSAT
(C)	6. (Step 2.3)	Opened 2CV-4731-2, LTOP isolation valve.	On 2C09, took hand switch for 2CV-4731-2 to clockwise direction and observed that Green light OFF and Red light ON.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	7. (Step 2.3)	Opened 2CV-4740-2, LTOP isolation valve.	On 2C09, took hand switch for 2CV-4741-1 to clockwise direction and observed that Green light OFF and Red light ON.	N/A SAT UNSAT
	8. (Step 2.3)	Verified Alarm 2K10-C4 and 2K10-C5 alarms cleared.	On 2K10, verified that alarm window C4 and C5 light are in 'slow flash' and acknowledged alarm lights to verify that alarm windows clear.	N/A SAT UNSAT
END				

JOB PERFORMANCE MEASURE

EXAMINERS COPY:

INITIAL CONDITIONS:

Reactor Coolant System and Pressurizer cool down are in progress.

2K10-C4, Loop 1 LTOP Valve Align Incorrect, and 2 K10-C5, Loop 2 LTOP Valve Align Incorrect, are in alarm.

INITIATING CUE:

The Control Room Supervisor directs you respond to annunciators 2K10-C4 and 2K10-C5 using OP 2203.012J.

JOB PERFORMANCE MEASURE

EXAMINEES COPY:

INITIAL CONDITIONS:

Reactor Coolant System and Pressurizer cool down are in progress.

2K10-C4, Loop 1 LTOP Valve Align Incorrect, and 2 K10-C5, Loop 2 LTOP Valve Align Incorrect, are in alarm.

INITIATING CUE:

The Control Room Supervisor directs you respond to annunciators 2K10-C4 and 2K10-C5 using OP 2203.012J.

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 006 DATE: _____SYSTEM/DUTY AREA: Abnormal/Emergency OperationsTASK: Restore component cooling water to reactor coolant pumps (Alternate Success Path)JTA#: ANO2-RO-EOPAOP-EMERG-32KA VALUE RO: 3.3 SRO: 3.1 KA REFERENCE: 008 A4.01APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: 20 MinutesREFERENCE(S): EOP 2202.010 Attachment 21 Rev. 007-03-0

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.

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, are re-energized from SU#2 following a degraded power situation. 2202.010 ATT. 29 steps up to 1.m.7 have been completed.

-

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

TASK PERFORMANCE AIDS: Copy of EOP 2202.010 Attachment 21

SIMULATOR SETUP: Set up CCW valves per EOP 2202.010 Attachment 29 "STARTUP XFM# 2 USAGE" perform actions through step 1.m.7. Close RCP CCW RETURN valves, 2CV-5255-1, 2CV-5254-2 and 2CV-5236-1. No CCW pumps running. SW to CCW/ACW supply and returns closed. NO SIAS actuation. Run CAE 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=DO HS 5255 R off (override)

T4=DO HS 5255 G off (override)

T4=CV52551 = 0.0% (component malfunction)

JOB PERFORMANCE MEASURE**INITIATING CUE:**

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

CRITICAL ELEMENTS (C): 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
Examiner's note: Give Examinee Attachment 21.				
	1. (Step 1.A)	Verify RCP Bleedoff to VCT valves open.	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. (Step 1.B)	Verify RCP Bleedoff Relief Isolation to Quench Tank open.	On panel 2C09, verified 2CV-4856 red light on; key switch in LOCKED OPEN.	N/A SAT UNSAT
(C)	3. (Step 2)	Determine RCP Seal temperature and status of Loop II CCW pump.	On panel 2C14 or on PMS computer determined RCP seal temperatures greater than 180°F. On 2C14, observed running indication for one Loop II CCW pump and Loop II flow. NA'd step 2.	N/A SAT UNSAT
(C)	4. (Step 3.A)	Verify RCP CCW Return valve (2CV-5255-1) CLOSED.	On panel 2C17, verified 2CV-5255-1 closed. Observed green light ON; red light OFF above handswitch.	N/A SAT UNSAT
(C)	5. (Step 3.B)	Open RCP CCW Supply valve (2CV-5236-1).	On panel 2C17, placed handswitch for 2CV-5236-1 in "OPEN". Observed green light OFF; red light ON.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Step 3.C)	Open RCP CCW Return valve (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.				
(C)	7 (Step 3.D)	Modulate RCP CCW Return valve (2CV-5255-1) OPEN. Examiner's Cue: Breaker for 2CV5255-1, 2B53-H2 has tripped.	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 cool down before making the decision that CCW cannot be restored. This monitoring of RCP seal cool down may take several minutes to validate that 2CV-5255-1 did not open. The examinee should go to step 4 of Attachment 21.				
(C)	8. (Step 4.A)	Verify ALL RCP's secured. <u>POSITIVE CUE:</u> 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. (Note examinee may elect to start RCP oil lift pumps prior to securing RCP's)	N/A SAT UNSAT
(C)	9. (Step 4.B)	Close 2CV-5254-2. <u>POSITIVE CUE:</u> 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

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	10. (Step 4.B)	Close 2CV-5236-1. <u>POSITIVE CUE:</u> 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
(C)	11. (Step 4.C.1)	Close RCP bleedoff to VCT valves. <u>POSITIVE CUE:</u> 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
(C)	12. (Step 4.C.2)	Close RCP bleedoff relief isolation to quench tank valve (2CV-4856). <u>POSITIVE CUE:</u> 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'S COPY

JPM INITIAL TASK CONDITIONS:

2A1, 2A2, are re-energized from SU#2 following a degraded power situation. 2202.010 ATT. 29 steps up to 1.m.7 have been completed.

INITIATING CUE:

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

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

2A1, 2A2, are re-energized from SU#2 following a degraded power situation. 2202.010 ATT. 29 steps up to 1.m.7 have been completed.

INITIATING CUE:

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

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 000 DATE: _____SYSTEM/DUTY AREA: Abnormal/Emergency OperationsTASK: Perform control element assembly exercise. (ALTERNATE SUCCESS PATH JPM)JTA#: ANO2-RO-CEDM-SURV-13KA VALUE RO: 4.0 SRO: 3.7 KA REFERENCE: 001 A4.03APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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 MinutesREFERENCE(S): OP 2105.009 Rev. 22-01-0, ACA 2203.012J Rev. 031-00-0

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.

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: OP 2105.009 Supplement 2, "CEA Exercise Test" is

completed successfully through step 2.5 for all CEA's except CEA #46. No T-alt is installed on either RSPT
for CEA #46. Plant is currently 250 EFPD (**ALTERNATE SUCCESS PATH JPM**)

TASK STANDARD: CEA #46 has been withdrawn to the Upper Electrical limit, insert ~ 5" and CEA
movement
stopped after taking the CEAMCS control switch to Manual
Individual.

TASK PERFORMANCE AIDS: Copy of partially completed OP 2105.009 Supplement 2.

AOP 2203.012J ACA 2K10 D-1

SIMULATOR SETUP: All CEA's withdrawn to programmed insertion limit (148.5").

Insert malfunction that causes CEA 46 to continue to insert when CEDMCS shim switch is taken to insert
and
will not stop moving until the CEDMCS control switch is taken to stop.

JOB PERFORMANCE MEASURE**INITIATING CUE:**

The CRS directs, "Complete the CEA Exercise Test for CEA #46 using OP 2105.009 Supplement 2, Step 2.5."

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

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 2.5.2)	Verify CEA #46 is within 7" of other CEA's in Group 6 throughout exercise.	Using RSPT1, RSPT2 or Pulse counter readings on PMS verify that CEA 46 remains within 7" of all Group 6 CEA's throughout exercise.	N/A SAT UNSAT
	2. (Step 2.5.3)	Select position indication for CEA # 46 to monitor movement of CEA.	On panel 2C03, CEA #46 displayed on all available CEAC module displays by one of the following methods: - Standard OM, - CEA group plot (Group 6 selected) - CEA values Page 2 - CEA subgroup plot (Group 6 selected)	N/A SAT UNSAT
(C)	3. (Step 2.5.4)	Place the individual CEA selection switches to CEA #46.	On panel 2C03, selected CEA #46. Observed the TENS in "4" and the UNITS in "6". <u>OR</u> Observed CEA #46 individual light ON.	N/A SAT UNSAT
(C)	4. (Step 2.5.5)	Place the mode select switch to MANUAL INDIVIDUAL.	On panel 2C03, placed mode select switch to MI. Observed MI (MANUAL INDIVIDUAL) light ON.	N/A SAT UNSAT
	5. (Step 2.5.6)	Verify CEA #46 at upper electrical limit (UEL).	On insert 2JC-9058, moved CEA 46 to UEL by going to WITHDRAW on CEA insert until #46 Upper Electrical Limit (UEL) red light on. Observed UEL red light ON.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Step 2.5.7)	Insert CEA #46 seven steps (>5").	Inserted CEA seven steps (>5"). Observed insertion of 5.0 inches or greater on CEAC's #1 and #2 displays.	N/A SAT UNSAT
Examiner's Note: As CEA #46 is inserted the CEA will not stop moving until the CEDMCS control switch, 2JC-9058, is taken to OFF. If ACA's or AOP's are desired, then let them use the copies in the Simulator.				
	7.	Recognize CEA # 46 has not stopped moving when shim switch is returned to center position.	On CEAC inserts and PMS pulse counter indication, the CEA #46 continues to insert.	N/A SAT UNSAT
Examiner's Note: CEA minor deviation alarm will occur at 145.5" withdrawn (Other CEA's in Group 6 are at 148.5" withdrawn and alarm actuates with 3" deviation). CEA Major Deviation alarm will annunciate at ~ 142.5" withdrawn (at 6" deviation). At 140.38" the CEAC's will begin calculation and activate deviation alarms on 2K04, J5, J6, CEAC deviation alarms. CEA will insert at ~30"/minute and will take about 5 minutes for CEA to insert to the lower electrical limit, LEL.				
(C)	8.	CEDMCS control switch, 2JC-9058, is taken to OFF and observes that the CEA stops moving.	CEDMCS control switch, 2JC-9058, is taken to OFF before the lower electrical limit (LEL) is reached and verified by CEAC and Pulse counter indication that the CEA movement stops.	N/A SAT UNSAT
	9.	Reports that CEA #46 did not stop moving until the CEDMCS control switch was taken to OFF. Examiner's CUE: Acknowledge the problem with CEDMCS and that the CRS will take care of the CR and possible Tech Spec entry.	Reports to the CRS that CEA #46 did not stop moving until the CEDMCS control switch was taken to OFF and possible entry into the CEA malfunction AOP.	N/A SAT UNSAT
END				

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

OP 2105.009 Supplement 2, "CEA Exercise Test" is completed successfully through step 2.5 for all CEA's except CEA # 46.
No T-alt is installed on either RSPT for CEA #46.
Plant is currently 250 EFPD.

INITIATING CUE:

The CRS directs, "Complete the CEA Exercise Test for CEA #46 using OP 2105.009 Supplement 2, Step 2.5."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

OP 2105.009 Supplement 2, "CEA Exercise Test" is completed successfully through step 2.5 for all CEA's except CEA # 46.

No T-alt is installed on either RSPT for CEA #46.

Plant is currently 250 EFPD.

INITIATING CUE:

The CRS directs, "Complete the CEA Exercise Test for CEA #46 using OP 2105.009 Supplement 2, Step 2.5."

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 009 DATE: _____SYSTEM/DUTY AREA: Feed water Control SystemTASK: Place the Feed water Control System in AutomaticJTA#: ANO2ROFWCSNORM5KA VALUE RO: 3.7 SRO: 3.6 KA REFERENCE: 035 A4.01APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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 MinutesREFERENCE(S): OP-2106.007 Rev. 23-01-0

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.

JOB PERFORMANCE MEASURE**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

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

JPM INITIAL TASK CONDITIONS:

I&C has completed testing on "A" FWCS.

The FW Master Controller is in MANUAL.

Both "A" FWCS individual valve controllers are in MANUAL.

TASK STANDARD:

'A' FWCS in AUTOMATIC

Neither a Low SG level alarm (50%) was received nor has the HLO, High Level Override (82%) actuated.

TASK PERFORMANCE AIDS:

OP 2106.007 Section 13.0

SIMULATOR SETUP:

'A' FWCS master controller is in manual, 'A' Main Feed regulating valve HIC is in manual

'A' Main Feed regulating valve bypass HIC is in manual.

'A' MFP HIC is in AUTO.

EXAMINER'S NOTES:**INITIATING CUE:**

JOB PERFORMANCE MEASURE

The CRS directs, "Place the 'A' FWCS Master and individual Manual/Auto stations in AUTOMATIC from MANUAL mode using OP 2106.007 Section 13.0."

