Facility: South Texas Project Date of Examination: 8/18/03
Examination Level: RO Operating Test Number: 1

Administrative Topic (see Note)	Describe activity to be performed:
Conduct of Operations	(A.1) Perform QPTR K/A 2.1.33 (3.4) Ability to recognize indications for system operating parameters which are entry level conditions for technical specifications. Modified to include determination of TS action
Conduct of Operations	(A.2) Perform Instrumentation Channel Checks K/A 2.1.20 (4.3) Ability to execute procedure steps New
Equipment Control	(A.3) Review completed surveillance K/A 2.2.12 (3.0) Knowledge of surveillance procedures Bank
Radiation Control	(A4) Determine radiological requirements to enter a high radiation area K/A 2.3.10 (3.3) Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure. Bank
Emergency Plan	NA

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

Facility: South Texas Project **Date of Examination:** 8/18/2003
Examination Level: SRO **Operating Test Number:** 1

Administrative Topic (see Note)	Describe activity to be performed:
Conduct of Operations	(A5) Review RCS Inventory and determine Tech Spec applicability K/A 2.1.7: (4.4) Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior and instrument response.
Conduct of Operations	(A6) Determine Shift Staffing Requirements K/A 2.1.5 (3.4) Ability to locate and use procedures and directives related to shift staffing
Equipment Control	(A7) Review ESF Power Availability Results (Modified) K/A 2.1.33 (4.0) Ability to recognize indications for system operating parameters which are entry level conditions for Tech Specs.
Radiation Control	(A4) Determine radiological requirements to enter a high radiation area K/A 2.3.10 (3.3) Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.
Emergency Plan	(A8) Declare an Emergency Action Level (Modified) K/A 2.4.41 (4.1) Knowledge of the emergency action level thresholds and classification.

NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.

Facility: South Texas Project **Date of Examination:** 8/18/03

Exam Level: RO / SRO(I) **Operating Test No.:** 1

Control Room Systems (8 for RO; 7 for SROI;2 or 3 for SROU)

System / JPM Title	Type Code*	Safety Function
a. (S1) Recover a Dropped Control Rod	S, D	I
b. (S2) Establish RCP Seals with the PDP	S, N	II
c. (S3) Manually Energize an ESF Bus	S, N, A, E	VI
d. (S4) Isolate SI Accumulators	S, A, D, L, E	III
e. (S5) Power Range NI Failure	S, D	VII
f. (S6) Establish Supplementary Purge	S, D, L	VIII
g. (C1) Determine/Establish CS Requirements	C, D, A, L, E	V
h. (C2) Respond to RCB High Radiation (RO ONLY)	C, N, L	IX (APE)

In-Plant Systems (3 for RO; 3 for SROI; 3 or 2 for SROU)

System / JPM Title	Type Code*	Safety Function
i. (P1) Perform Local Channel Check and Source Check of RT-8038	P, M, R	IX
j. (P2) Place a Battery Charger in Service	P, D	VI
k. (P3) Place Rod Control MG Set in Service	P, D, A, L	I

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

NOTE: The following are designed to be run concurrent:

S1/S3
S2/S5
S4/S6

Facility: South Texas Project **Date of Examination:** 8/18/03

Exam Level: SRO(U) **Operating Test No.:** 1

Control Room Systems (8 for RO; 7 for SROI;2 or 3 for SROU)

System / JPM Title	Type Code*	Safety Function
a. (S4) Isolate SI Accumulators	S, A, D, L, E	III
b. (S6) Establish Supplementary Purge	S, D, L	VIII

In-Plant Systems (3 for RO; 3 for SROI; 3 or 2 for SROU)

i. (P1) Perform Local Channel Check and Source Check of RT-8038	P, M, R	IX
j. (P2) Place a Battery Charger in Service	P, D	VI
k. (P3) Place Rod Control MG Set in Service	P, D, A, L	II

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

NOTE: The following simulator JPMs are designed to be done concurrent:

S4 and S6

Facility: South Texas Project **NRC Scenario No.: 1** **Op-Test No.: 1**

Source:
New _____ Bank - Significantly Modified __X__ Bank - Initial Condition Change __X

See page 3 for Examiner/student assignments

Initial Conditions: 100% power, BOL

Turnover: Maintain current power. Shift Centrifugal Charging Pumps for upcoming maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (N) SRO (N)	Shift Centrifugal Charging Pumps.
2 (10 min)	03-09-02 (True)	RO (C) SRO (C)	1B Centrifugal Charging Pump trips – after CCP's are swapped (should be within 10 min.)
3 (20 min)	08-15-03 (True)	BOP (I) SRO (I)	1C Steam Generator controlling Feedwater flow channel fails low – after TS are addressed for CCP failure or 10 minutes
4 (30 min)	50-BM-01 (1.0)	RO (I) SRO (I)	VCT level transmitter LT-113 fails high – after 1C MFRV in auto or 10 min.
5 (37 min)	05-03-02 (0.1)	ALL (M)	1B Steam Generator Tube Rupture (15 min. ramp) – after LD Divert Valve is re-positioned to the VCT or 7 minutes
6 (67 min)	05-07-02 (True)	BOP (C) SRO (C)	Steam Generator 1B Main Steam Isolation Valve fails to close. Can be closed locally – integral to scenario. Apparent approx. 20-25 min after reactor trip
7 (67 min)	08-03-01 (True)	BOP (C) SRO (C)	Aux Feedpump #11 trips – occurs automatically 20 min after reactor trip
8 (57 min)	01-35-02 (True)	RO (C) SRO (C)	Intermediate Range Channel N36 failure of compensating voltage – integral to scenario, will be apparent approx. 10-15 minutes after reactor trip

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

Facility: South Texas Project NRC Scenario No.: 2 Op-Test No.: 1

Source:
New __X__ Bank - Significantly Modified _____Bank - Initial Condition Change

See page 3 for Examiner/student assignments

Initial Conditions: 80% power at BOL, power escalation in progress following a shutdown for turbine blade inspection.

Turnover: 80% power, power escalation in progress. Currently at step 7.33 of 0POP03-ZG-0005. Boric Acid Tanks are at 7300 ppm

Event No.	Malf. No.	Event Type*	Event Description
1 (2 min)	05-17-01 (1.0)	BOP (I) SRO (I)	1A SG PORV Pressure Transmitter PT-7411 fails high – 2 minutes after crew assumes watch
2 (11 min)	08-23-01 (True)	BOP (C) SRO (C)	Loss of Condensate Pump 11 – after T.S. addressed for PORV or after 9 minutes
3 (22 min)	01-07-01 (True)	RO (C) SRO (C)	Dropped Control Rod C9 – after DA Level Control returned to Auto. or after 11 min.
4 (32 min)	NA	RO (R) BOP (R) SRO (R)	Power Reduction due to dropped rod – crew should begin power reduction approx. 10 min following dropped rod.
5 (42 min)	50-LI-53 (True)	BOP (C) RO (C) SRO (C)	Second Dropped Control Rod G3, Manual Reactor– after power reduction of 2-3% (approx. 10 minutes after power reduction started).
6 (NA)	01-12-01 01-12-02 (True)	RO (C) BOP (C) SRO (C)	ATWS-reactor fails to trip automatically or manually. Can be tripped by opening LC breakers from the control room – integral to scenario
7 (54 min)	02-01-01 (1.0)	All (M)	RCS break develops into a LBLOCA (upon ES01 entry) – 5 min. ramp – after ES01 entered or 12 minutes after EO00 entered.