CRITICAL ELEMENTS (C): 5, 6, 8, 11, 12

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 13.1)	Verify S/G levels are within 2% of level set point.	On panel 2C02, observed S/G levels within 2% of level set point and/or adjusted Main Feed Regulating Valve position until S/G levels were within 2% of set point.	N/A SAT UNSAT
	2. (Step 13.2)	Verify Steam Generator level is stable.	On panel 2C02, adjusted Main Feed Regulating Valve position until S/G levels were stable.	N/A SAT UNSAT
	3. (Step 13.3)	<p>On EWS, verify the following:</p> <p>All Signal RESET's, on all Signal Validation Screens, have been Reset, or reason known and it is desired to continue. NO unexplained alarms are present KEY in OPERATE and Removed.</p> <p>Examiner CUE:</p> <p>All Signal RESET's, on all Signal Validation Screens, have been Reset, or reason known and it is desired to continue. NO unexplained alarms are present KEY in OPERATE and Removed.</p>	<p>On EWS, verify the following:</p> <p>All Signal RESET's, on all Signal Validation Screens, have been Reset, or reason known and it is desired to continue. NO unexplained alarms are present KEY in OPERATE and Removed.</p>	N/A SAT UNSAT
<p>Examiner's Note (Step 13.4):</p> <p>SDBCS is NOT operating with any of the valves in automatic, so the entire step should be N/A'd. Indications are on 2C02.</p>				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	4. (Step 13.5.1)	Display FW flow demand tracking for 'A' FWCS at either: <ul style="list-style-type: none"> On page 2 of MFP Speed Fisher Porter Controllers. On PMS point (FWFDMDT1) 	On 2C02, Displayed FW flow demand tracking for 'A' FWCS on page 2 of associated MFP Speed Fisher Porter Controller. OR On PMS, On 2C02, Displayed FW flow demand tracking for 'A' FWCS on PMS using point (FWFDMDT1)	N/A SAT UNSAT
(C)	5. (Step 13.5.2)	Match the Flow Demand on the Master controller to within 2% of the flow demand tracking value.	On 2C02, using the FWCS associated master controller, depressed the raise or lower manual pushbutton(s) to match the output signal to the Flow demand tracking value.	N/A SAT UNSAT
<p align="center">Examiner's Note:</p> <p>Either the main feed regulating valve controller or the main feed regulating valve bypass may be placed in automatic first. Also, the FWCS HIC's are not typical fisher-porter controllers; they simply relay the signal to the FWCS cabinet. If the M/A pushbutton is not pushed and released then the controller could swap from MANUAL to AUTO back to MANUAL again. This is the design of the controller-FWCS interface.</p>				
(C)	6. (Step 13.5.3)	Transfer the first FWCS Valve controller to AUTOMATIC.	On panel 2C02, using the FW Reg Valve Controller (2HIC-0748), depressed the M/A pushbutton. Observed that an 'A' is displayed on the HIC. OR On panel 2C02, using the FW Reg Valve Bypass Controller 2HIC-0753, depressed the M/A pushbutton. Observed the "M" changed to an "A" the selected HIC, indicating the controller is in automatic.	N/A SAT UNSAT
	7. (Step 13.5.4)	Verify the first valve position remains in a satisfactory position.	On panel 2C02 observed that the valve selected to be placed in automatic first, remains in a satisfactory position.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	8. (Step 13.5.5)	Transfer the "A" FWCS Master controller to AUTO.	On panel 2C02, placed Master Controller (2FIC-1029) in AUTO by depressing the M/A pushbutton. Observed the "M" changed to an "A" on 2FIC-1029 indicating the controller is in AUTOMATIC.	N/A SAT UNSAT
	9. (Step 13.5.6)	Verify Flow Demand on the Master controller output is responding as desired.	On 2C02, using the Master Controller, verified Flow Demand on the Master controller output is responding	N/A SAT UNSAT
	10. (Step 13.5.7.a)	Verify both valve positions are close to the respective positions required by the FWCS.	On 2C02, observed that both valve positions, the valve in automatic and the valve desired to place in automatic are close to the respective positions required by the FWCS by comparing the FWCS demanded position to the actual valve position.	N/A SAT UNSAT
(C)	11. (Step 13.5.7.b)	Transfer the controller for the second valve to AUTOMATIC.	On panel 2C02, using the FW Reg Valve Controller (2HIC-0748), depressed the M/A pushbutton. Observed that an 'A' is displayed on the HIC. OR On panel 2C02, using the FW Reg Valve Bypass Controller 2HIC-0753, depressed the M/A pushbutton. Observed the "M" changed to an "A" the selected HIC, indicating the controller is in automatic.	N/A SAT UNSAT
(C)	12.	Verify neither the SG low level alarm @ 50% narrow range is received nor the High Level Override (HLO) @ 82% Narrow range throughout the performance of this JPM.	The Low SG level alarm pretrip clear (2K04 A4 or A5 or A6 or A7) and HLO alarm clear (2K03-J3 or J4)	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

I&C has completed testing on "A" FWCS.
The FW Master Controller is in MANUAL.
Both "A" FWCS individual valve controllers are in MANUAL.

INITIATING CUE:

The CRS directs, "Place the 'A' FWCS Master and individual Manual/Auto stations in AUTOMATIC from MANUAL mode using OP 2106.007 Section 13.0."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

I&C has completed testing on "A" FWCS.
The FW Master Controller is in MANUAL.
Both "A" FWCS individual valve controllers are in MANUAL.

INITIATING CUE:

The CRS directs, "Place the 'A' FWCS Master and individual Manual/Auto stations in AUTOMATIC from MANUAL mode using OP 2106.007 Section 13.0."

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 009 DATE: _____SYSTEM/DUTY AREA: Hydrogen Recombiner and Purge SystemTASK: Start Up a Hydrogen Analyzer (2C128B manual start).JTA#: ANO2ROCONH2NORM3KA VALUE RO: 3.1 SRO: 3.3 KA REFERENCE: 028 A4.03APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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 MinutesREFERENCE(S): OP-2104.044 Rev. 29-00-0

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.

JOB PERFORMANCE MEASURE**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

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

JPM INITIAL TASK CONDITIONS:

The hydrogen analyzer system is aligned using OP 2104.044 Attachment "A".

Service water is available.

Containment building recirculation fans are in operation.

Power is available to the analyzers.

CAMS unit 2RE-8271-2 is NOT aligned for containment building oxygen control.

CIAS or SIAS is not present.

TASK STANDARD:

Hydrogen Analyzer (2C128B) is in service.

TASK PERFORMANCE AIDS:

OP 2104.044 Section 7.5

SIMULATOR SETUP:

Ensure that 2RE8231 is in service and in modes 1-4.

EXAMINER'S NOTES:

JOB PERFORMANCE MEASURE**INITIATING CUE:**

The CRS directs, Place Hydrogen Analyzer (2C128B) in service manually per OP 2104.044 section 7.5.

CRITICAL ELEMENTS (C): 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
<u>Examiner's note:</u> This JPM can be given in the simulator or in the control room. If given in the control room then provide the component position cues as required.				
	1. (Step 7.5.1)	Verify CIAS and SIAS not actuated.	Verified per initial conditions that CIAS and SIAS are not actuated.	N/A SAT UNSAT
	2. (Step 7.5.2)	Verify 2RE8271-2 Not aligned for containment oxygen control.	Verified per initial conditions that 2RE8271-2 is NOT aligned for containment oxygen control.	N/A SAT UNSAT
	3. (Step 7.5.3)	Verify CAMS Unit 2RE-8231-1 in service. Examiner's cue: "pump on" alarm light ON. "low flow" alarm light OFF. "filter not in motion" alarm light OFF.	On panel 2C25, observed "pump on", "low flow" and "filter not in motion" alarm lights OFF for 2RE8231-1.	N/A SAT UNSAT
	4. (Step 7.5.4)	Stop Radiation Monitor 2RE-8271-2 Sample Pump (2C-48). Examiner's Cue: "Pump On" light OFF "Low Flow" light ON	On panel 2C25, placed handswitch for 2RE-8271-2 sample pump in STOP. Observed "Pump On" light OFF; "Low Flow" light ON.	N/A SAT UNSAT
(C)	5. (Step 7.5.5)	Close CAMS Isolation Supply and Return valves. Examiner's Cue: 2SV-8262-2/8260-2 has green light ON; red light OFF	On panel 2C16, placed handswitch for CAMS Isolation 2SV-8262-2/8260-2 in CLOSE. Observed green light ON; red light OFF over handswitch for 2SV-8262-2/8260-2.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Step 7.5.6)	Open CNTMT Air Sample Supply valve (2SV-8261-2). Examiner's Cue: 2SV-8261-2 has green light OFF and red light ON	On panel 2C16, placed key operated handswitch for 2SV-8261-2 in OPEN <u>OR</u> Verified 2SV-8261-2 open. Observed green light OFF; red light ON over handswitch for 2SV-8261-2.	N/A SAT UNSAT
(C)	7. (Step 7.5.6)	Open CNTMT Air Sample Supply valve (2SV-8263-2). Examiner's Cue: 2SV-8263-2 has green light OFF and red light ON	On panel 2C16, placed key operated handswitch for 2SV-8263-2 in OPEN <u>OR</u> Verified 2SV-8263-2 open. Observed green light OFF; red light ON over handswitch for 2SV-8263-2.	N/A SAT UNSAT
(C)	8. (Step 7.5.6)	Open CNTMT Air Sample Return valve (2SV-8259-1). Examiner's Cue: 2SV-8259-1 has green light OFF and red light ON	On panel 2C17, placed key operated handswitch for 2SV-8259-1 in OPEN <u>OR</u> Verified 2SV-8259-1 open. Observed green light OFF; red light ON over handswitch for 2SV-8259-1.	N/A SAT UNSAT
(C)	9. (Step 7.5.6)	Open CNTMT Air Sample Return valve (2SV-8265-1). Examiner's Cue: 2SV-8265-1 has green light OFF and red light ON	On panel 2C17, placed key operated handswitch for 2SV-8265-1 in OPEN <u>OR</u> Verified 2SV-8265-1 open. Observed green light OFF; red light ON over handswitch for 2SV-8265-1.	N/A SAT UNSAT
(C)	10. (Step 7.5.7)	Open CNTMT Air Sample Valve (2SV-8346-2). Examiner's Cue: 2SV-8346-2 has green light OFF and red light ON	On panel 2C33, placed handswitch for 2SV-8346-2 in OPEN. Observed green light OFF; red light ON over handswitch for 2SV-8346-2.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	11. (Step 7.5.8)	Place Hydrogen Purge Manifold Position switch (2HS-8337) in 6 - ALL VALVES CLOSED. Examiner's Cue: 2HS-8337 is in position 6 - ALL VALVES CLOSED.	On panel 2C25, rotated hand switch until 2HS-8337 is in position 6 - ALL VALVES CLOSED.	N/A SAT UNSAT
(C)	12. (Step 7.5.9)	Verify 2C128B Backup Sample Valve (2SV-8341-2) closed. Examiner's Cue: 2SV-8341-2 has green light ON and red light OFF	On panel 2C184, verified 2SV-8341-2 closed. Observed green light ON; red light OFF above handswitch for 2SV-8341-2.	N/A SAT UNSAT
<u>EXAMINER'S NOTE:</u> In the following step, placing handswitch to open will cause red light to come on. Verification of solenoid open will occur when flow is verified.				
(C)	13. (Step 7.5.10)	Open 2C128B Isolation valves (2SV-8266-2/8264-2). Examiner's Cue: 2SV-8266-2/8264-2 have red light ON	On panel 2C184, placed handswitch 2HS-8266-2 for 2SV-8266-2/8264-2 in OPEN. Observed red light ON above 2HS-8266-2.	N/A SAT UNSAT
(C)	14. (Step 7.5.11)	Start 2C128B Sample Pump (2P-163). Examiner's Cue: Hand switch for 2C128B is in Start. <u>When hand Switch released:</u> Examiner's Cue: Hand switch for 2C128B has returned to center position.	On panel 2C184, placed and held 2HS-8272-2 in START. After approximately 5 seconds, released 2HS-8272-2.	N/A SAT UNSAT
(C)	15. (Step 7.5.12)	Verify 2C128B Sample Pump (2P-163) running.	On panel 2C184, observed green light OFF and red light ON above handswitch for 2P-163.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	16. (Step 7.5.13)	Check analyzer flow (on panel 2C182A) Examiner's Cue: Sample flow on 2FI-8385 is reading 0.35 SCFM and CRS will take care of adding reading to CBOT log.	On panel 2C182A, observed flow on 2FI-8385 > 0.282 SCFM. Stated need to add to CBOT log.	N/A SAT UNSAT
<u>Examiner's note:</u> The rest of the steps in this section are directed to the WCO in the auxiliary building to verify local operation of the Hydrogen Analyzer, these steps are not required to be completed for this JPM.				
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE**EXAMINER'S COPY****JPM INITIAL TASK CONDITIONS:**

The hydrogen analyzer system is aligned using OP 2104.044 Attachment "A".
Service water is available.
Containment building recirculation fans are in operation.
Power is available to the analyzers.
CAMS unit 2RE-8271-2 is NOT aligned for containment building oxygen control.
CIAS or SIAS is not present.

INITIATING CUE:

The CRS directs, Place Hydrogen Analyzer (2C128B) in service manually per OP 2104.044 section 7.5.

JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****JPM INITIAL TASK CONDITIONS:**

The hydrogen analyzer system is aligned using OP 2104.044 Attachment "A".
Service water is available.
Containment building recirculation fans are in operation.
Power is available to the analyzers.
CAMS unit 2RE-8271-2 is NOT aligned for containment building oxygen control.
CIAS or SIAS is not present.

INITIATING CUE:

The CRS directs, Place Hydrogen Analyzer (2C128B) in service manually per OP 2104.044 section 7.5.

JOB PERFORMANCE MEASUREUNIT: 2 REV #: 001 DATE: _____SYSTEM/DUTY AREA: Incore Instrumentation SystemTASK: Remove An Incore Detector From ScanJTA#: ANO2ROPMSNORM4KA VALUE RO: 3.1 SRO: 3.5 KA REFERENCE: 015 A2.02APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: XAPPROXIMATE COMPLETION TIME IN MINUTES: 15 MinutesREFERENCE(S): OP 2105.013 Rev. 23-00-0

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.

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 forms 2105.013B and 2105.013C.