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

Note: Once SI is initiated it will take approximately 23 minutes to reach the point of swapover to SI recirculation

SCENARIO OUTLINE

Facility: South Texas Project   NRC Scenario 3   Op-Test No.: 1

Source:
New _____ Bank - Significantly Modified __X__ Bank - Initial Condition Change __X__

See page 3 for Examiner/student assignments

Initial Conditions: 60% power. Power decrease is on hold to allow a SG Feedpump to be secured.

Turnover: 60% power. Power decrease is on hold to allow SG Feedpump # 12 to be secured. Maintain current power level.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	NA	BOP (N) SRO (N)	Secure SGFPT # 12
2 (12 min)	02-26-02 (1.0)	RO (I) SRO (I)	Loop 'B' T-Cold TT-420B fails high – after SUFP returned to Auto or after 12 minutes.
3 (22 min)	05-12-03 (0.0)	BOP (I) SRO (I)	1C Steam Generator level transmitter LT-539 fails low - after T.S. addressed for TT-420B or after 10 minutes
4 (32 min)	08-16-03 (0.0)	BOP (C) SRO (C)	SG 1C Feedwater Regulating Valve (FCV-553) fails closed resulting in a reactor trip - after Feedwater regulating valve is returned to auto or after 10 minutes
5 (47 min)	02-12-01 (0.8) 02-04-01 (0.1)	All (M)	Pzr Steam Space Break (after entry into ES01) – at step 6 of ES01 or after 15 minutes. Note: 02-04-01 will be removed after 6 min.
6 (72 min)	10-02-01 LA10M1-D-3	RO (C) SRO (C)	Loss of power to ESF Bus '1A', ESF DG #11 fails to load – at EO10 Step 3 or 5 minutes after entering EO10.

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

Facility: South Texas Project NRC Backup Scenario Op-Test No.: 1

Source:
New ____ Bank - Significantly Modified __X__ Bank - Initial Condition Change _X

See page 3 for Examiner/student assignments

Initial Conditions: 40% power, shutdown in progress for turbine blade inspection. The National Weather Service has issued a Severe Weather Warning in effect until 2000 hrs.

Turnover: 40% power. Plant shutdown in progress to allow turbine blade inspection. Plant shutdown is on hold to allow FW Booster Pump #11 to be secured. The National Weather Service has issued a Severe Weather Warning in effect until 2000 hrs.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	NA	BOP (N) SRO (N)	Secure Feedwater Booster Pump #11
2 (15 min)	03-17-02 (True)	RO (C) SRO (C)	Boric Acid Pump 'B' trips during first boration of the power reduction – (within approximately 5 minutes of starting power reduction).
3 (25 min)	03-06-01 (0.0)	BOP (C) SRO (C)	Letdown Pressure Control Valve PCV-0135 fails closed – after T.S. consulted for BA Pump or after 10 minutes
4 (35 min)	05-14-01 (0 .6)	BOP (I) SRO (I)	Steam Header Pressure Instrument PT-557 fails low – after Letdown flush started or after 10 minutes.
5 (47 min)	05-02-04 (0.5)	All (M)	Steam Break on SG 1D inside Containment (ramped over 5 min.) – after FW-0002 exited or after 12 minutes.
6 (NA)	01-12-04A 01-12-04B 01-12-04C (True)	RO (C) SRO (C)	Phase 'A' Containment Isolation fails to actuate – integral to scenario

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

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **PERFORM A QPTR CALCULATIONS**

JPM NO.: **A1**

REVISION: **2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: PERFORM A QPTR CALCULATION

JPM No.: A1

Rev. No.: 2

STP Task: 37750, Perform a Quadrant Power Tilt Ratio calculation

STP Objective: Perform a Quadrant Power Tilt Ratio calculation in accordance with 0PSP10-NI-0002.

Related K/A Reference: 2.1.20 (4.3) Ability to execute Procedure Steps

References: T.S. 3/4.2.4 Quadrant Power Tilt Ratio
0POP09-AN-05M3 (05M3-B-3) PR Lower Det Flux Dev Hi/Auto Def
0PSP10-NI-0002, Rev. 8, Excore QPTR Determination

Task Normally Completed By: RO

Method of Testing: Performance

Location of Testing: N/A

Time Critical Task: NO

Validation Time: 30 minutes

Required Materials (Tools/Equipment):

Calculator
Technical Specifications

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 has been at approximately 100% steady state power (currently at 99.9%) for 5 days. Control Room Annunciator 05M03 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, alarms. Initial action of 0POP09-AN-05M3 for Window B-3 to verify all Control Rods are properly aligned, is complete. All Excore Nuclear Instrumentation Channels are operable and the detector currents (in microamps) are:

N41U = 536	N42U = 567	N43U = 542	N44U = 588
N41L = 559	N42L = 577	N43L = 587	N44L = 549

- All meter readings were taken with the Current Meter Range Switch Scale in the "1" position.
- Reactor Power is 99.9% by U1169

INITIATING CUE:

The Unit Supervisor instructs you to do the following:

- Manually calculate QPTR per 0PSP10-NI-0002, Excore QPTR Determination.
- Determine any applicable Technical Specification action(s).

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Applicant determines:

- *Upper Tilt Ratio = 1.002 (±0.003), Lower Tilt Ratio = 1.027 (±0.003), and QPTR = 1.027 (±0.003) and identifies the Acceptance Criteria is NOT met.*
- *That Reactor Power must be reduced to at least 91.9% within two (2) hours and that the Power Range High Flux Trip Setpoints must be reduced to 100.9% within the next four (4) hours.*

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

- 0PSP10-NI-0002, Excore QPTR Determination.
- Plant Curve Book Fig. 5.1 (a special copy for use with this JPM)

NOTES:

- Examiner has a “KEY” of Form 1 and Form 3 of 0PSP10-NI-0002, Excore QPTR Determination. DO NOT give applicant copy of the procedure marked “KEY”.

- Examiner has a “NRC EXAM JPM USE ONLY” copy of Figure 5.1, Incore-Excore Cross-Calibration Constants. After the applicant obtains the Plant Curve Book and locates Figure 5.1, provide the applicant the “NRC EXAM JPM USE ONLY” copy of Figure 5.1. The data on this copy may be different from that contained in the current Plant Curve Book. The calculations performed in the “KEY” are based on the data from the “NRC EXAM JPM USE ONLY” copy of Figure 5.1.

- The calculated QPTR is equal to approximately 1.027 (±0.003) and does not meet the procedure acceptance criteria and T.S. LCO actions 3.2.4.and 3.2.4.b are entered.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain the procedure.

Standard:

Applicant obtains current revision of 0PSP10-NI-0002, Excore QPTR Determination.

Comment:

The Handout Copy of 0PSP10-NI-0002, Excore QPTR Determination includes partially completed Forms 1 and 3.

Cue:

Provide the Handout Copy of 0PSP10-NI-0002, Excore QPTR Determination.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Review 0PSP10-NI-0002, Excore QPTR Determination, for applicability and prerequisites.

Standard:

Applicant reviews procedures and verifies prerequisites are met and signs Form 1.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 3

Obtain latest Figure 5.1 in the Unit 1 Plant Curve Book.

Standard:

Obtains Figure 5.1 of the Unit 1 Plant Curve Book.

Comment:

The “NRC EXAM JPM USE ONLY” copy of Figure 5.1, Incore-Excore Cross-Calibration Constants, may not be the current data in the Unit 1 Plant Curve Book, but contains the data applicable to this JPM. The data on this copy of Figure 5.1 should be used in the QPTR calculation.