CRITICAL ELEMENTS (C): 3, 5, 6, 8

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
NOTES: 1. If keyboard used, an <ENTER> must follow the Turn-On-Code (TOC) entry 2. Examinee may elect to go directly to step by typing the appropriate TOC (Turn-On-Code) in from PMS screen, bypassing Main Menu(s). 3. Form 2105.013B section 1.1 already filled out by CRS. 4. JPM steps 1-3 are for form 2105.013.				
	1. (Step 1.2.1)	Identify Incore location to be removed from scan on form 2105.013B.	Entered Incore location NE02-1 into space provided on form 2105.013B and initialed step.	N/A SAT UNSAT
	2. (Step 1.2.2)	Perform CHECK program using N9 function. Examiner's Cue: Go through step sequence to the point of actually printing out report. But, do not print N9 report. Examiner's Note: When examinee gets to the point of selecting the printer, give N9 report labeled "Before" 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. (Step 1.2.3)	Using N9 report, verify compliance with SAR section 7.7.1.1.7 assuming the detector will be removed from scan. EXAMINERS NOTE: 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. (Step 1.1)	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. (Step 1.2)	Use RIS function to select E02-1 for removal from scan	At PMS terminal/screen examinee performed the following evolution using touch-screen on Panel 2C03 AND/OR typing in TOCs using keyboard on PMS terminal: 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. (Step 1.3)	Use RID function to remove E02-1 from scan	<p>At PMS terminal/screen examinee performed the following evolution using touch screen on 2C03 AND/OR typing in TOCs at keyboard on Panel 2C04.</p> <p>RID (Delete)</p> <p>↓</p> <p>E02-1 (Enter Grid Loc-Level)</p> <p><ENTER></p> <p>↓</p> <p>Yes (Are you sure DEL is REQ'D (Y/N))</p> <p><ENTER></p> <p>Initialed Step 1.3 of 2105.013C.</p>	N/A SAT UNSAT
	7. (Step 1.4)	<p>Perform CHECK program using N9 function</p> <p>Examiner's Cue: Go through step sequence to the point of actually printing out report. But, do not print N9 report.</p> <p>Examiner's Note:</p> <p>When examinee gets to the point of selecting the printer, give N9 report labeled "After" to examinee.</p> <p>DO NOT ALLOW EXAMINEE TO PRINT REPORT!</p>	<p>At PMS terminal/screen/keyboard on 2C03 examinee performed the following evolutions to obtain CHECK program printout using COLSS N9 function:</p> <p>Touched COLSS button on PMS touch screen OR typed COLSS <Enter> on keyboard rom PMS terminal.</p> <p>Touched N9 button on PMS touch screen OR typed N9 <Enter> on keyboard for PMS terminal.</p> <p>Obtained CHECK program printout and initialed Step 1.4 of 2105.013C.</p>	N/A SAT UNSAT
(C)	8. (Step 1.4)	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.	<p>Examinee used the N9 report to determine that:</p> <p>Incore detector E02-1 has been removed from scan</p> <p><u>AND</u></p> <p>The requirements of SAR 7.7.1.1.7 are still being met.</p> <p>Examinee initialed 2105.013C Step 1.4.</p>	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
9. (Step 1.5)	Perform Independent Verification that Incore detector E02-1 is removed from scan. Examiner's 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. Examinee initialed 2105.013C Step 1.5.	N/A SAT UNSAT	
10. (Step 1.6)	Submit WR/WO for deleted incore and entered Work request number. Examiner's CUE: Inform examinee that the P&S liason has submitted Work Request WR 12345 on Incore detector E02-1.	Discussed need to submit WR/WO (Work Request) for deleted incore instrument. Examinee will write 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 forms 2105.013B and 2105.013C.

NOTE: Give examinee only forms 2105.013B and 2105.013C at this time.

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 forms 2105.013B and 2105.013C.

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 05 DATE: _____SYSTEM/DUTY AREA: Diesel Generator SystemTASK: Start up the AAC diesel generator manually locally (Alternate Success Path)JTA#: ANO2-AO-AACDG-OFFNORM-18KA VALUE RO: 3.3 SRO: 3.4 KA REFERENCE: 064 A3.06APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK LOCATION: INSIDE CR: X OUTSIDE CR: _____ 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 MinutesREFERENCE(S): OP 2104.037 Rev 008-00-0

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.

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. Battery 2D55 has been disconnected from the AAC DC Distribution Panel, 2D40.
2. The reactor has tripped due to a loss of off-site power.
3. Both emergency diesel generators are tied to their respective buses.
4. The AAC diesel generator DC Distribution panel 2D40 has no power.
5. The 13.8 kV yard bus is de-energized.

TASK STANDARD: The AAC Diesel has been started and is at 4160 V and 900 rpm with the output breaker (2A-1001) closed. The 480V bus 2B16 has been powered from the AAC diesel generator.

TASK PERFORMANCE AIDS: OP 2104.037 Exhibit 1

JOB PERFORMANCE MEASURE**INITIATING CUE:**

The CRS directs, "Start the AAC Diesel Generator using OP 2104.037 Exhibit 1. Bring the AACG Diesel up to rated speed and voltage carrying house loads."

CRITICAL ELEMENTS (C): 5, 8, 9, 10

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	1. (Step 1.0)	Place "Local/Remote" switch in LOCAL. (2HS-7118) <u>Examiner's CUE:</u> "Local/Remote" switch indicates LOCAL.	On panel 2C-440, placed the "Local/Remote" switch in LOCAL. (2HS-7118)	N/A SAT UNSAT
<u>EXAMINER'S NOTE:</u> This failure of the AAC diesel to start by the local/remote switch will cause the examinee to start the AAC diesel by an alternate means. Provide the following cue after ≈ 35 seconds when the local start switch is taken to START. <u>Examiner's CUE:</u> There has been NO change in AAC diesel generator frequency or noise level.				
	2. (Step 2.0)	Start the AAC Diesel using the local start switch. (2HS-7117) <u>Examiner's CUE:</u> The local start switch is in start.	On panel 2C-440 turned the local control switch (2HS-7117) Clockwise to start and held switch in START for about 35 seconds.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go inside the AAC diesel engine room.				
	3. (Step 3.1)	Open the pre-lube pump solenoid (2SV-7224) for >10 seconds. <u>Examiner's CUE:</u> 2SV-7224 manual operating stem has been rotated and starting air noise is heard.	On the south side of the engine at the generator end, rotated the manual operator of 2SV-7224 Clockwise to open for >10 seconds.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
	4. (Step 3.2)	Close the pre-lube solenoid (2SV-7224). <u>Examiner's CUE:</u> 2SV-7224 manual operating stem has been rotated and air noise is stopped.	After > 10 seconds on the south side of the engine at the generator end, rotated the manual operator of 2SV-7224 Counterclockwise to close.	N/A SAT UNSAT
(C)	5. (Step 3.3)	Open EITHER of the air start solenoid valves: - 2SV-7222 <u>OR</u> - 2SV-7223 <u>Examiner's CUE:</u> 2SV-7222 (2SV-7223) manual operating stem has been rotated and engine speed and noise level increases.	On the south side of the engine at the generator end, rotated the manual operator of one of the air start solenoid valves CW to open. Looked for an increase in engine noise and/or discharge of oil and air from the air start motors.	N/A SAT UNSAT
	6. (Step 3.4)	Close the air start solenoid valve that was opened. <u>Examiner's CUE:</u> 2SV-7222 (2SV-7223) manual operating stem has been rotated to its original position.	On the south side of the engine at the generator end, rotated the manual operator for the air start solenoid valve CCW to close.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go inside the AAC diesel control panel room.				
	7. (Step 4.0)	Verify the AAC Diesel Generator is at rated speed and voltage. <u>Examiner's CUE:</u> Frequency indicates 60 Hz and voltage indicates 4160V.	On panel 2C-440, observed generator frequency at 60 Hz and voltage at 4160V.	N/A SAT UNSAT
<u>EXAMINER'S NOTE:</u> With no DC control power the breakers will require manual operation. In addition, normal electrical breaker indications will NOT be present. Therefore, for each breaker, the positive cues in the following steps should be provided when the breaker is checked.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
Examiner's Note: When 2A1001 cubicle door is attempted to be opened, inform examinee that the cubicle door <u>shall not be opened</u> and give the examinee the pictures of the inside of the breaker cubicle.				
(C)	8. (Step 5.1)	Close the AAC Generator Output Breaker (2A-1001). <u>EXAMINER CUES:</u> There is no lamp indication on the breaker cubicle door. When first checked, the breaker mechanical indicator shows green open. The mechanical closing spring charged indicator shows yellow charged. When the mechanical push button is pushed, the mechanical indicator changes to red closed.	Using the picture of the inside the 2A-1001 breaker cubicle door, point out the following. 1. Breaker mechanical indicator indicates open (green). 2. Closing springs charged indicator showed yellow charged. Pushed the mechanical breaker close push button Observed breaker closed with the mechanical breaker position showing red closed.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go to the upstairs area of the switchgear room.				
(C)	9. (Step 5.2)	Open London Feed to MCC 2B161 breaker 2B16-A1. <u>Examiner's CUES:</u> 2B16-A1 indicates CLOSED (Red) When the red mechanical (push-to-open) trip button is pushed, the breaker mechanical position indicator shows green open.	Observed the mechanical position indicator breaker for 2B16-A1 to show red closed. Opened the breaker by pushing the red mechanical (push-to-open) trip button. When red mechanical (push-to-open) trip button has been pushed, observed the mechanical position indicator showing green open.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
EXAMINER'S NOTE: <p>The mechanical breaker close push button is covered by a metal plate that is bolted over the push button. The plate has a small hole approximately 0.125" in diameter. The button can be pushed with the tip of a pen or some other object small enough to go through the hole.</p> <p>When the breaker closes 2B116 (the 480 V MCC) is energized and the florescent lights in the east end of the switchgear room come on.</p> <p>When 2B116 is energized the battery charger starts and all DC loads are restored. This would include the electrical indication for the three breakers that have been operated.</p>				
(C)	10. (Step 5.3)	Close "Load Center 2B16 Supply" from the AAC diesel (2B16-B1). Examiner CUES: The mechanical breaker indication shows green (open). The mechanical closing springs indicator indicates yellow (charged). When the mechanical push-to-close button is pushed the mechanical breaker position indicator shows red (closed).	When the breaker is first checked, observed the mechanical position indicator for breaker 2B16-B1 showing green (open). Observed the mechanical springs charged indicator showing yellow (springs charged). Pushed the mechanical push-to-close push button. After the mechanical breaker push-to-close push button has been pushed, observed the mechanical breaker position indicator showing red (closed).	N/A SAT UNSAT
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

The reactor has tripped due to a loss of off-site power.
Both emergency diesel generators are tied to their respective buses.
Battery 2D55 has been disconnected from the AAC DC Distribution Panel, 2D40.
The AAC diesel generator DC Distribution panel 2D40 has no power.
The 13.8 kV yard bus is de-energized.

INITIATING CUE:

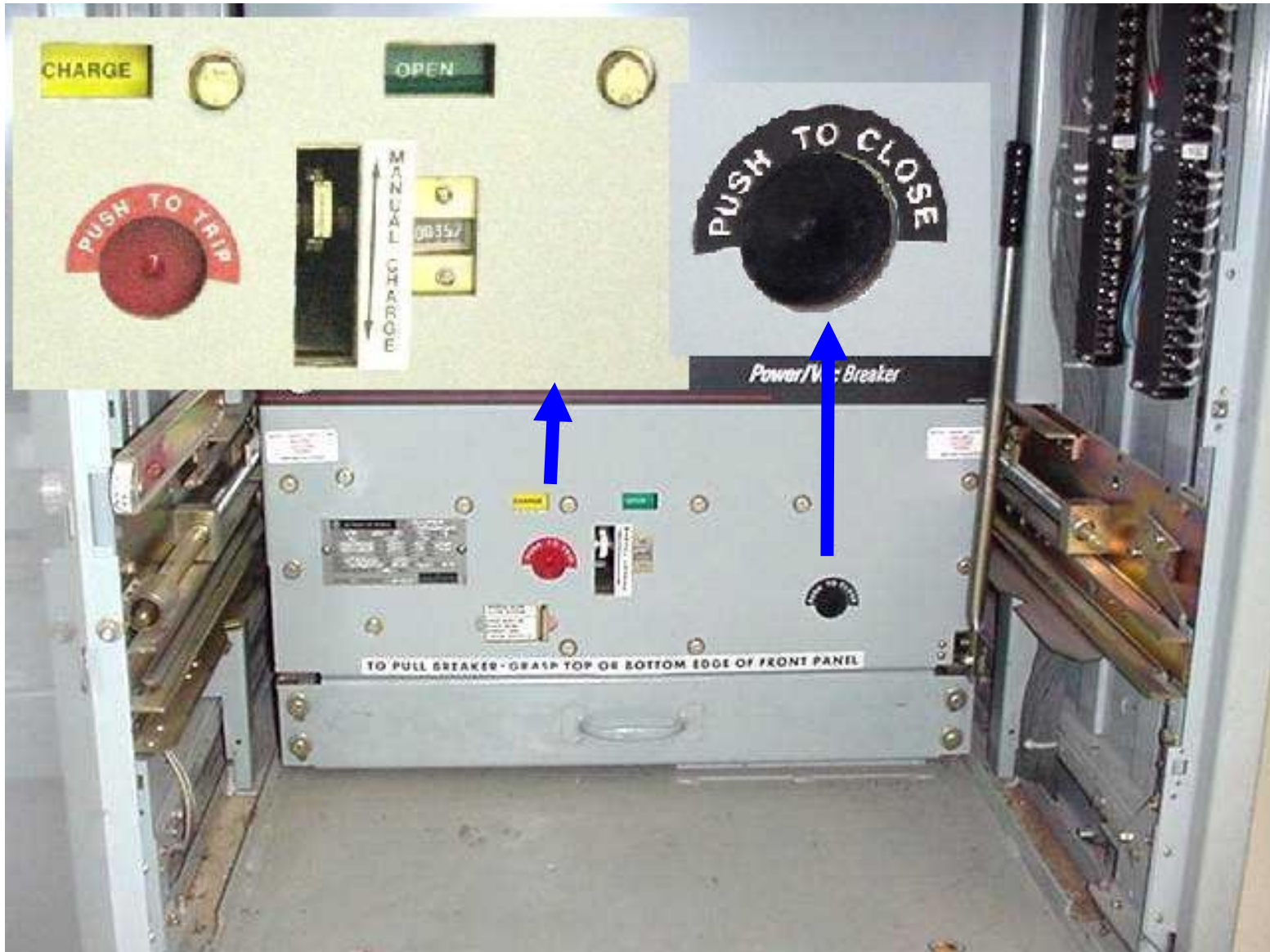
The CRS directs, "Start the AAC Diesel Generator using OP 2104.037 Exhibit 1. Bring the unit up to rated speed and voltage carrying house loads."