Cue:

After the applicant locates the Plant Curve Book and obtains Figure 5.1, provide the applicant with the copy of Figure 5.1, Incore-Excore Cross-Calibration Constants, marked “FOR NRC EXAM JPM USE ONLY”.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

100% Power Detector Currents from Figure 5.1 and the current Indicated Detector Currents for the Upper and Lower Detectors are entered into Form 3.

Standard:

Enters the 100% and Indicated Power Currents onto Form 3.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 5

For each channel of Upper Detectors, calculate Normalized Current, then the sum of normalized currents, and average of normalized current.

Standard:

Calculates the Average Normalized Upper Current to be 1.003 (±0.003).

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Calculate Upper Tilt Ratio.

Standard:

Calculates the Upper Tilt Ratio to be 1.002 (±0.003).

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 7

For each channel of Lower Detectors, calculate Normalized Current, then the sum of normalized currents, and average of normalized currents.

Standard:

Calculates the Average Normalized Lower Current to be 1.017 (±0.003).

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8(C)

Calculate Lower tilt Ratio.

Standard:

Calculates the Lower Tilt Ratio to be 1.027 (±0.003).

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 9(C)

Determines QPTR.

Standard:

Determines the QPTR to be 1.027 (±0.003).

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Obtain independent verification of calculations.

Standard:

Applicant informs the evaluator that independent verification is needed.

Comment:

Cue:

Inform the applicant that the independent verification is complete with no changes.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11(C)*

Determine applicable Technical Specification action(s) to take.

Standard:

Applicant determines:

- ***** *Within 2 hours, THERMAL POWER must be reduced at least 3% from RATED THERMAL POWER for each 1% of indicated QUADRANT POWER TILT RATIO in excess of 1. This requires a power reduction to at least 91.9%*

- ***** *Within the following 4 hours, the Power Range Neutron Flux-High Trip Setpoints must be reduced at least 3% from RATED THERMAL POWER for each 1% of indicated QUADRANT POWER TILT RATIO in excess of 1. This requires a trip setpoint reduction to at least 100.9%.*

- *Within 24 hours and every 7 days thereafter, verify that* F_Q *(Z) (by* F_{XY} *evaluation) and* $F^N_{?H}$ *are within their limits by performing Surveillance Requirements 4.2.2.2 and 4.2.3.2. THERMAL POWER and setpoint reductions shall then be in accordance with the ACTION statements of Specifications 3.2.2 and 3.2.3.*

Comment:

Items designated with a (*****) are the Critical Portions of this step.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12

Notify Reactor Engineering Supervisor to prepare to take action per Technical Specification 3.2.4 action b.

Standard:

Applicant informs the Reactor Engineering Supervisor to take action per Technical Specification 3.2.4 action b.

Comment:

Cue:

Inform the applicant that the Reactor Engineering Supervisor has been notified.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A1, PERFORM A QPTR CALCULATION

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature** __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 has been at approximately 100% steady state power (currently at 99.9%) for 5 days. Control Room Annunciator 05M03 Window B-3, PR LOWER DET FLUX DEV HI/AUTO DEF, alarms. Initial action of 0POP09-AN-05M3 for Window B-3 to verify all Control Rods are properly aligned, is complete. All Excore Nuclear Instrumentation Channels are operable and the detector currents (in microamps) are:

N41U = 536	N42U = 567	N43U = 542	N44U = 588
N41L = 559	N42L = 577	N43L = 587	N44L = 549

- All meter readings were taken with the Current Meter Range Switch Scale in the "1" position.
- Reactor Power is 99.9% by U1169

INITIATING CUE:

The Unit Supervisor instructs you to do the following:

- Manually calculate QPTR per 0PSP10-NI-0002, Excore QPTR Determination.
- Determine any applicable Technical Specification action(s).

J. Carlos Garza	Rory L. Warren	J. Carlos Garza	NF&A
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of Contents Page

1.0 Purpose and Scope

1.1 The purpose of this procedure is to determine the Quadrant Power Tilt Ratio (QPTR) and verify it satisfies the requirements of Technical Specification 3.2.4.

1.2 This procedure is written to verify QPTR by Plant Computer QPTR Method or by Manual QPTR Method.

1.3 This procedure meets the Surveillance Requirements of Technical Specifications 4.2.4.1.a and 4.2.4.1.b.

2.0 Responsibilities

2.1 The Test Coordinator is responsible for identifying the portions of this procedure that are to be performed to satisfy the test purpose.

2.2 The Test Coordinator SHALL ensure that all requirements of this procedure are completed and determine acceptability of the test results.

2.3 The procedure performer SHALL obtain data as specified in the procedure and prepare the data package.

2.4 The verifier SHALL verify all entries and calculations in the data package as specified in the procedure.

2.5 Shift Supervisor or designee SHALL complete the Second Review of Test Results on Form 1.

2.6 Shift Supervisor SHALL complete the Plant Operations Review of Test Results on Form 1 if acceptance criteria are not met.

3.0 Notes & Precautions

3.1 When verifying QPTR to support Power Range NIS Axial Flux Difference (AFD) Calibrations, then the manual calculation process should be used to verify QPTR until all four Power Range channels are calibrated.

3.2 When using the manual calculation process to verify QPTR, then the correct current scale should be read for each detector current value.

3.3 When above 75% RTP with one Power Range NI channel inoperable, at least once per 12 hours, an incore QPTR shall be determined per 0PSP10-II-0004 (Determination of Quadrant Power Tilt Ratio Using Incore Instrumentation) concurrently with this procedure.

3.4 <u>WHEN</u> “ * ” (asterisk) appears in the checkoff space following a step, <u>THEN</u> sign/initial Data Package to signify step completion.

4.0 Prerequisites

4.1 Plant Computer QPTR Method

4.1.1 All four Power Range NI channels are operable. _____

4.1.2 On Plant Curve Book Figure 5.1, the identified Source for the Normalized 100% Power, 0% IAO Excore Detector Currents is either 0PSP10-II-0005 (One Point Incore-Excore Detector Calibration) or 0PSP10-II-0001 (Incore-Excore Detector Calibration). _____

4.1.3 All 4 AFD channels have been calibrated with the latest Incore-Excore calibration data. This prerequisite is satisfied if Plant Computer Points K0554, K0552, K0551, and K0553 match the values recorded on Plant Curve Book Figure 5.1. _____

4.1.4 The following Plant Computer points are operable. _____

- ICYUH0111N QPTR NIS UPPER QUAD A (CH 43)
- ICYUH0112N QPTR NIS UPPER QUAD B (CH 42)
- ICYUH0113N QPTR NIS UPPER QUAD C (CH 44)
- ICYUH0114N QPTR NIS UPPER QUAD D (CH 41)
- ICYUH0121N QPTR NIS LOWER QUAD A (CH 43)
- ICYUH0122N QPTR NIS LOWER QUAD B (CH 42)
- ICYUH0123N QPTR NIS LOWER QUAD C (CH 44)
- ICYUH0124N QPTR NIS LOWER QUAD D (CH 41)

4.2 Manual QPTR Method

4.2.1 At least three Power Range NI channels are operable. _____

4.3 Reactor power has not changed by greater than ± 0.5% RTP in the last 5 minutes. _____

4.4 The plant is in Mode 1. _____

4.5 Notify the Shift Supervisor to review the limiting conditions for operation associated with Technical Specification 3.2.4, Quadrant Power Tilt Ratio. _____

4.6 Have the Shift Supervisor sign Form 1 giving permission to start the test. _____

5.0 Procedure

NOTE
• An approved computer code may be used to perform the calculations on Form 3. • Computer generated forms may also be used for Form 2 or Form 3.

5.1 If using Plant Computer QPTR Method to verify QPTR, then perform the following steps. Otherwise NA the following steps.

5.1.1 Verify the prerequisites have been met and sign Form 1. ___*___

5.1.2 Record the following information on Excore QPTR Form 2. ______

5.1.2.1 Unit number, cycle number, date and time. ______

5.1.2.2 The current Reactor Power indication being used and its value. ______

5.1.3 Record the following QPTR values on Excore QPTR Plant Computer points on Form 2. ______

Upper Radial Flux Tilts (URFT's)

- ICYUH0111N QUAD A (CH 43)
- ICYUH0112N QUAD B (CH 42)
- ICYUH0113N QUAD C (CH 44)
- ICYUH0114N QUAD D (CH 41)

Lower Radial Flux Tilts (LRFT's)

- ICYUH0121N QUAD A (CH 43)
- ICYUH0122N QUAD B (CH 42)
- ICYUH0123N QUAD C (CH 44)
- ICYUH0124N QUAD D (CH 41)

5.1.4 Record the QPTR on Form 2 as the largest numerical value of the URFT or the LRFT Plant Computer points recorded per Step 5.1.3. ______

5.1.5 The Test Coordinator SHALL sign Form 2 when complete. ___*___

5.1.6 Continue with Step 5.3. ______

5.2 If using Manual QPTR Method to verify QPTR, then perform the following steps. Otherwise NA the following steps.

5.2.1 Verify the prerequisites have been met and sign Form 1. ___*___

5.2.2 Record the following information on Excore QPTR Form 3. ______

5.2.2.1 Unit number, cycle number, date and time. ______

5.2.2.2 The current Reactor Power indication being used and its value. ______

CAUTION

Always use the 100% power detector currents from the latest Figure 5.1 in the Plant Curve Book for ALL the NI channels, even if the new values have not yet been set in all of the NI channels.

5.2.2.3 Latest 100% power detector current, in microamps, for each operable upper and lower Power Range NI detector from Figure 5.1 in the Plant Curve Book. ______

CAUTION

- The reading of the upper and lower detector currents for all of the operable Power Range NI detectors should be done as near the same time as possible to minimize any errors from NI channel oscillations.
- Steps 5.2.3 and 5.2.4 need to be performed concurrently.
- Step 5.2.3 refers to each detector current meter range switch scale setting (0.1, 0.5, 1 and 5 settings).
- Ensure that the correct current scale is being read for each detector current value.

5.2.3 Record each detector current meter range switch scale prior to reading the detector current. ______

5.2.4 Read the indicated detector current for each operable upper and lower Power Range NI detector from CP-011 to the nearest microamp, e.g. 612 microamps, and record the values on Excore QPTR Form 3. ______

NOTE

- When one Power Range NI channel is inoperable, the three operable channels shall be used to determine QPTR.
- Comments pertaining to the inoperable channel should be recorded in the REMARKS section of Excore QPTR Form 1.

5.2.5 Calculate the Upper Tilt Ratio (UTR) as follows:

CAUTION

The following calculations in steps 5.2.5.1 through 5.2.5.4 shall be carried out to at least three decimal places.

5.2.5.1 Determine the upper normalized current (I_U) for each channel by dividing the indicated detector current by the 100% power detector current. Record the upper normalized current (I_U) on Excore QPTR Form 3. _____

5.2.5.2 Determine the sum of the upper normalized detector currents (Sum I_U) and record this value on Excore QPTR Form 3. _____

5.2.5.3 Determine the average upper normalized current (Average I_U) by dividing the sum of the upper normalized currents (Sum I_U) by the number of operable detectors. Record the average upper normalized current (Average I_U) on Excore QPTR Form 3. _____

5.2.5.4 Calculate the UTR by dividing the maximum upper normalized current (Maximum I_U) by the average upper normalized current (Average I_U). Record the UTR on Excore QPTR Form 3. _____

5.2.6 Calculate the Lower Tilt Ratio (LTR) as follows:

CAUTION

The following calculations in steps 5.2.6.1 through 5.2.6.4 shall be carried out to at least three decimal places.

5.2.6.1 Determine the lower normalized current (I_L) for each channel by dividing the indicated detector current by the 100% power detector current. Record the lower normalized current (I_L) on Excore QPTR Form 3. _____

5.2.6.2 Determine the sum of the lower normalized current (Sum I_L) and record this value on Excore QPTR Form 3. _____

5.2.6.3 Determine the average lower normalized current (Average I_L) by dividing the sum of the lower normalized currents (Sum I_L) by the number of operable detectors. Record the average lower normalized current (Average I_L) on Excore QPTR Form 3. _____

5.2.6.4 Calculate the LTR by dividing the maximum lower normalized current (Maximum I_L) by the average lower normalized current (Average I_L). Record the LTR on Excore QPTR Form 3. _____

NOTE

QPTR is defined in Technical Specifications as the value of the UTR or the value of the LTR, whichever is greater.

5.2.7 Record the larger numerical value (UTR or LTR) as the QPTR on Form 3. _____

5.2.8 The Test Coordinator SHALL sign Form 3 when calculations are complete. __*__

5.2.9 Obtain independent verification of all calculations, including verification that all of the recorded 100% detector currents on Form 3 are from the latest approved Figure 5.1 of the Plant Curve Book. Sign for independent verification on Form 3. __IV__

5.3 Verify the QPTR meets the Acceptance Criteria. _____

NOTE

If the QPTR > 1.02 and Reactor Power is $\leq$ 50%, then reactor power may be increased above 50% in accordance with the action requirements of Technical Specification 3.2.4.

5.4 If the test results did not satisfy the Acceptance Criteria then immediately notify the Shift Supervisor. ____

5.5 If QPTR > 1.02 and Reactor Power > 50%, then notify the Reactor Engineering Supervisor to prepare to take action per Technical Specification 3.2.4 action b. ____

5.6 The Test Coordinator SHALL ensure all procedure performers and verifiers print their names, sign and initial Form 1. ___*___

5.7 Indicate the reason for performing this test on Form 1. ____

5.8 Indicate the test results and sign Form 1. ___*___

5.9 Mark sections of Form 1, Form 2 or Form 3 which were not completed with N/A or similar notation. ____

5.10 Forward the data package to the Shift Supervisor. ____

5.11 The Shift Supervisor SHALL indicate the results of the second review on Form 1. ____

5.12 If the Shift Supervisor determines test results did not satisfy the acceptance criteria, then he SHALL immediately complete the applicable portion of Form 1. ____

5.13 Forward the Data Package for review in accordance with 0PGP03-ZE-0004 (Plant Surveillance Program). ____

6.0 Acceptance Criteria

6.1 The Quadrant Power Tilt Ratio shall not exceed 1.02.

7.0 References

7.1 STPEGS Technical Specification 3/4.2.4

7.2 0PGP03-ZE-0004, Plant Surveillance Program

7.3 0PSP10-II-0004, Determination of Quadrant Power Tilt Ratio Using Incore Instrumentation