JOB PERFORMANCE MEASURE**EXAMINEE'S COPY****JPM INITIAL TASK CONDITIONS:**

The reactor has tripped due to a loss of off-site power.
Both emergency diesel generators are tied to their respective buses.
Battery 2D55 has been disconnected from the AAC DC Distribution Panel, 2D40.
The AAC diesel generator DC Distribution panel 2D40 has no power.
The 13.8 kV yard bus is de-energized.

INITIATING CUE:

The CRS directs, "Start the AAC Diesel Generator using OP 2104.037 Exhibit 1. Bring the unit up to rated speed and voltage carrying house loads."



JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 001 DATE: _____SYSTEM/DUTY AREA: Chemical and Volume Control SystemTASK: Operate Charging Pump 2P36B Locally During Alternate ShutdownJTA#: ANO2ROCVCSOFFNORM46KA VALUE RO: 3.8 SRO: 3.4 KA REFERENCE: 004 A4.08APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: 30 MinutesREFERENCE(S): AOP 2203.014, Rev. 15-05-0

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.

JOB PERFORMANCE MEASURE**THE EXAMINER SHALL REVIEW THE FOLLOWING WITH THE EXAMINEE:**

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

JPM INITIAL TASK CONDITIONS:

The control room has been evacuated as required by 2203.014, "Alternate Shutdown". Simulate obtaining keys, handheld radio and flashlight from the alternate shutdown locker. Enter controlled access area if necessary, using normal ingress and egress methods and follow all normal procedural controls for radiological, security and other concerns during the performance of this JPM.

TASK STANDARD:

Charging pump (2P36B) has been started from breaker 2B62-A5.

TASK PERFORMANCE AIDS:

2203.014, Alternate Shutdown Section 6, RO 2 Follow-up Actions. Mark through steps 1, 2, 3 and 4 to indicate completion.

SIMULATOR SETUP:

None.

EXAMINER'S NOTES:

JOB PERFORMANCE MEASURE

INITIATING CUE:

The CRS directs, "Perform applicable steps of Alternate Shutdown AOP for RO2, Section 6. Steps 1 through 4 have been completed."

CRITICAL ELEMENTS (C): 3, 4, 6, 8, 9, 10

START TIME: _____

PERFORMANCE CHECKLIST		STANDARDS	(Circle One)	
NOTE: Examinee will enter CAA by normal means. The following actions are performed on the 354' elevation of the auxiliary building.				
	1. (Step 5)	Open breakers 2B62-E4, power to 2CV-4840-2 and 2B62-F2, power to 2CV-4950-2. <u>Examiner's CUE</u> Breaker 2B62-E4 is open. Both red and green lights OFF. Breaker 2B62-F2 is open. Both red and green lights OFF.	At MCC 62, open breakers 2B62-E4, power to 2CV-4840-2 and 2B62-F2, power to 2CV 4950-2. Observed both red and green lights OFF for 2B62-E4, and 2B62-F2.	N/A SAT UNSAT
	2. (Step 6)	Inform RO 1 on radio that power has been removed from 2CV-4950-2. <u>Examiner's CUE:</u> Give the following response when contacted as RO 1: "Understand RWT Suction To Charging Pumps Valve 2CV-4950-2 is de-energized (RO1 step 6)."	Contacted RO 1 by radio and inform that RWT Suction To Charging Pumps valve 2CV-4950-2 is de-energized (RO1 step 6).	N/A SAT UNSAT
NOTE: The following actions would be performed on the 354' elevation of the auxiliary building in the Upper South Piping Penetration Room (USPPR). Area around 2CV 4840-2 may be contaminated and possibly high radiation area, DO NOT ALLOW ENTRY and provide the following cue when candidate starts to perform step.				
(C)	3. (Step 7)	Examiners cue: How would you verify position of valve 2CV 4840-2? After discussion, if correct provide the following: 2CV 4840-2 is OPEN.	Verify 2CV-4840-2 OPEN <u>DISCUSS ONLY:</u> Verify that pointer on valve indicates open. <u>AND/OR</u> Screw threads on the valve stem are at the upper part of the gland packing area (the shiny part of the stem is exposed).	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
Examiner's CUE: After transitioning from previous location, Give the following message: " RO 1 reports on the radio that the BAMT Gravity Feed Outlet valves, 2CV-4920-1 and 2CV-4921-1 are de-energized." The Examinee will then transition to the 386' of the CAA to the Boric Acid Tank Room.				
(C)	4. (Step 8)	Verify 2CV-4920-1 and 2CV-4921-1 are OPEN. <u>Examiner's initial CUE:</u> 2CV-4920-1 and 2CV-4921-1 are CLOSED. <u>Give the following after valve opening simulated:</u> <u>Examiner's CUE:</u> 2CV-4920-1 and 2CV-4921-1 are OPEN.	In Boric Acid Tank Room under each Boric Acid Tank, verified 2CV-4920-1 and 2CV-4921-1 are OPEN by one of the following methods on each valve: Manual engagement lever would be depressed and hand-wheel taken to the open direction until valve travel stopped. <u>AND/OR</u> Verify that pointer on valve indicates open. <u>AND/OR</u> Screw threads on the valve stem are at the upper part of the gland packing area (the	N/A SAT UNSAT
	5. (Step 9)	Inform CRS on radio that BAM Tank Gravity Feed Outlet Valves are OPEN (CRS step 19). Examiner's Cue: "Understand BAM Tank Gravity Feed Outlet Valves are OPEN (CRS step 19)."	Contact CRS on radio and inform that BAM Tank Gravity Feed Outlet Valves are OPEN (CRS step 19).	N/A SAT UNSAT
Examiner's NOTE: Inform the examinee that steps 10 and 11 of section 6 will NOT be performed as part of this JPM. Examiner's CUE: Provide the following message: "CRS reports that the VCT outlet valve 2CV-4873-1 has been de-energized."				
Examiner's NOTE: This valve, 2CV 4873-1 is located on 354' level of the CAA inside the VCT room and is in a locked high radiation area. DO NOT ALLOW ENTRY. Discuss how valve would be verified closed, if entry were made, when outside the room.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	6. (Step 12)	Verify VCT Outlet Valve 2CV-4873-1 is closed. <u>Examiner's CUE:</u> 2CV 4873-1 is CLOSED.	On 354' level inside VCT room, verified 2CV-4873-1 CLOSED by one of the following methods: <u>DISCUSS ONLY</u> Manual engagement lever would be depressed and handwheel taken to the open direction until valve travel stopped. <u>AND/OR</u> Verify that pointer on valve indicates open. <u>AND/OR</u> Screw threads on the valve stem are at the upper part of	N/A SAT UNSAT
	7. (Step 13)	Verify VCT Makeup Isolation Valve 2CV-4941-2 maintained CLOSED. <u>Examiner CUES:</u> 2CV-4941-2 is CLOSED. Instrument Air Supply valve is CLOSED. Air Pressure is VENTED.	On 354' level outside VCT Room, verified 2CV-4941-2 is maintained CLOSED by: Closing Instrument Air Supply valve. <u>AND</u> Venting air pressure off supply regulator.	N/A SAT UNSAT
Examiner's CUE: Inform the examinee that Steps 14 and 15 of Section 6 will NOT be performed as part of this JPM.				
Transition Step: MCC 62 is located on 354' elevation of the CAA.				
	8. (Step 16.A)	Inform TSC that 2P36B is not running. Examiner Cues: "Green light is ON and Red Light is OFF on 2B62-A5." When TSC is contacted provide the following: "Understand Charging Pump 2P36B is not running. Start Charging Pump 2P36B."	At breaker 2B62-A5, observed Green light ON and Red light OFF and informed the TSC Charging Pump 2P36B is NOT running.	N/A SAT UNSAT

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST		STANDARDS		(Circle One)
NOTE:				
If examinee requests Attachment E, Safe Shutdown Systems Checklist step 4.D, provide the following message:				
“Step 4.D states PZR level maintained 29 to 80%.”				
(C)	9. (Step 16.B.1)	Place local/remote handswitch (2HS-4843-2) for 2P36B to LOCAL. <u>Examiner's CUE:</u> Local/remote handswitch in LOCAL.	At breaker 2B62-A5, rotated local/remote handswitch (2HS-4843-2) to LOCAL.	N/A SAT UNSAT
(C)	10. (Step 16.B.2)	Start Charging Pump (2P36B). <u>Examiner's CUE:</u> Handswitch is in START. Green light OFF; Red light ON.	At breaker 2B62-A5, rotated start/stop handswitch (2HS-4844-2) to START. Observed green light OFF, red light ON	N/A SAT UNSAT
Examiner's Note: When examinee starts 'B' Charging Pump this JPM has completed. There are additional steps in the attachment that are not necessary to perform for this JPM.				
END				

STOP TIME: _____

JOB PERFORMANCE MEASURE

EXAMINER'S COPY

JPM INITIAL TASK CONDITIONS:

The control room has been evacuated as required by 2203.014, "Alternate Shutdown". Simulate obtaining keys, handheld radio and flashlight from the alternate shutdown locker. Enter controlled access area if necessary, using normal ingress and egress methods and follow all normal procedural controls for radiological, security and other concerns during the performance of this JPM.

INITIATING CUE:

The CRS directs, "Perform applicable steps of Alternate Shutdown AOP for RO2, Section 6. Steps 1 through 4 have been completed."

JOB PERFORMANCE MEASURE

EXAMINEE'S COPY

JPM INITIAL TASK CONDITIONS:

The control room has been evacuated as required by 2203.014, "Alternate Shutdown". Simulate obtaining keys, handheld radio and flashlight from the alternate shutdown locker. Enter controlled access area if necessary, using normal ingress and egress methods and follow all normal procedural controls for radiological, security and other concerns during the performance of this JPM.

INITIATING CUE:

The CRS directs, "Perform applicable steps of Alternate Shutdown AOP for RO2, Section 6. Steps 1 through 4 have been completed."

JOB PERFORMANCE MEASURE

UNIT: 2 REV #: 008 DATE: _____SYSTEM/DUTY AREA: Emergency and Abnormal OperationsTASK: Perform local operations of the proportional heatersJTA #: ANO2ROEOPAOPOFFNORM126KA VALUE RO: 3.3 SRO: 3.6 KA REFERENCE: 010 A2.01APPROVED FOR ADMINISTRATION TO: RO: X SRO: XTASK 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: X LAB: _____TESTING METHOD: SIMULATE: X PERFORM: _____APPROXIMATE COMPLETION TIME IN MINUTES: 15 minutesREFERENCE(S) OP 2203.014, Attachment G Rev. 015-05-0

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 _____ 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: _____

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. A fire has occurred in the Control Room rendering the Control Room uninhabitable.
2. RCS pressure is 1840 psia.
3. Pressurizer Level is 44%

TASK STANDARD:

Proportional heater control has been established locally at 2C117 and 2C118 and the heaters have been energized.

TASK PERFORMANCE AIDS:

1. OP 2203.014, Attachment G

JOB PERFORMANCE MEASURE

INITIATING CUE: The CRS provides the following direction:

Energize pressurizer proportional heaters locally and raise pressurizer pressure as directed by TSC using AOP 2203.014, Attachment G

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

START TIME: _____

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
<u>TRANSITION NOTE:</u> Go to the lower south electrical penetration room. NOTE log onto RWP prior to entry into this room. Examiner my prompt examinee prior to transitioning to LSEPR, if desired.				
	1. (Step 1.A)	Verify "PZR PROP HTR CONT SW" (2HS-4640B) position. <u>Examiner's CUE:</u> 2HS-4640B indicates OFF.	On panel 2C117, verified 2HS-4640B in OFF.	N/A SAT UNSAT
	2. (Step 1.A)	Verify "PZR PROP HTR CONT SW" (2HS-4641B) position. <u>Examiner's CUE:</u> 2HS-4641B indicates OFF.	On panel 2C118, verified 2HS-4641B in OFF.	N/A SAT UNSAT
(C)	3. (Step 1.B)	Place "PZR PROP HTR SEL SW" (2HS-4640A) in EMERG. <u>Examiner's CUE:</u> 2HS-4640A indicates EMERG.	On panel 2C117, verified key inserted in key switch. Rotated 2HS-4640A to EMERG position.	N/A SAT UNSAT
(C)	4. (Step 1.B)	Place "PZR PROP HTR SEL SW" (2HS-4641A) in EMERG. <u>Examiner's CUE:</u> 2HS-4641A indicates EMERG.	On panel 2C118, verified key inserted in key switch. Rotated 2HS-4641A to EMERG.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go to the 2B5/2A3 Switchgear room.				