7.4 CR 97-17272 Operator Weakness Reading Wrong Power Range Scale.

8.0 Support Documents

8.1 Form 1 Data Package Cover Sheet

8.2 Form 2 Plant Computer Excore QPTR Data Sheet

8.3 Form 3 Excore QPTR Manually Calculated Data Sheet

Unit 1 Cycle 11	Work Activity Number(s): *N/A* / *N/A*	-ST: *N/A* / -ST: *N/A*	
Tech Spec Reference: 4.2.4.1.a 3.2.4 4.2.4.1.b	Test Interval: 7 days (alm. op.) 12 hrs (alm. inop.)	Modes Required: 1	Test Performance Mode: 1

4.6 Permission to start: *James Madison* (Shift Supervisor) *Today* (Date)

5.7 Reason for Test:

- ☐ For Surveillance Credit
- ☐ Periodic Surveillance Test To Satisfy 4.2.4.1.a
- ☑ Other Annunciator 05M3-B-3 Not Cleared
- ☐ Not for Surveillance Credit
- ☐ Conditional Surveillance to satisfy 4.2.4.1.b

5.8 Test Results:

- ☐ Acceptable (Acceptance Criteria met)
- ☐ Unacceptable (Any Acceptance Criteria NOT met)

Test Completed By: ______________________ ____________ ____________
Test Coordinator Date Time

5.11 Second Review of Test Results:

- ☐ Acceptable (All Acceptance Criteria met)
- ☐ Unacceptable (Any Acceptance Criteria NOT met)

Test Reviewed By: ______________________ ____________ ____________
Shift Supervisor Date Time

5.12 Plant Operations Review of Test Results (if required):

IF test results are unacceptable, IMMEDIATELY inform the Shift Supervisor who SHALL complete the following:

Potential Reportable Occurrence ☐ Yes ☐ No
LCO Action Statement Entered ☐ Yes ☐ No
Corrective Action Taken: ____
____

Test Reviewed By: ______________________ ____________ ____________
Shift Supervisor Date Time

All pages of this Form and Form 2 or Form 3, shall be included in the data package.

This form, when completed, SHALL be retained for the life of the plant.

Performers and Verifiers:			
Name (Printed)	Signature	Initials	Sections Performed

5.1.1 or 5.2.1 Prerequisites met: ______________________ ____________

Test Coordinator Date

Remarks:

This form, when completed, SHALL be retained for the life of the plant.

5.1.2.1 Unit ________ Cycle _________ Date _______________ Time _________

5.1.2.2 Reactor Power _______________ Indicator _________________

5.1.3

Point ID	Description	Channel	Value
Upper Radial Flux Tilt (URFT)			
ICYUH0111N	QPTR NIS UPPER QUAD A	CH 43	
ICYUH0112N	QPTR NIS UPPER QUAD B	CH 42	
ICYUH0113N	QPTR NIS UPPER QUAD C	CH 44	
ICYUH0114N	QPTR NIS UPPER QUAD D	CH 41	
Lower Radial Flux Tilt (LRFT)			
ICYUH0121N	QPTR NIS LOWER QUAD A	CH 43	
ICYUH0122N	QPTR NIS LOWER QUAD B	CH 42	
ICYUH0123N	QPTR NIS LOWER QUAD C	CH 44	
ICYUH0124N	QPTR NIS LOWER QUAD D	CH 41	

5.1.4 QPTR = Largest numerical value of the URFT's or LRFT's	

5.1.5 Performed by: _________________________________ Date: ________________

This form, when completed, SHALL be retained for the life of the plant.

5.2.2.1 Unit ________ Cycle ________ Date ________ Time ________

5.2.2.2 Reactor Power 99.9 Indicator U1169

UPPER DETECTORS

		N41U	N42U	N43U	N44U	5.2.5.2 Sum I_U	5.2.5.3 Average I_U
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)						
5.2.4	Indicated Detector Current (µA)						
5.2.2.3	100% Power Detector Current (µA)						
5.2.5.1	Normalized (I_U) Currents						

5.2.5.4 UPPER TILT RATIO (UTR) = $\frac{\text{Maximum } I_U}{\text{Average } I_U}$ = ________

LOWER DETECTORS

		N41L	N42L	N43L	N44L	5.2.6.2 Sum I_L	5.2.6.3 Average I_L
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)						
5.2.4	Indicated Detector Current (µA)						
5.2.2.3	100% Power Detector Current (µA)						
5.2.6.1	Normalized (I_L) Currents						

5.2.6.4 LOWER TILT RATIO (LTR) = $\frac{\text{Maximum } I_L}{\text{Average } I_L}$ = ________

5.2.7 QPTR = Larger numerical value of the UTR or LTR = ________

5.2.8 Performed by: ________________ Date: ________

5.2.9 Verified (IV) by: ________________ Date: ________

This form, when completed, SHALL be retained for the life of the plant.

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Excore QPTR Determination			
Quality	Non Safety-Related	Usage: **Referenced**	Effective Date: 08/12/02

J. Carlos Garza	Rory L. Warren	J. Carlos Garza	NF&A
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Table of Contents Page

1.0 Purpose and Scope

1.1 The purpose of this procedure is to determine the Quadrant Power Tilt Ratio (QPTR) and verify it satisfies the requirements of Technical Specification 3.2.4.

1.2 This procedure is written to verify QPTR by Plant Computer QPTR Method or by Manual QPTR Method.

1.3 This procedure meets the Surveillance Requirements of Technical Specifications 4.2.4.1.a and 4.2.4.1.b.

2.0 Responsibilities

2.1 The Test Coordinator is responsible for identifying the portions of this procedure that are to be performed to satisfy the test purpose.

2.2 The Test Coordinator SHALL ensure that all requirements of this procedure are completed and determine acceptability of the test results.

2.3 The procedure performer SHALL obtain data as specified in the procedure and prepare the data package.

2.4 The verifier SHALL verify all entries and calculations in the data package as specified in the procedure.

2.5 Shift Supervisor or designee SHALL complete the Second Review of Test Results on Form 1.

2.6 Shift Supervisor SHALL complete the Plant Operations Review of Test Results on Form 1 if acceptance criteria are not met.

3.0 Notes & Precautions

3.1 When verifying QPTR to support Power Range NIS Axial Flux Difference (AFD) Calibrations, then the manual calculation process should be used to verify QPTR until all four Power Range channels are calibrated.

3.2 When using the manual calculation process to verify QPTR, then the correct current scale should be read for each detector current value.

3.3 When above 75% RTP with one Power Range NI channel inoperable, at least once per 12 hours, an incore QPTR shall be determined per 0PSP10-II-0004 (Determination of Quadrant Power Tilt Ratio Using Incore Instrumentation) concurrently with this procedure.

3.4 <u>WHEN</u> “ * ” (asterisk) appears in the checkoff space following a step, <u>THEN</u> sign/initial Data Package to signify step completion.

4.0 Prerequisites

4.1 Plant Computer QPTR Method

4.1.1 All four Power Range NI channels are operable. N/A

4.1.2 On Plant Curve Book Figure 5.1, the identified Source for the Normalized 100% Power, 0% IAO Excore Detector Currents is either 0PSP10-II-0005 (One Point Incore-Excore Detector Calibration) or 0PSP10-II-0001 (Incore-Excore Detector Calibration). N/A

4.1.3 All 4 AFD channels have been calibrated with the latest Incore-Excore calibration data. This prerequisite is satisfied if Plant Computer Points K0554, K0552, K0551, and K0553 match the values recorded on Plant Curve Book Figure 5.1. N/A

4.1.4 The following Plant Computer points are operable. N/A

- ICYUH0111N QPTR NIS UPPER QUAD A (CH 43)
- ICYUH0112N QPTR NIS UPPER QUAD B (CH 42)
- ICYUH0113N QPTR NIS UPPER QUAD C (CH 44)
- ICYUH0114N QPTR NIS UPPER QUAD D (CH 41)
- ICYUH0121N QPTR NIS LOWER QUAD A (CH 43)
- ICYUH0122N QPTR NIS LOWER QUAD B (CH 42)
- ICYUH0123N QPTR NIS LOWER QUAD C (CH 44)
- ICYUH0124N QPTR NIS LOWER QUAD D (CH 41)

4.2 Manual QPTR Method

4.2.1 At least three Power Range NI channels are operable. *Initials*

4.3 Reactor power has not changed by greater than ± 0.5% RTP in the last 5 minutes. *Initials*

4.4 The plant is in Mode 1. *Initials*

4.5 Notify the Shift Supervisor to review the limiting conditions for operation associated with Technical Specification 3.2.4, Quadrant Power Tilt Ratio. *Initials*

4.6 Have the Shift Supervisor sign Form 1 giving permission to start the test. *Initials*

5.0 Procedure

> NOTE
>
> - An approved computer code may be used to perform the calculations on Form 3.
> - Computer generated forms may also be used for Form 2 or Form 3.

5.1 If using Plant Computer QPTR Method to verify QPTR, then perform the following steps. Otherwise NA the following steps.

5.1.1 Verify the prerequisites have been met and sign Form 1. N/A

5.1.2 Record the following information on Excore QPTR Form 2. N/A

5.1.2.1 Unit number, cycle number, date and time. N/A

5.1.2.2 The current Reactor Power indication being used and its value. N/A

5.1.3 Record the following QPTR values on Excore QPTR Plant Computer points on Form 2. N/A

Upper Radial Flux Tilts (URFT's)

- ICYUH0111N QUAD A (CH 43)
- ICYUH0112N QUAD B (CH 42)
- ICYUH0113N QUAD C (CH 44)
- ICYUH0114N QUAD D (CH 41)

Lower Radial Flux Tilts (LRFT's)

- ICYUH0121N QUAD A (CH 43)
- ICYUH0122N QUAD B (CH 42)
- ICYUH0123N QUAD C (CH 44)
- ICYUH0124N QUAD D (CH 41)

5.1.4 Record the QPTR on Form 2 as the largest numerical value of the URFT or the LRFT Plant Computer points recorded per Step 5.1.3. N/A

5.1.5 The Test Coordinator SHALL sign Form 2 when complete. N/A

5.1.6 Continue with Step 5.3. N/A

5.2 If using Manual QPTR Method to verify QPTR, then perform the following steps. Otherwise NA the following steps.

5.2.1 Verify the prerequisites have been met and sign Form 1. *Initials*

5.2.2 Record the following information on Excore QPTR Form 3. *Initials*

5.2.2.1 Unit number, cycle number, date and time. *Initials*

5.2.2.2 The current Reactor Power indication being used and its value. *Initials*

CAUTION

Always use the 100% power detector currents from the latest Figure 5.1 in the Plant Curve Book for ALL the NI channels, even if the new values have not yet been set in all of the NI channels.

5.2.2.3 Latest 100% power detector current, in microamps, for each operable upper and lower Power Range NI detector from Figure 5.1 in the Plant Curve Book. *Initials*

CAUTION

- The reading of the upper and lower detector currents for all of the operable Power Range NI detectors should be done as near the same time as possible to minimize any errors from NI channel oscillations.
- Steps 5.2.3 and 5.2.4 need to be performed concurrently.
- Step 5.2.3 refers to each detector current meter range switch scale setting (0.1, 0.5, 1 and 5 settings).
- Ensure that the correct current scale is being read for each detector current value.

5.2.3 Record each detector current meter range switch scale prior to reading the detector current. *Initials*

5.2.4 Read the indicated detector current for each operable upper and lower Power Range NI detector from CP-011 to the nearest microamp, e.g. 612 microamps, and record the values on Excore QPTR Form 3. *Initials*

NOTE

- When one Power Range NI channel is inoperable, the three operable channels shall be used to determine QPTR.
- Comments pertaining to the inoperable channel should be recorded in the REMARKS section of Excore QPTR Form 1.

5.2.5 Calculate the Upper Tilt Ratio (UTR) as follows:

CAUTION

The following calculations in steps 5.2.5.1 through 5.2.5.4 shall be carried out to at least three decimal places.

5.2.5.1 Determine the upper normalized current (I_U) for each channel by dividing the indicated detector current by the 100% power detector current. Record the upper normalized current (I_U) on Excore QPTR Form 3. *Initials*

5.2.5.2 Determine the sum of the upper normalized detector currents (Sum I_U) and record this value on Excore QPTR Form 3. *Initials*

5.2.5.3 Determine the average upper normalized current (Average I_U) by dividing the sum of the upper normalized currents (Sum I_U) by the number of operable detectors. Record the average upper normalized current (Average I_U) on Excore QPTR Form 3. *Initials*

5.2.5.4 Calculate the UTR by dividing the maximum upper normalized current (Maximum I_U) by the average upper normalized current (Average I_U). Record the UTR on Excore QPTR Form 3. *Initials*

5.2.6 Calculate the Lower Tilt Ratio (LTR) as follows:

CAUTION

The following calculations in steps 5.2.6.1 through 5.2.6.4 shall be carried out to at least three decimal places.

5.2.6.1 Determine the lower normalized current (I_L) for each channel by dividing the indicated detector current by the 100% power detector current. Record the lower normalized current (I_L) on Excore QPTR Form 3. *Initials*

5.2.6.2 Determine the sum of the lower normalized current (Sum I_L) and record this value on Excore QPTR Form 3. *Initials*

5.2.6.3 Determine the average lower normalized current (Average I_L) by dividing the sum of the lower normalized currents (Sum I_L) by the number of operable detectors. Record the average lower normalized current (Average I_L) on Excore QPTR Form 3. *Initials*

5.2.6.4 Calculate the LTR by dividing the maximum lower normalized current (Maximum I_L) by the average lower normalized current (Average I_L). Record the LTR on Excore QPTR Form 3. *Initials*

NOTE

QPTR is defined in Technical Specifications as the value of the UTR or the value of the LTR, whichever is greater.

5.2.7 Record the larger numerical value (UTR or LTR) as the QPTR on Form 3. *Initials*

5.2.8 The Test Coordinator SHALL sign Form 3 when calculations are complete. *Initials*

5.2.9 Obtain independent verification of all calculations, including verification that all of the recorded 100% detector currents on Form 3 are from the latest approved Figure 5.1 of the Plant Curve Book. Sign for independent verification on Form 3. IV

5.3 Verify the QPTR meets the Acceptance Criteria. _______

NOTE

If the QPTR > 1.02 and Reactor Power is ≤ 50%, then reactor power may be increased above 50% in accordance with the action requirements of Technical Specification 3.2.4.