JOB PERFORMANCE MEASURE

PERFORMANCE CHECKLIST			STANDARDS	(Circle One)
(C)	5. (Step 1.C)	Close breaker 2B523 "PRESSURIZER PROPORTIONAL HEATER 2SCR-1". <u>Examiner's CUE:</u> Pushed 'Close' push button. Breaker 2B523 red CLOSED flag showing.	On load center 2B5, depressed breaker 2B523 "CLOSE" push button. Observed breaker red "CLOSED" flag indicated.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go to the 2B6/2A4 switchgear room.				
(C)	6. (Step 1.D)	Close breaker 2B623 "PRESSURIZER PROPORTIONAL HEATER 2SCR-2" <u>Examiner's CUE:</u> Pushed 'Close' push button. Breaker 2B623 red CLOSED flag showing.	On load center 2B6, depressed breaker 2B623 "CLOSE" push button. Observed breaker red "CLOSED" flag indicated.	N/A SAT UNSAT
<u>TRANSITION NOTE:</u> Go to the lower south electrical penetration room.				
<u>EXAMINER'S NOTE:</u> Examinee may contact TSC and state that they are standing by to energize the proportional heaters. If this is communicated to the TSC, provide direction to energize the heaters and stand by.				
(C)	7. (Step 1.E)	Energize all proportional heaters. <u>EXAMINER'S CUE:</u> 2HS-4640B is in 'ON' position. 2HS 4641B is in "ON" position.	On panel 2C117, placed "PZR PROP HTR CONT SW" (2HS-4640B) in ON. On panel 2C118, placed "PZR PROP HTR CONT SW" (2HS-4641B) in ON.	N/A SAT UNSAT
END				

STOP
TIME: _____

JOB PERFORMANCE MEASURE

Examiner's Copy

JPM INITIAL TASK CONDITIONS

1. A fire has occurred in the Control Room rendering the Control Room uninhabitable.
2. RCS pressure is 1840 psia.
3. Pressurizer Level is 44%

INITIATING CUE:

The CRS provides the following direction:

“Energize pressurizer proportional heaters locally and raise pressurizer pressure as directed by TSC using AOP 2203.014, Attachment G”

JOB PERFORMANCE MEASURE

Examinee's Copy

JPM INITIAL TASK CONDITIONS

4. A fire has occurred in the Control Room rendering the Control Room uninhabitable.
5. RCS pressure is 1840 psia.
6. Pressurizer Level is 44%

INITIATING CUE:

The CRS provides the following direction:

“Energize pressurizer proportional heaters locally and raise pressurizer pressure as directed by TSC using AOP 2203.014, Attachment G”

Facility: ANO-2	Scenario No.: 1 (New)	Op-Test No.: 2006-1	
Page 1			
Examiners:	Operators:		
Initial Conditions: 20% MOL, All Engineered Safety Features systems are in standby. Plant startup following a five day stator water cooling outage. 2P27, MFP standby lube oil pump tagged out for maintenance. RED Train Maintenance Week.			
Turnover: 20%. 250 EFPD. EOOS indicates 'Minimal Risk.' Plant Startup in progress; OP 2104.004 section 9, raising power above 20%, is the controlling procedure. 2P27, MFP standby lube oil pump tagged out for maintenance. RED Train Maintenance Week.			
Event No.	Malf. No.	Event Type*	Event Description
1	Raise Power above 20%	R (ATC)	Raise reactor and turbine power.
2 ~T+20	XRCCHAPCNT	I (ATC)	Pressurizer control channel pressure fails high.
3 ~T+25	XSG2LT10312	I (CBOT)	Steam generator level instrument fails low. Event is inserted after PZR control channel fails high.
4 ~T+37	CCWFAILBAUTO CCW2P33CPWR	C (CBOT)	Loop II Component Cooling Water pump 'C' Trips and 'B' Component Cooling Water pump fails to automatically start.
5 ~T+38	RCP2P32AASLK	M (ATC) N (CBOT)	Reactor Coolant System inter-system leak into Component Cooling Water system resulting in Loss of Coolant Accident and Safety Injection Actuation System (post reactor trip).
6	BUS2H2	M (ALL)	2H2 lockout. Loss of 2 Reactor Coolant Pump's and one condenser circulating water pump.
7	RPSRXAUTO	C (ATC)	Reactor Protection System fails to automatically trip the reactor on loss of Reactor Coolant Pumps.
8	XMSHDRPRS	I (CBOT)	Steam Dump and Bypass Control System fails to automatically open bypass and dump valves to control Steam Generator pressure.
9	HPI2P89AFAL	C (CBOT)	2P89A, 'A' High Pressure Safety Injection pump fails to auto-start.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

Scenario #1 Objectives

- 1) Evaluate individual response to a failure of a Pressurizer pressure instrument.
- 2) Evaluate individual response to a failure of a Steam Generator Safety Channel Level detector.
- 3) Evaluate individual response to an inter-system loss of coolant event.
- 4) Evaluate individual ability to perform an escalation in plant power.
- 5) Evaluate individual ability to mitigate failure of a non-vital 6900 VAC bus.
- 6) Evaluate individual ability to monitor operation of ESF equipment.
- 7) Evaluate individual response to a failure Reactor Protection System.
- 8) Evaluate individual response to a failure of automatic operation of Steam dump and bypass control system.
- 9) Evaluate individual response to a failure of a running Component Cooling Water Pump.

SCENARIO #1 NARRATIVE

Simulator session begins with the plant at 20% power steady state. The plant is ready for a power escalation to 100% following completion of required Core Operating Limits Supervisory System (COLSS) surveillances. 2P27, Main feed pump standby lube oil pump is tagged out for maintenance.

When the crew has completed their control room walk down and brief, the crew should begin a power escalation following the reactivity control plan provided.

When the required reactivity manipulation is completed, the Channel '1' Pressurizer, PZR, pressure control channel will fail high. This will result in both normal spray valves opening causing actual PZR pressure to lower. AOP 2203.018, PZR Systems Malfunctions, will be entered and actions directed by the CRS. The ATC operator will verify that the other pressure control channel is reading correctly and select channel '2' for control. The CBOT will take the Steam Dump and Bypass Control System, SDBCS, master controller to 'AL' and adjust the set point to 1000 psia. If no action is taken, the plant will trip when PZR pressure rises above 2362 psia.

5 minutes after the 'A' PZR pressure transmitter fails, 'A' Steam Generator level transmitter will fail low. The ATC/CBOT will announce Trip and Pretrip alarms on 'B' PPS channel. The CRS will refer to the ACA for RPS Pretrip-Trip alarms and Technical Specifications and direct that points on 'B' channel PPS for A SG level low, A SG level high, A SG Δ P - EFAS 1 must be bypassed.

12 minutes after the 'A' SG level transmitter fails, 'C' component cooling water pump trips and 'B' fails to automatically start. The ATC will announce the 'low CCW flow to RCP's' alarms on 2K11. The CRS will enter RCP emergencies AOP and direct actions to be completed. The CBOT will manually start 'B' CCW pump and verify CCW flow to the RCP's by observing that the Alarms on 2K11 clear.

SCENARIO #1 NARRATIVE (continued)

One minute after 'B' CCW pump is started, a RCS leak into CCW from 'A' RCP will start. The ATC will announce the 'process liquid radiation High' alarm will come in due to Loop 2 CCW radiation levels exceeding the set point. The CBOT may observe loop 2 CCW surge tank level rising and announce it when placing 'B' CCW pump in service. The CRS will enter OP2203.016, excess RCS leakage AOP and direct actions. The CBOT will align loop 2 CCW surge tank vent to the gas collection header and monitor RCP seal performance. The ATC will isolate letdown and verify that the leak into CCW is not from the letdown heat exchanger. The plant startup will be terminated and plans made to take the unit off line.

When the actions for a RCS leak into CCW are completed, a lockout will occur on 2H2 and result in DNBR trips on all four CPC's without a Reactor trip due to a failure of RPS to automatically trip the reactor. The ATC will manually trip the reactor.

Following the Reactor trip, the main steam pressure input to the SDBCS master controller will fail low. This will prevent the SDBCS from automatically opening valves to the condenser to control Steam Generator pressure. The RCS will heat up until the Main Steam Safety Valves open to control pressure. The CBOT will manually control steam pressure by taking manual control of the SDBCS valves from 2C04 and maintain the pressure band given by the CRS.

Also post trip the RCS to CCW leak will be raised to 250gpm. The ATC will secure all four RCP's. The CBOT will manually isolate CCW to containment to confine the leak to containment and isolate the controlled bleed off relief valve to the quench tank to minimize heat up of the RCP seals, upon direction from the CRS. These actions will be completed before Standard Post Trip Actions, SPTA's, are started.

The crew will assess safety functions by completing SPTA's, diagnose a loss of coolant accident and enter the LOCA EOP 2202.003. The CRS will direct the ATC to cool down the RCS. The ATC will cool down the RCS using the SDBCS bypass valves to the condenser and plot and record the cooldown using standard attachments 1 and 8.

When SIAS is actuated, 'A' High Pressure Safety Injection, HPSI, pump will fail to automatically start. The CBOT will manually start 'A' HPSI pump from 2C17.

Simulator Instructions for Scenario 1

Brief crew before simulator session starts of initial conditions and allow time for reactivity brief before entering simulator.

Reset simulator to MOL 20% power IC steady state.

Markup OP 2102.004, power operations up to step 9.1.

Ensure that AACG is secured and annunciators clear.

Ensure hotwell level is ~80%.

Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.

Swing ESF equipment aligned to the RED train.

'B' CCP lead charging pump.

2PCV0231, Gland sealing steam pressure control valve failed closed.

T1, T2, T4, T6 set to false.

T3 set to "qh4r5228", 'B' CCW pump red light ON

T5 set to RXTRP, Reactor Trip

Event No.	Malf. No. / Trigger Number	Value/ Ramp Time	Event Description
1	Raise Power above 20%		No malfunctions inserted in event #1.
2	XRCCHAPCNT Trigger = T1	2500/ 0.0MIN	Pressurizer control channel pressure fails high.
3	XSG2LT10312 Trigger = T6	0.0	Steam generator level instrument fails low.
4	CCWFAILBAUTO CCW2P33CPWR Trigger=T2	TRUE	Loop II Component Cooling Water pump 'C' Trips and 'B' Component Cooling Water pump fails to automatically start.
5	RCP2P32AASLK Trigger = T3 with 1 minute delay	50 / 0.0 MIN (250 post trip)	Reactor Coolant System inter-system leak into Component Cooling Water system initial value 50 gpm. Raise LKRT to 250 gpm leak post reactor trip.
6	BUS2H2 Trigger = T4	TRUE	2H2 lockout. Loss of 2 Reactor Coolant Pump's and one condenser circulating water pump.
7	RPSRXAUTO No Trigger	TRUE	Reactor Protection System fails to automatically trip the reactor on loss of Reactor Coolant Pumps.
8	XMSHDRPRS Trigger = T5	750 / 0.0MIN	Input pressure to Steam Dump and Bypass Control System master controller fails low.
9	HPI2P89AFAL No trigger	TRUE	2P89A, 'A' High Pressure Safety Injection pump fails to auto-start.

Simulator Instructions for Scenario 1

Brief crew of initial plant conditions before entering simulator. Allow crew to complete reactivity and power escalation brief before entering simulator.

Cued by lead Trigger T1 Channel 1 PZR pressure transmitter fails High.
examiner

Cue: Report that I & C planner will begin planning work on failed PZR pressure instrument.

At T= 5 Trigger T6 'A' steam generator level transmitter fails low.
minutes after
T1

Cue: As Work Week Manager, report that I&C is developing a work package to repair transmitter.

CUED by Trigger T2 'C' CCW pump trips and 'B' CCW pump fails to start.
Lead
Examiner
~T=37

Cue: As AO, report that 'C' CCW pump breaker is tripped open and the 'C' CCW pump motor is extremely hot to touch.

One minute Trigger T3 RCS to CCW leakage @ 50 gpm.
after 2P33B
is started.

**Cue: As Auxiliary Operator, maintain loop 2 surge tank within level band given by CRS.
As Chemistry, acknowledge need to sample CCW for activity.
As RP, acknowledge need to perform surveys and post as required.**

CUED by Trigger T4 Lockout on 2H2.
Lead Failure of RPS to automatically actuate.
Examiner
~13 minutes
after T3 but
BEFORE
manual trip is
initiated.

**Cue: As Auxiliary Operator, report that lockout on 2H2 is due to a ground fault relay trip on 2H2.
As work week manager, report that a planning team has been assembled to determine failure.**

Simulator Instructions for Scenario 1

Reactor Trip	Trigger T5	SDBCS main steam pressure input to master controller.
Reactor Trip	No trigger	Raise RCS to CCW Leakage to 250 gpm.
SIAS Actuation	No trigger	'A' HPSI pump fails to start following SIAS actuation signal.