5.4 If the test results did not satisfy the Acceptance Criteria then immediately notify the Shift Supervisor. *Initials*

5.5 If QPTR > 1.02 and Reactor Power > 50%, then notify the Reactor Engineering Supervisor to prepare to take action per Technical Specification 3.2.4 action b. *Initials*

5.6 The Test Coordinator SHALL ensure all procedure performers and verifiers print their names, sign and initial Form 1. *Initials* * ____

5.7 Indicate the reason for performing this test on Form 1. *Initials*

5.8 Indicate the test results and sign Form 1. *Initials* * ____

5.9 Mark sections of Form 1, Form 2 or Form 3 which were not completed with N/A or similar notation. *Initials*

5.10 Forward the data package to the Shift Supervisor. ____

5.11 The Shift Supervisor SHALL indicate the results of the second review on Form 1. ____

5.12 If the Shift Supervisor determines test results did not satisfy the acceptance criteria, then he SHALL immediately complete the applicable portion of Form 1. ____

5.13 Forward the Data Package for review in accordance with 0PGP03-ZE-0004 (Plant Surveillance Program). ____

6.0 Acceptance Criteria

6.1 The Quadrant Power Tilt Ratio shall not exceed 1.02.

7.0 References

7.1 STPEGS Technical Specification 3/4.2.4

7.2 0PGP03-ZE-0004, Plant Surveillance Program

7.3 0PSP10-II-0004, Determination of Quadrant Power Tilt Ratio Using Incore Instrumentation

7.4 CR 97-17272 Operator Weakness Reading Wrong Power Range Scale.

8.0 Support Documents

8.1 Form 1 Data Package Cover Sheet

8.2 Form 2 Plant Computer Excore QPTR Data Sheet

8.3 Form 3 Excore QPTR Manually Calculated Data Sheet

Form 1	Data Package Cover Sheet (Sample)	Page 1 of 2

Unit 1 Cycle 11	Work Activity Number(s): ____ -ST: ____ -ST: ____

Tech Spec Reference:	Test Interval:	Modes Required:	Test Performance Mode:
4.2.4.1.a 3.2.4 4.2.4.1.b	7 days (alm. op.) 12 hrs (alm. inop.)	1	1

4.6 Permission to start: *James Madison* *Today*
Shift Supervisor Date

5.7 Reason for Test:

- ☐ For Surveillance Credit
- ☐ Periodic Surveillance Test To Satisfy 4.2.4.1.a
- ☑ Other Annunciator 05M3-B-3 Not Cleared
- ☐ Not for Surveillance Credit
- ☐ Conditional Surveillance to satisfy 4.2.4.1.b

5.8 Test Results:

- ☐ Acceptable (Acceptance Criteria met)
- ☑ Unacceptable (Any Acceptance Criteria NOT met)

Test Completed By: *Applicant's Signature* *Date* *Time*
Test Coordinator Date Time

5.11 Second Review of Test Results:

- ☐ Acceptable (All Acceptance Criteria met)
- ☐ Unacceptable (Any Acceptance Criteria NOT met)

Test Reviewed By: ____ ____ ____
Shift Supervisor Date Time

5.12 Plant Operations Review of Test Results (if required):

IF test results are unacceptable, IMMEDIATELY inform the Shift Supervisor who SHALL complete the following:

Potential Reportable Occurrence ☐ Yes ☐ No
LCO Action Statement Entered ☐ Yes ☐ No
Corrective Action Taken: ____

Test Reviewed By: ____ ____ ____
Shift Supervisor Date Time

All pages of this Form and Form 2 or Form 3, shall be included in the data package.

Performers and Verifiers:			
Name (Printed)	Signature	Initials	Sections Performed
Applicant’s Name	*Applicant’s Signature*	*Initials*	*4, 5 or various*

5.1.1 or 5.2.1 Prerequisites met: *Applicant’s Signature* *Date*
Test Coordinator Date

Remarks: *Applicant may make an entry in this section regarding QPTR being Unsat and entry into Technical Specifications.*

5.1.2.1 Unit ________ Cycle _________ Date _______________ Time _________

5.1.2.2 Reactor Power _______________ Indicator __________________

5.1.3

Point ID	Description	Channel	Value
Upper Radial Flux Tilt (URFT)			
ICYUH0111N	QPTR NIS UPPER QUAD A	CH 43	
ICYUH0112N	QPTR NIS UPPER QUAD B	CH 42	
ICYUH0113N	QPTR NIS UPPER QUAD C	CH 44	
ICYUH0114N	QPTR NIS UPPER QUAD D	CH 41	
Lower Radial Flux Tilt (LRFT)			
ICYUH0121N	QPTR NIS LOWER QUAD A	CH 43	
ICYUH0122N	QPTR NIS LOWER QUAD B	CH 42	
ICYUH0123N	QPTR NIS LOWER QUAD C	CH 44	
ICYUH0124N	QPTR NIS LOWER QUAD D	CH 41	

N/A

KEY

5.1.4 QPTR = Largest numerical value of the URFT's or LRFT's	

5.1.5 Performed by: ________________________________ Date: ________________

This form, when completed, SHALL be retained for the life of the plant.

Excore QPTR Determination

Form 3	Excore QPTR Manually Calculated Data Sheet (SAMPLE)	Page 1 of 1

5.2.2.1 Unit 1 Cycle 11 Date *Date* Time *Time*

5.2.2.2 Reactor Power 99.9 Indicator U1169

UPPER DETECTORS

		N41U	N42U	N43U	N44U		
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)	1	1	1	1		
5.2.4	Indicated Detector Current (µA)	536.0	567.0	542.0	588.0		
5.2.2.3	100% Power Detector Current (µA)	534.0	564.1	542.0	586.4	5.2.5.2 Sum I_U	5.2.5.3 Average I_U
5.2.5.1	Normalized (I_U) Currents	1.004	1.005	1.000	1.003	4.012	1.003

5.2.5.4 UPPER TILT RATIO (UTR) = $\dfrac{\text{Maximum } I_U}{\text{Average } I_U}$ = 1.002

LOWER DETECTORS

		N41L	N42L	N43L	N44L		
5.2.3	Current Meter Range Switch Scale (0.1, 0.5, 1 or 5)	1	1	1	1		
5.2.4	Indicated Detector Current (µA)	559.0	577.0	587.0	549.0		
5.2.2.3	100% Power Detector Current (µA)	555.0	552.5	582.9	543.2	5.2.6.2 Sum I_L	5.2.6.3 Average I_L
5.2.6.1	Normalized (I_L) Currents	1.007	1.044	1.007	1.011	4.069	1.017

5.2.6.4 LOWER TILT RATIO (LTR) = $\dfrac{\text{Maximum } I_L}{\text{Average } I_L}$ = 1.027

5.2.7 QPTR = Larger numerical value of the UTR or LTR = 1.027

5.2.8 Performed by: *Applicant's Signature* Date: *Date*

5.2.9 Verified (IV) by: ____________________ Date: __________

This form, when completed, SHALL be retained for the life of the plant.

Figure 5.1
Incore-Excore Cross-Calibration Constants
Unit 1 Cycle 11

(Source: 0PSP10-II-0005 performed 1/14/03)

Normalized 100% Power, 0% IAO Excore Detector Current (micoaramps)				
Channel	N41	N42	N43	N44
Upper	534.0	564.1	542.0	586.4
Lower	555.0	552.5	582.9	543.2

Incore vs. Excore Axial Offset Equations	
N41	IAO = 1.456 × EAO + (2.804)
N42	IAO = 1.456 × EAO + (-1.509)
N43	IAO = 1.456 × EAO + (5.293)
N44	IAO = 1.456 × EAO + (-5.575)

EAO is calculated based on Top Detector Current (IT) and Bottom Detector Current (IB) as follows:
EAO = (IT – IB) ÷ (IT + IB) × 100%

Delta-I% is determined by calculating IAO using the calculated EAO in the Incore vs. Excore Axial Offset Equations above and the following:
Delta-I% = IAO × (% Reactor Power) ÷ 100

Plant Computer Incore vs. Excore Constants			
Channel	Constants	Point ID	Value
N41	M41	K0554	17.466
N42	M42	K0552	17.466
N43	M43	K0551	17.466
N44	M44	K0553	17.466