Op-Test No.: 1			Scenario No.: 1			Event No.: 1		
Event Description: Plant power escalation from 20%.								
Time		Position		Applicant's Actions or Behavior				
		ALL		Crew will conduct brief for power increase.				
		CRS		Implement normal operating procedure 2102.004, power operations section 9.0. <ul style="list-style-type: none"> • Use Attachment A for ASI control during power escalation. • Monitor ASI AND AZ Tilt as calculated by COLSS and compare to CPC's. 				
		CRS		Direct CBOT to monitor symmetrical LP Turbine steam inlet ΔT during power escalation: <ul style="list-style-type: none"> • MSR 2E-12B RS to LPT B Temp (T0500) OR 2TRS-0211, point 29 • MSR 2E-12B RS to LPT A Temp (T0447) OR 2TRS-0211, point 30 • MSR 2E-12A RS to LPT A Temp (T0440) OR 2TRS-0211, point 31 • MSR 2E-12A RS to LPT B Temp (T0450) OR 2TRS-0211, point 32 				

Op-Test No.: 1			Scenario No.: 1			Event No.: 1		
Event Description: Plant power escalation from 20%.								
Time		Position		Applicant's Actions or Behavior				
		CRS		Direct ATC to dilute to raise RCS temperature and adjust turbine load using load set potentiometer at a rate specified in Reactor Engineering supplied reactivity plan.				
		ATC		Commence RCS dilution using OP2104.003, Chemical addition. Verify Reactor makeup water pump running. Verify mode selector switch (2HS-4928) in DILUTE. Verify reactor makeup water flow controller (2FIC-4927) in MANUAL or AUTO and demand less than CCP flow. Verify VCT makeup isolation valve (2CV-4941-2) open. Depress red pushbutton on reactor makeup water flow batch controller (2FQIS-4927). Verify that 2FQIS-4927 has desired quantity set and 2FIC-4927 indicates desired flow. Obtain PEER check.				

Op-Test No.: 1			Scenario No.: 1			Event No.: 1		
Event Description: Plant power escalation from 20%.								
Time		Position		Applicant's Actions or Behavior				
		ATC		Adjust turbine load to maintain reference temperature and RCS average temperature within two degrees. Obtain initial PEER check then use reactivity aid and maintain reference temperature within band given by CRS of RCS temperature.				
Termination criteria: Reactivity manipulation completed or at lead examiner's discretion.								

Op-Test No.: 1			Scenario No.: 1			Event No.: 2		
Event Description: Channel '1' Pressurizer Pressure instrument will fail High.								
Time	Position	Applicant's Actions or Behavior						
	ATC	Announce annunciator 2K10-E6 Pressurizer Pressure Control Channel 1 Pressure HI / LO alarm is due to High pressure.						
	CRS	<p>Refer to PZR Systems Malfunctions AOP 2203.028 and direct board operators actions.</p> <p>Refer to TS 3.2.8 if pressure not 2025 to 2275 psia.</p> <p>Could direct placing SDBCS valves in manual closed</p>						
	ATC	<p>Compare channels and determine Channel 1 failed High.</p> <p>Place PZR Pressure Channel Select switch (2HS-4626) to Channel 2.</p> <p>Restore heaters to automatic control, if secured.</p> <p>Verify that PZR heaters respond as designed.</p> <p>Verify that PZR spray valves close.</p>						
	CBOT	<p>Recognize and announce that SDBCS valves are opening (cycling on permissive set point) due to PZR instrument failure biasing master controller set point down. (Will cause Tave to lower ~2°F)</p> <p>Place SDBCS Master controller in AUTO local and adjust set-point to 1000 psia.</p>						
Termination Criteria: PZR pressure control selected to channel 2 in auto control or at lead examiner's discretion.								

Op-Test No.: 1			Scenario No.: 1			Event No.: 3		
Event Description: 'A' Steam Generator level transmitter on Channel 'B' fails low.								
Time	Position	Applicant's Actions or Behavior						
	ATC	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.						
	ATC	Report A SG level low pretrip/trip on PPS insert.						
	CBOT	Compare all four channels and report 2LI-1031-2 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 channels in bypass on Channel B: A SG level low A SG level high A SG ΔP - EFAS 1						
	ATC	Verify annunciator 2K04-C3 PPS CHANNEL BYPASSED Verify correct channels in bypass.						
	CRS	Contact maintenance/PS liaison.						
Termination Criteria: Affected channel points placed in bypass or at lead examiner's discretion.								

Op-Test No.: 1		Scenario No.: 1	Event No.: 4
Event Description: Loop II Component Cooling Water pump 'C' Trips and 'B' Component Cooling Water pump fails to automatically start.			
Time	Position	Applicant's Actions or Behavior	
	ATC	Announce annunciators: <ul style="list-style-type: none"> • 2K11-A1, A3, A5, A7 – 'A', 'B', 'C', and 'D' RCP CCW low flow 	
	CRS	Implement AOP 2203.025, Reactor Coolant Pump Emergencies <ul style="list-style-type: none"> • Record Time CCW lost (if not restored W/I 10 minutes; direct ATC to manually trip the reactor and secure RCP's) • Check that RCP Controlled Bleed off temperature > 180°F • Direct CBOT to manually start 'B' CCW pump (this may be done out of sequence) 	
	CBOT	On panel 2C14, manually start 'B' CCW pump. On 2K11, verify CCW low flow alarms clear.	
Termination Criteria: CCW is restored to RCP's or at lead examiner's discretion.			

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: 50 GPM RCS to CCW leak from 'A' RCP seal.								
Time		Position		Applicant's Actions or Behavior				
		ATC / CBOT		Announce PZR level lowering (letdown flow at minimum), PZR pressure dropping. Announce 2K11 C10, Process liquid radiation high alarm due to Loop 2 CCW (The CBOT may observe loop 2 CCW surge tank level rising and announce it when placing 'B' CCW pump in service.)				

Op-Test No.: 1		Scenario No.: 1	Event No.: 5
Event Description: 50 GPM RCS to CCW leak from 'A' RCP seal.			
Time	Position	Applicant's Actions or Behavior	
	CRS	<p>Implement OP-2203.016, Excess RCS leakage:</p> <ul style="list-style-type: none"> • Direct ATC to start and stop CCP's as required to maintain PZR level. • Direct ATC and CBOT to perform RCS leak-rates using loop 2 surge tank level change and RCS mass balance • Implement step 9.E <ul style="list-style-type: none"> ○ Verify leakage into CCW by loop 2 surge tank level rise and radiation levels going up ○ Go to Attachment A <ul style="list-style-type: none"> § Direct ATC to isolate letdown and determine that leakage does not stop. § Direct CBOT to align loop 2 CCW surge tank vents to GCH and to monitor RCP seal performance. § Direct AO to maintain loop 2 surge tank level 40-50% § Verify all RCS samples are isolated. § Notify chemistry to sample CCW § Notify RP to monitor for elevated dose rates and post as required. § Go back to Step 10 in AOP • Direct ATC to perform a plant shutdown using Attachment R, RCS boration from RWT. • Declare EAL 2.2, ALERT, RCS leakage >44gpm • TS 3.4.6.2, RCS leakage > 10 GPM 	

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: 50 GPM RCS to CCW leak from 'A' RCP seal.								
Time		Position		Applicant's Actions or Behavior				
		ATC		Maintain PZR level within band set by CRS manually starting CCP's				
		ATC / CBOT		Calculate an RCS leak rate of ~50 gpm.				
		ATC		Isolate letdown using 2CV-4820-2 and determine that leakage is NOT due from letdown heat exchanger. (Letdown may or may not be restored.)				
		CBOT		On 2C14, align loop 2 CCW surge tank vents to GCH using 2CV 5218 and monitor RCP seal performance.				
		ATC		Stop power escalation, if not done previously and make preparations to start plant shutdown using RWT.				
Termination criteria: When plant shutdown is directed / briefed or at lead examiner's discretion (Event is continued after event 6).								

Op-Test No.: 1			Scenario No.: 1			Event No.: 6		
Event Description: 2H2 lockout.								
Time		Position		Applicant's Actions or Behavior				
		ATC		DNBR trips on all four CPC channels but reactor did not trip. Report that 'B' and 'C' RCP's tripped.				
		CBOT		Report lockout alarm on 2H2. Report that 'B' Circulating water pump tripped and discharge valve is closed.				
		CRS		Direct ATC to manually trip the reactor.				
Termination criteria: When 2H2 lockout recognized and Reactor Trip required or at lead examiner's discretion.								

Op-Test No.: 1		Scenario No.: 1	Event No.: 7
Event Description: Reactor Protection System fails to automatically trip the reactor on loss of Reactor Coolant Pumps.			
Time	Position	Applicant's Actions or Behavior	
CRITICAL STEP	ATC	Manually trips the reactor from 2C03. Announces that the reactor has tripped.	
	CRS	Recognizes that Technical Specification 3.0.3 should be entered due to failure of RPS to automatically trip. Recognizes that a safety limit of DNBR has been exceeded (TS 2.1.1)	
	CRS	Recognizes that EAL 6.2, ALERT, failure to complete an Automatic trip when valid RPS set point exceeded should be declared.	
Termination criteria: When Reactor Trip is completed or at lead examiner's discretion.			

Op-Test No.: 1		Scenario No.: 1	Event No.: 5
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)			
Time	Position	Applicant's Actions or Behavior	
	CRS	Implement OP 2203.016 Attachment 'A' post reactor trip actions: <ul style="list-style-type: none">• Direct ATC to verify ALL RCP's stopped.• Direct ATC to place BOTH PZR Spray valve hand-switches in MANUAL and closed:<ul style="list-style-type: none">○ 2CV-4651○ 2CV-4652• Direct CBOT to close RCP CCW Supply valve (2CV-5236-1).• Direct CBOT to close RCP CCW Return valves:<ul style="list-style-type: none">○ 2CV-5254-2○ 2CV-5255-1• Direct CBOT to close RCP Bleed off valves to VCT closed:<ul style="list-style-type: none">○ 2CV-4846-1○ 2CV-4847-2• Direct ATC to close RCP Bleed off Relief Isolation to Quench Tank (2CV-4856).	
	ATC	On 2C04, take all RCP hand switches to stop or PTL.	
	ATC	On 2C04, take PZR normal spray valves to manual.	
CRITICAL STEP	CBOT	On 2C17 take 2CV 5236-1 to close. On 2C17, take CV 5255-1 to close. On 2C16, take 2CV 5254-2 to close.	

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time	Position	Applicant's Actions or Behavior						
	ATC / CBOT	On 2C09, take hand switch 2CV 4856 to close.						
	CRS	Direct Manual Actuation of SIAS / CIAS						
	ATC	ON 2C03, Manually Actuate of SIAS / CIAS and/or announce automatic actuation of SIAS/CIAS (See event 8)						
	CRS	Implement Standard Post Trip Actions , notify operators to monitor Exhibit 7 CBO Reactor Trip Checklist, track safety functions, and direct board operator actions.						
	ATC	Check reactivity control: Reactor power decreasing. All CEA's inserted.						

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Check maintenance of vital auxiliaries: Main turbine tripped. Generator output and exciter breakers open. All 4160v and 6900 v Non-Vital busses energized except lockout on 2H2. ALL 4160v and 480v vital AC bus energized. All 125v vital DC bus energized.				
		ATC		Check inventory control: PZR level 16 to 80%. Report PZR level lowering and all CCP's running.				
		ATC		Check RCS pressure control: RCS pressure 1800 to 2300 psia. Report Pressurizer pressure is lowering and all heaters are off (if level is less than 20%). If RCS pressure less than 1400 psia, then trip one RCP in each loop.				

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time		Position		Applicant's Actions or Behavior				
		ATC		Check core heat removal by forced circulation: RCP 's running Loop ΔT less than 10° F. RCS MTS 30° F or greater. Service water pump suction aligned to Lake. Component cooling water aligned to RCPs. SW not aligned to CCW and ACW				
		CBOT		Restore SW to ACW per Exhibit 5. (NOTE: This action requires several minutes) Check SIAS actuated. Maintain SW pressure greater than 85 psig.				
		CBOT		Check RCS Heat Removal: Report SG levels and main feed water is in RTO. Report feed water line intact. Report SG pressures (See event 7) Report RCS Tcold value and trend.				

Op-Test No.: 1		Scenario No.: 1	Event No.: 5
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)			
Time	Position	Applicant's Actions or Behavior	
	ATC	Check CNTMT parameters: Temperature greater than 140° F and rising. Pressure rising could be greater than 16 psia. Status of radiation alarms: CAMS (2K10-B6) possibly IN ALARM (unless isolated by SIAS) Area radiation (2K11-B10) IN ALARM Process liquid (2K11-C10) IN ALARM Secondary Sys Radiation Hi (2K11-A10) NOT in alarm Verify all containment cooling fans running with SW aligned Verify SIAS/CCAS actuated when pressure > 18.3psia	
	CBOT	Will open 2CV0233, bypass around 2PCV0231 which is simulated closed to match condition of valve at plant. This is in response to low gland seal pressure.	
	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	

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time	Position	Applicant's Actions or Behavior						
	CRS	Implement Loss of Coolant procedure and open place keeping page.						
	ALL	Perform crew brief and review mitigation strategies and floating steps.						
	CRS	Contact chemistry to sample SG for activity						
	CRS	Determine applicable floating steps: <ul style="list-style-type: none"> • Commence cool down to less than SDC window. • HPSI Override Criteria. 						
	CBOT	Restore ESF/Non-ESF systems: <ul style="list-style-type: none"> • 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. 						
	CBOT	Verify HPSI flow to RCS (See Event 8)						
	CBOT	Verify all CNTMT Cooling Fans running in emergency mode.						
	CBOT	Verify SG levels greater than 22.2%.						

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Align Feedwater: <ul style="list-style-type: none">•Check EFW pump 2P7B running.•Secure EFW pump 2P7A.•Verify AFW pump 2P75 secured.•Secure running MFW pump and close ALL FW blocks.				
		ATC /CBOT		Verify Safety Injection flow to RCS: Check HPSI flow using Exhibit 2. Check LPSI flow using Exhibit 3.				
		ATC		Check LOCA is limited to containment. <ul style="list-style-type: none">•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.				
		ATC		Check CNTMT Isolation parameters. CNTMT pressure exceeds 18.3 psia. CNTMT RADIATION HI alarm 2K10-A6 NOT in alarm. Verify ONE Penetration Room Ventilation Fan Running.				
		ATC		Check CNTMT pressure trend not exceeded 23.3 psia. Verify CSAS actuated on PPS inserts. <ul style="list-style-type: none">•Stop ALL RCP's, 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.				

Op-Test No.: 1			Scenario No.: 1			Event No.: 5		
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)								
Time	Position	Applicant's Actions or Behavior						
	CBOT	Verify All available miscellaneous CNTMT ventilation running: <ul style="list-style-type: none"> •CNTMT Bldg. Recirc fans (2VSF-31A-D) •Reactor Cavity fans (2VSF-34A&B) •Three CEDM Shroud Cooling fans (2VSF-35s) 						
	CBOT	Check ALL AC and vital DC buses energized.						
	ATC	Check IA pressure greater than 65 psig.						
	CRS	Check <u>LOCA not isolated and proceed to Section 3</u>						
CRITICAL STEP	ATC	Perform controlled cooldown to 275°F. (Float Step) <ul style="list-style-type: none"> •Reset low PZR pressure and low SG pressure set points. •Record and plot cooldown on Attachments 1 and 8. Initiate cooldown using SDBCS bypass valves.						
	CBOT	Verify EFW feeding Steam Generators. Secure Running MFP. Close Feed water Block valves. Verify one Condensate pump running.						
	CBOT	Maintain SG levels 45 to 90%. Check CST level greater than 82%						
	ATC	Restore PZR level. Maintain 29% to 80%						
	ATC	Verify Natural Circulation: <ul style="list-style-type: none"> •Loop ΔT less than 50° F. •Thot and Tcold constant or lowering. •RCS MTS 30° F or greater. •ΔT between Thot and average CET's less than 10° F. 						

Op-Test No.: 1		Scenario No.: 1	Event No.: 5
Event Description: (Continued) Raised RCS to CCW leakage (250gpm)			
Time	Position	Applicant's Actions or Behavior	
	CRS	Check that RCP restart criteria is NOT met.	
	ATC	Check RCS void free: <ul style="list-style-type: none"> •PZR level stable using aux spray. •RVLMS LVL 01 indicates WET. •Upper head thermocouples indicate subcooled. 	
	CBOT ATC	Override HPSI when termination criteria met: <ul style="list-style-type: none"> •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: RCS Cool down in progress or at examiner's discretion.			

Op-Test No.: 1			Scenario No.: 1			Event No.: 8		
Event Description: Steam Dump and Bypass Control System fails to automatically open bypass and dump valves to control Steam Generator pressure.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Recognize and announce that SDBCS is NOT maintaining steam Generator pressure.				
		CRS		Direct CBOT to manually control Steam Generator pressure by either taking manual control of a SDBCS bypass valve or place the SDBCS master controller in manual and adjust output to open SDBCS bypass valve(s) to maintain Steam Generator pressure 950 to 1000 psia.				
		CBOT		Manually control SDBCS valves to control Steam Generator pressure.				
Termination criteria: SDBCS is controlled manually or at the discretion of the lead examiner.								

Op-Test No.: 1			Scenario No.: 1			Event No.: 9		
Event Description: 2P89A, 'A' High Pressure Safety Injection pump fails to auto-start.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Recognizes and announces failure of 'A' HPSI pump to automatically start.				
		CRS		CBOT to manually start 'A' HPSI pump.				
		CBOT		On 2C17, took hand switch for 'A' HPSI pump to start and verified discharge pressure (if pressure < 1450psia, verified flow to RCS). <u>OR</u> On 2C17, took hand switch for 'C' HPSI pump to start and verified discharge pressure (if pressure < 1450psia, verified flow to RCS) and took hand switch for 'A' HPSI pump to PTL.				
Termination criteria: When 'A' HPSI pump is started or at the discretion of the lead examiner.								

Facility: ANO-2		Scenario No.: 2 (Modified)		Op-Test No.: 2006-1	
Page 1					
Examiners:			Operators:		
Initial Conditions: 100% MOL, All ESF systems in standby. RED Train Maintenance Week.					
Turnover: 100%. 250 EFPD. EOOS indicates 'Minimal Risk. RED Train Maintenance Week. 'B' main chiller is tagged out due to Freon leak.					
Event No.	Malf. No.	Event Type*	Event Description		
1	2VSF1C	C (CBOT)	2VSF1C, 'C' containment cooling fan trips. Tech spec entry and start standby containment cooling fan		
2 ~T+7	NIBLINEPWR	I (CBOT)	Safety channel linear power channel 'B' fails low. CBOT must bypass points in Plant Protection System (PPS) channel.		
3 ~T+17	XCV2LT4861	I (ATC)	Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction.		
4 ~T+23	CWS2P3BBOL	R (ATC) N (CBOT)	Trip 2P3B, 'B' Circulating Water Pump, which causes a partial loss of main condenser circulating water flow resulting in a rapid down power to ~ 90% power.		
5	MSSGBLK	M (CBOT) M (ATC)	'B' Steam Generator Excess Steam Demand (ESD) inside containment results in manual reactor trip and control of Reactor Coolant System heat up and Pressurizer pressure post SG blow down.		
6	CEA51STUCK	C (ATC)	Control Element Assembly #51 stuck on reactor trip results in Emergency Boration.		
7	CV1036-2 CV1075-1	C (CBOT)	'B' Emergency Feed Water (EFW) Pump to 'B' Steam Generator valves fail to close from control room resulting in over feeding Steam Generator with ESD cool down of RCS unnecessarily. Secure 'B' EFW pump.		
8	BS2P35BFAL BS2P35AFAULT	C (CBOT)	'B' Spray Pump fails to start. Can be manually started. 'A' Spray Pump cannot be restarted.		
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor					

Scenario #2 Objectives

- 1) Evaluate individual response to a failure of an Excore Nuclear Instrument.
- 2) Evaluate individual response to a failure of a Volume Control Tank level transmitter.
- 3) Evaluate individual response to a trip of a Circulating Water Pump.
- 4) Evaluate individual ability to mitigate an Excess Steam Demand inside Containment.
- 5) Evaluate individual response to a stuck out CEA after a Reactor Trip.
- 6) Evaluate individual response to a failure of the Emergency Feed water system to operate correctly.
- 7) Evaluate individual response to a failure of both Containment Spray Pumps.
- 8) Evaluate individual response to failure of a containment cooling fan.

SCENARIO #2 NARRATIVE

Simulator session begins with the plant at 100% power steady state. The 'B' Main Chiller is tagged out for oil change out.

When the crew has completed their control room walk down and brief, 'C' containment cooling fan will trip its breaker. Crew will announce 2K04 B2, CCAS INOP alarm and the CRS will refer to ACA 2203.012D. CRS will recognize entry into TS 3.6.2.3 and direct the CBOT to start 'D' containment cooling fan.

When TS entry is recognized and 'D' containment cooling fan started, 'B' Excore will fail low. This will result in a CPC sensor failure alarm and the NI linear and log power instruments on 'B' channel failing to Zero. The CRS will enter the Nuclear Instrument Malfunction AOP, AOP 2203.026. The CRS will direct the CBOT to bypass points 1, 2, 3, and 4 on 'B' PPS. TS 3.3.1.1 will be entered due to the excore failure.

About 10 minutes after 'B' Excore NI has failed, one of the Volume Control Tank level transmitters, 2LT4861, will fail low. The crew will respond to VCT low low level alarm, 2K12 G5. This will result in the VCT outlet valve to the charging pump suction to close and the Refueling Water tank (RWT) suction to the charging pumps to open. RCS temperature and pressure will lower until the ATC positions the VCT outlet valve manually opened and the RWT valve manually closed.

When Charging pump suction has been restored to the VCT (about 5 minutes), 'B' circulating water pump will trip due to a phase to ground fault on the motor. This will result in the crew rapidly reducing turbine load to restore condenser vacuum (turbine trip occurs at 7"Hg ABS) by manually lowering turbine load and aligning emergency boration to the CCP suction. When vacuum is lowered to less than 6"Hg ABS, the crew will secure emergency boration and align normal boration to reduce vacuum to less than 5.3"HgABS to clear high condenser pressure alarms and clear the steam dump and bypass control system condenser interlock.

SCENARIO #2 NARRATIVE (continued)

When the ATC has completed the reactivity manipulation (about T+35), a steam line break will occur on 'A' Steam Generator inside the containment building. The crew will recognize the leak and manually trip the reactor and should manually actuate Main Steam Isolation Signal, MSIS, before automatic actuation. The crew will complete Standard Post Trip Actions, OP2202.001, and diagnose an Excess Steam Demand event and enter OP 2202.005. The crew will manually open the upstream atmospheric dump valves on 'A' steam generator to control RCS temperature approximately constant and manually open the Auxiliary spray valve to control Pressurizer pressure approximately constant when 'B' Steam Generator has boiled dry. When parameters have returned to high pressure safety injection, HPSI, override values the crew will manually secure HPSI and manually start and stop Coolant Charging Pumps as required to maintain Pressurizer level at set point.

Following the Reactor trip, CEA 51 will stick partway into the core on reactor trip. This will require the ATC to manually align emergency boration to the reactor coolant system.

Following an Emergency Feed Actuation Signal, the isolation valves to 'B' steam generator from 'B' Emergency Feed Water Pump, EFW, will fail to close from both the control room and locally. The CBOT must secure the 'B' EFW pump from 2C17 to stop feeding the steam generator with the ruptured steam piping and cause further overcooling of the reactor coolant system.

Following a Containment Spray Actuation Signal, the 'B' Containment Spray Pump will fail to automatically start and the 'A' Containment Spray Pump will trip on a motor overload. The CBOT must manually start the 'B' Containment Spray pump from 2C16 to prevent exceeding design pressure of the containment building.

Simulator Instructions for Scenario 2

Reset simulator to MOL 100% power IC steady state.
 Ensure that AACG is secured and annunciators clear.
 Ensure hotwell level is ~80%.
 Place MINIMAL RISK and RED Train Maintenance Week signs on 2C11.
 Swing ESF equipment aligned to the RED train.
 'B' CCP lead charging pump.
 2PCV0231, Gland sealing steam pressure control valve failed closed.
 T1, T2, T3, T4, T7 set to false.
 T5 set to 'RXTRP', Reactor trip
 T6 set to 'EFAS2 action', Emergency Feed Actuation Signal channel 2
 T8 set to 'CSAS1', Containment Spray Actuation Signal channel 1

Event No.	Malf. No. / Trigger Number	Value/ Ramp Time	Event Description
1	DI_HS_8214_1 DO_HS_8214_G DO_HS8214_R K04_B02 Trigger T7	TRUE OFF OFF ON	2VSF1C, 'C' containment cooling fan, trips.
2	NIBLINEPWR Trigger = T1	TRUE/ 0.0 MIN	Safety channel linear power channel 'B' fails low.
3	XCV2LT4861 Trigger = T2	0/ 0.0MIN	Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction.
4	CWS2P3BBOL CWS2P3BTRP Trigger = T3	TRUE / 0.0 MIN	Trip 2P3B, 'B' Circulating Water Pump, which causes a partial loss of main condenser circulating water flow resulting in a rapid down power to ~ 90% power.
5	MSSGBLK Trigger = T4	3 / 30.0 MIN	'B' Steam Generator Excess Steam Demand (ESD) inside containment results in manual reactor trip and control of Reactor Coolant System heat up and Pressurizer pressure post SG blow down.
6	CEA51STUCK Trigger = T5	TRUE	Control Element Assembly #51 stuck on reactor trip results in Emergency Boration.
7	CV1036-2 CV1075-1 DO_HS_1036_R DO_HS_1075_R Trigger = T6	1.0 / 12 SEC	'B' Emergency Feed Water (EFW) Pump to 'B' Steam Generator valves fail to close from control room resulting in over feeding Steam Generator with ESD cool down of RCS unnecessarily. Secure 'B' EFW pump.

Event No.	Malf. No. / Trigger Number	Value/ Ramp Time	Event Description
8	BS2P35BFAL BS2P35AFAULT Set to TRUE	TRUE	'B' Spray Pump fails to start. Can be manually started. 'A' Spray Pump cannot be restarted.

Simulator Instructions for Scenario 2

At T=0 Trigger T7 2VSF 1C trips.

Cue: Report that an Electricians planner will begin planning work on tripped containment cooling fan.

Report as AO that breaker 2B63-L1 is in a “tripped free” state and 2B63-J1 is closed.

CUED by lead examiner
~T=8 min

Cue: Report that I & C planner will begin planning work on failed excore instrument.

CUED by lead Examiner ~T = 18 minutes	Trigger T2	Volume Control Tank level instrument fails low
--	------------	--

Cue: As Work Week Manager report that a team is troubleshooting cause for VCT level instrument failure and developing a repair plan.

Cued by lead examiner
~ T=22 minutes

Cue: As Auxiliary Operator, report that both vacuum pumps are running satisfactory.

As Auxiliary Operator, report that the Ground Fault relay on 'B' Circ Pump Breaker has tripped.

As Auxiliary Operator, report that the 'B' Circulating water pump motor has no obvious damage, but that it is still warm to the touch.

As Reactor Engineering, recommend maintaining ASI at power dependant ESI and to use reactivity plan for 80% power reduction and determine amount of boron needed and divide by time to reach 80% to obtain boration rate.

CUED by Lead Examiner ~T=35	Trigger T4	Excess Steam Demand on 'B' Steam Generator inside the Containment building.
--------------------------------	------------	---

Simulator Instructions for Scenario 2

Cue: As Auxiliary Operator, report that lockout on 2H2 is due to a ground fault relay trip on 2H2.

As work week manager, report that a planning team has been assembled to determine failure.

Reactor Trip	Trigger T5	CEA #51 sticks partway into the core on reactor trip.
--------------	------------	---

EFAS-2 actuation	Trigger T6	2CV 1036-2 and 2CV1075-1 fail to close after opening.
---------------------	------------	---

Cue: As WCO, report that 2CV1036-2 will not reposition locally due to the hand wheel spinning freely and 2CV 1075-1 will not reposition locally due to being internally bound-up causing the hand wheel to not move.

Set to True on CSAS actuation	No Trigger	'B' Containment Spray Pump fails to start automatically. 'A' Containment Spray Pump will not start due to motor fault.
----------------------------------	------------	---

Op-Test No.: 1			Scenario No.: 2			Event No.: 1		
Event Description: 'C' containment cooling fan trips.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Recognizes and announces 2K04 B2, CCAS INOP alarm and that 2VSF1C, 'C' containment cooling fan has tripped.				
		CRS		Implements ACA 2203.012D. Directs the AO to investigate the Breaker for 2VSF1C (may have electricians investigate the breaker). Directs the CBOT to manually start 'D' containment cooling fan. Notifies work week manager to begin trouble shooting 'C' containment cooling fan.				
		CBOT		From 2C16, manually starts 'D' containment cooling fan. Monitors containment atmosphere using PMS.				
		CRS		Enters Technical Specifications 3.6.2.3, containment cooling action a, 7 day action to restore fan to operable status.				
Termination criteria: When 'D' containment cooling fan is started and CRS enters appropriate tech spec or at lead examiner's discretion.								

Op-Test No.: 1		Scenario No.: 2	Event No.: 2
Event Description: Channel 'B' excore nuclear instrument will fail low. The CRS will enter the NI malfunction AOP, OP 2203.026.			
Time	Position	Applicant's Actions or Behavior	
	ALL	Crew will diagnose that 'B' Excore is the only channel that has failed.	
	CRS	Enter AOP 2203.026, NI malfunction and perform the following actions: Refer to TS 3.3.1.1 and 3.3.3.5 Direct the CBOT to bypass points 1,2,3 and 4 on 'B' PPS Verify that Log channel is also affected Notify maintenance of problem with 'B' Excore	
	CBOT	Will perform the following: Obtain Key 12 from SM Notify control room of potential PPS security door and Bypass alarms Open 2C23 door and unlock panel door Push bypass buttons for points : 1 - Hi Linear Power 2 – Hi Log Power 3 – High LPD 4 – Low DNBR Verify that bypass lights illuminated on operator inserts on 2C03	
	ATC	Will perform the following: PEER check that bypass lights for points 1,2,3 and 4 are illuminated on operator inserts on 2C03	
Simulator Operator Cue: When contacted as IC or Work Week Manager, report that you will begin planning work on 'B' Excore.			
Termination criteria: When points 1,2,3 and 4 are bypassed on 'B' PPS or at the discretion of the lead examiner.			

Op-Test No.: 1		Scenario No.: 2	Event No.: 3
Event Description: Volume Control Tank level instrument fails low resulting in Refueling Water Tank being aligned to Coolant Charging Pump suction.			
Time	Position	Applicant's Actions or Behavior	
	ATC	Announce annunciator 2K12-G5 VCT 2T4 LEVEL LO LO verify on 2C09 that actual level in VCT has not dropped (Chart recorder and VCT pressure).	
	CRS	Implement Annunciator Corrective Action AOP 2203.012L.	
	ATC	Report level indicates normal on 2LIS-4857 but 2LT-4861 reads 0% on computer. Reports charging pump suction swapping to RWT.	
	ATC	May secure charging to stop boration if crew has not determined indication is a failed instrument and VCT level is normal. OR When faulty instrument identified, then manually reopen VCT outlet and close the RWT to CCP suction valve.	
	CBOT / ATC	Reduce turbine load to maintain Tave within 2° F of Tref if Tave lowered.	
	CRS	Contact maintenance/Work Week Manager to troubleshoot failed instrument.	
Termination criteria: Charging suction manually aligned to the VCT and RWT to CCP valve closed or at the discretion of the lead examiner.			

Op-Test No.: 1			Scenario No.: 2			Event No.: 4		
Event Description: Trip 2P3B, 'B' Circulating Water Pump.								
Time	Position	Applicant's Actions or Behavior						
	ATC	Announce 2K12, A9, Circ water potential failure alarm. Recognize and announce that 'B' circulating water pump has tripped and discharge valve is going closed.						
	CBOT	Recognize and announce Main Condenser lowering vacuum: 2K03 A3, 2E11A Pressure HI 2K03 B3, 2E11A Turb Hood Press HI 2K03 E4, Vacuum pump 2C5B Auto Start 2K02 B14, Condenser Interlock						
	CRS	Enter 2203.019, Loss of condenser vacuum and direct the following actions: <ul style="list-style-type: none"> • Verify both vacuum pumps running • Reduce MTG load to maintain Tc less than 554.7°F and condenser vacuum < 6.5 inHg. • Commence emergency boration using exhibit 1. • Secure Emergency boration when condenser vacuum is < 6.5 inHg. • Enter Tcold Tech Spec 3.2.6, if Tc exceeds 554.7°F. 						
	CBOT	Reduce MTG load to maintain Tc less than 554.7°F and condenser vacuum < 6.5 inHg.						

Op-Test No.: 1			Scenario No.: 2			Event No.: 4		
Event Description: Trip 2P3B, 'B' Circulating Water Pump.								
Time	Position	Applicant's Actions or Behavior						
	ATC	Commence boration using Exhibit 1.						
	ATC	When vacuum is less than 6.5 inHg. Secure emergency boration.						
	CRS	Direct ATC to reduce commence a normal boration at power and reduce turbine load to maintain Tave vs Tref less than 2°F and to reduce condenser vacuum to less than 5.3in Hg ABS. Contact Ops Management. Call Reactor Engineering.						
	ATC	Align normal boration to RCS. Reduce turbine load to maintain Tave within 2° of Tref until condenser vacuum is less than 5.3 in Hg ABS. Insert CEA's to maintain ASI \pm .27 or as directed by CRS.						
Termination criteria: When ATC has completed reactivity manipulations or at discretion of lead examiner.								

Op-Test No.: 1		Scenario No.: 2	Event No.: 5
Event Description: Excess Steam Demand on 'B' Steam Generator.			
Time	Position	Applicant's Actions or Behavior	
	ATC / CBOT	Recognize and announce indications of MS line break inside containment. Pressurizer level lowering. Pressurizer pressure lowering. Tave lowering. Plant Power rising. Steam and Feed flow rising. Containment pressure/temperature/humidity rising.	
	CRS	Direct ATC to manually trip the reactor and actuate main steam isolation, MSIS.	
	ATC	From 2C03, manually trip the reactor. Verify and announce that the reactor has tripped. Manually actuate MSIS.	
	CRS	Implement Standard Post Trip Actions , notify operators to monitor Exhibit 7 CBO Reactor Trip Checklist, track safety functions, and direct board operator actions.	

Op-Test No.: 1			Scenario No.: 2			Event No.: 5		
Event Description: Excess Steam Demand on 'B' Steam Generator.								
Time		Position		Applicant's Actions or Behavior				
		ATC		Check reactivity control: Reactor power decreasing. Report CEA 51 not inserted and emergency boration in progress. (Event 5)				
		ATC		Check inventory control: PZR level 16 to 80%. Report PZR level lowering and all CCP's running.				
		ATC		Check RCS pressure control: RCS pressure 1800 to 2300 psia. Report Pressurizer pressure is lowering and all heaters are off. Trip all Reactor Coolant Pumps due to valid CSAS.				

Op-Test No.: 1			Scenario No.: 2			Event No.: 5		
Event Description: Excess Steam Demand on 'B' Steam Generator.								
Time		Position		Applicant's Actions or Behavior				
		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. EDG's running unloaded with service water aligned (SIAS) All 125v vital DC bus energized.				
		ATC		Check core heat removal by natural circulation (RCP's secured due to CSAS): Take all spray valve hand switches to manual and closed.				

Op-Test No.: 1			Scenario No.: 2			Event No.: 5		
Event Description: Excess Steam Demand on 'B' Steam Generator.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Check RCS Heat Removal: Report SG levels > 10% and main feed water is secured. Manually actuate EFW if not previously actuated. Secure feed to 'B' SG. (Event 6) Report feed water line intact. Report MSIS actuated. Line up to steam 'A' SG using 2CV1001(AOV) and 2CV1002(MOV) may start steaming 'A' SG but pressure must be maintained above 'B' SG pressure.				
		ATC		Check CNTMT parameters: Temperature greater than 140° F and rising. Pressure rising could be greater than 16 psia. Status of radiation alarms: CAMS (2K10-B6) NOT in alarm Area radiation (2K11-B10) NOT in alarm Process liquid (2K11-C10) NOT in alarm Secondary Sys Radiation Hi (2K11-A10) NOT in Alarm. Verify all containment cooling fans running with SW aligned Verify SIAS and CCAS actuated. Verify CSAS actuated but spray flow less than 1875GPM (Event 7)				

Op-Test No.: 1			Scenario No.: 2			Event No.: 5		
Event Description: Excess Steam Demand on 'B' Steam Generator.								
Time		Position		Applicant's Actions or Behavior				
		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 Excess Steam Demand EOP entry.				
		ALL		Perform crew brief and review floating steps.				

Op-Test No.: 1		Scenario No.: 2	Event No.: 5
Event Description: Excess Steam Demand on 'B' Steam Generator.			
Time	Position	Applicant's Actions or Behavior	
	CRS	<p>Implement Excess Steam Demand procedure, OP 2202.005, and direct the following actions:</p> <ul style="list-style-type: none"> • Verify Steam Generator Sample Valves OPEN • Contact Chemistry to sample both steam Generators for activity • SM to refer to EAL's (Classify event as NUE 3.1, Uncontrolled SG depressurization resulting in MSIS) • Verify SIAS/MSIS actuated • Verify MSIV's closed • Verify service water pumps running / maintain SW pressure greater than 85 psig / SW aligned to CCW and ACW • Verify EDG running properly • Verify Vital and Non-vital electrical busses energized from off site power • Establish CCW flow to RCP's • Verify 'B' Steam Generator with ESD • Isolate 'B' SG using attachment 10 • Direct board operators to maintain post SG blow down RCS temperature and pressure • Direct board operators to override High Pressure Safety Injection 	

Op-Test No.: 1			Scenario No.: 2			Event No.: 5		
Event Description: Excess Steam Demand on 'B' Steam Generator.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Establish CCW flow to RCP's using attachment 21, if not previously completed.				
CRITICAL STEP		CBOT / ATC		Maintain RCS temperature within P-T curve limits by steaming intact SG using EITHER of the following: <ul style="list-style-type: none"> • Upstream ADV. • Upstream ADV Isolation MOV. Maintain RCS pressure within P-T curve limits using PZR heaters and Attachment 27, Auxiliary PZR Spray Operation				
		CBOT / ATC		Override HPSI when the following are satisfied: <ul style="list-style-type: none"> • RCS MTS 30°F or greater. • PZR level greater than 29% [50%] and controlled. • RVLMS LVL 03 or higher elevation indicates WET. • At least ONE intact SG available for Heat Removal by EITHER of the following: <ul style="list-style-type: none"> ○ Level 10 to 90% [20 to 90%] with FW available. ○ Level being restored with total FW flow of 485 gpm or greater. Override HPSI - Throttle HPSI flow OR place HPSI pumps in PTL as needed to control RCS pressure, inventory and heat removal.				
Termination Criteria: RCS temperature and pressure stabilize and HPSI overridden with PZR controlled or at discretion of lead examiner.								

Op-Test No.: 1			Scenario No.: 2			Event No.: 6		
Event Description: One CEA fails to insert into the core requiring emergency boration by the ATC.								
Time		Position		Applicant's Actions or Behavior				
CRITICAL STEP		ATC		Recognize and announce that CEA 51 did not insert fully into the core. Perform Emergency Boration using Exhibit 1.				
		CRS		Recognize Technical Specification entry 3.1.1.1, Shutdown Margin				
Termination Criteria: Emergency Boration established or at discretion of lead examiner.								

Op-Test No.: 1			Scenario No.: 2			Event No.: 7		
Event Description: B' Emergency Feed Water (EFW) Pump to 'B' Steam Generator valves fail to close.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Recognizes and announces that on 2C17 2CV 1036-2 and 2CV 1075-1 are open and feeding 'B' Steam Generator.				
		CRS		Direct closing 2CV 1036-2 and 2CV 1075-1 or securing 2P7B, 'B' Emergency Feed Water pump. (May contact WCO to close valves locally) Recognize Technical Specification entry 3.7.1.2, Emergency Feed Water.				
		CBOT		On 2C17, attempted to override and close EFW valves to 'B' SG but will be unsuccessful. Places 2P7B in Pull-to-lock and verifies pump is secured.				
Termination criteria: When 'B' Emergency Feed Water Pump is secured or at lead examiner's discretion.								

Op-Test No.: 1			Scenario No.: 2			Event No.: 8		
Event Description: 'B' Spray Pump fails to start. 'A' Spray Pump cannot be restarted.								
Time		Position		Applicant's Actions or Behavior				
		CBOT		Recognizes and announces that both containment spray pumps have failed to start.				
		CRS		Directs CBOT to attempt manual start both containment spray pumps.				
CRITICAL STEP		CBOT		From 2C16, manually starts 'B' Containment Spray Pump, 2P35B and verifies > 1875gpm spray flow to containment. Reports than 'A' Containment Spray Pump will not start from control room.				
		CRS		Recognize Technical Specification entry 3.0.3, due to failure of BOTH containment spray pumps to automatically start.				
Termination criteria: When 'B' Containment Spray Pump started or at lead examiner's discretion.								