OT-Delta-T Circuitry Summing Amplifier Gains – f(Delta-I%)				
Channel	N41	N42	N43	N44
Gain	1.820	1.820	1.820	1.820

Delta-I% is calculated using the following Yokogawa Recorder Voltage vs. Delta-I% Equation:
Delta-I% = 9.6 × Gain × (Recorder Delta-V)
Where Delta-V is obtained from NR-41, -42, -43, -44 Ch. 3 display

Completed By: J. Carlos Garza Date: 1/15/03

Reviewed By: Steve J. Farnham II Date: 1/22/03

Approved By: Duane Gore Date: 1/22/03

Reactor Engineering Supervisor

NUCLEAR TRAINING DEPARTMENT

JOB PERFORMANCE MEASURE

TITLE: **PERFORM INSTRUMENTATION CHANNEL CHECKS**

JPM NO.: **A2**

REVISION: **2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	PERFORM INSTRUMENTATION CHANNEL CHECKS
JPM No.:	A2
Rev. No.:	2
Task No.:	68900
STP Objective:	68900, Maintain required logs records, charts, printouts and status reports in accordance with 0POP01-ZQ-0022.
Related K/A Reference:	2.1.20 (4.3) Ability to execute procedure steps
References:	0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks
Task Normally Completed By:	RO
Method of Testing:	Actual Performance
Location of Testing:	NTF
Time Critical Task:	NO
Alternate Path JPM:	NO
Validation Time:	30 minutes

Required Materials (Tools/Equipment):

- Red Pen
- Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 2 is at 100% power. Surveillance Procedure 0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks, is in progress. Steps have been completed through step 5.4 (data gathering).

From the OAS Log, the following Core Exit Thermocouples (CETs) are inoperable:

TE07, TE08, TE10, TE12, TE31, TE32, TE44, TE48, TE49

INITIATING CUE:

The Unit Supervisor directs you to complete the surveillance beginning with step 5.5 (comparison of channel indications on Data Sheet 1 and 2 with Acceptance Criteria) and inform him if any Acceptance Criteria are not met.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The student notes the following critical items:

1. *The channel check for SG 'B' Pressure does not meet acceptance criteria (Critical Item)*

2. *Quadrant 'A' or 'B' thermocouples do not meet the Acceptance Criteria for Center Area CET's because TE11 can only be used to satisfy the requirements for one of these quadrants, not both. (Critical Item)*

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Student copy of 0PSP03-SP-0001

NOTES:

A Key is provided for the evaluator. **Do NOT hand this out to the student.**

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:
$ Critical steps are identified by (C).
$ Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

<u>SAT/UNSAT</u> Performance Step: 1

Obtain a copy of 0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks

Standard:

Obtains a copy of 0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks

Comment:

Provide the student with the handout copy of 0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Compare the channel indication with the Acceptance Criteria

Standard:

Determines the channel check for SG ‘B’ Pressure does not meet acceptance criteria

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 3 (C)

Compare the channel indication with the Acceptance Criteria

Standard:

Determines Quadrant ‘A’ or ‘B’ thermocouples do not meet the Acceptance Criteria for Center Area CET’s because TE11 can only be used to satisfy the requirements for one of these quadrants, not both.

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A2, PERFORM INSTRUMENTATION CHANNEL CHECKS

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature** __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 2 is at 100% power. Surveillance Procedure 0PSP03-SP-0001, Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks, is in progress. Steps have been completed through step 5.4 (data gathering).

From the OAS Log, the following Core Exit Thermocouples (CETs) are inoperable:

TE07, TE08, TE10, TE12, TE31, TE32, TE44, TE48, TE49

INITIATING CUE:

The Unit Supervisor directs you to complete the surveillance beginning with step 5.5 (comparison of channel indications on Data Sheet 1 and 2 with Acceptance Criteria) and inform him if any Acceptance Criteria are not met.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
SG PRESS	ASP	DET. DATA P. 6	PT-514	1032	≤ 40 psig between PT-7411 and PT-514/515/516	4.3.3.5.1 4.3.3.6 [ITS SR 3.3.4.1 SR 3.3.3.1]
			PT-515	1044		
			PT-516	1059		
			PT-7411	1035		
			PT-524	1037	≤ 40 psig between PT-7421 and PT-524/525/526	
			PT-525	1011		
			PT-526	1027		
			PT-7421	1052		
			PT-534	1031	≤ 40 psig between PT-7431 and PT-534/535/536	
			PT-535	1028		
			PT-536	1034		
			PT-7431	1043		
			PT-544	1020	≤ 40 psig between PT-7441 and PT-544/545/546	
			PT-545	1031		
			PT-546	1042		
			PT-7441	1034		

The difference between PT-7421 and the PT-525 is >40 psig therefore these transmitters do not meet acceptance criteria.

1.0 Determine inoperable CETs from OAS log **AND** surveillance Data Sheet 1.

NOTE

This section ensures core radial temperature gradient can be adequately measured.

2.0 Circle in RED each of the **INOPERABLE** CETs for Channel A in Table 1 below:

TABLE 1

	Quadrant A	**Quadrant B**	**Quadrant C**	**Quadrant D**
Perimeter Area CETs	TE01	TE02		
	TE03	TE04*		
	TE04*	TE05		
	TE06	TE09		
	TE13*			
Center Area CETs	TE07	TE08	TE16	TE15
	TE10	TE11*	TE19*	TE18**
	TE11*	TE12	TE20**	TE19*

The 4 thermocouples circled are inoperable (per the given information) leaving only TE11 operable in Quadrants 'A' and 'B'. However, this is a shared thermocouple, thus can only be used to satisfy the requirements of one of these Quadrants causing one to not meet acceptance criteria.

* Denotes shared CETs (Shared CETs are located within the boundaries between quadrants and may be used in either quadrant) (Reference Addendum 2).

** May be used as a Perimeter Area CET or Center Area CET.

NOTE

- **NO** shared CETs SHALL be used in more than one Quadrant.
- IF TE20 is used in a CET pair, THEN pairing is EITHER with TE24 OR TE16.
- IF TE18 is used in a CET pair, THEN pairing is EITHER with TE21 OR TE15.

3.0 Determine Acceptance Criteria (**AC**) using Table 1 (above):

Initials

AC • One operable CET in the Center Area **AND** one operable CET in the Perimeter Area for each quadrant. ______

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Remote Shutdown Monitoring and Accident Monitoring Instrumentation Channel Checks			
Quality	Safety-Related	Usage: **IN HAND Controlling Station**	Effective Date: 12/26/02

E. H. Hudson	T.J. Riccio	Crew 1A	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

Procedure Performance Data Sheet

Unit Number: 2	Work Activity Number: 229342	-ST: 88001993	
Technical Specification Reference: 4.3.3.5.1, 4.3.3.6 [ITS SR 3.3.3.1, SR 3.3.4.1]			
Test Interval: Monthly	Test Performance Allowed in Plant Modes: 1,2,3,4	Train Reference: N/A	

Reason for Test:

☒ Periodic Surveillance Test — ☒ For Surveillance Credit

☐ Maintenance Work Package # ____________________ — ☐ Not for Surveillance Credit

Radiation Work Permit No.:	Fire Hazard Evaluation No.:	Equipment Clearance No.:
N/A	N/A	N/A

Administrative Approval to Perform Test:

BT Barnum	today	now
Shift Supervisor	Date	Time

Test Results Review:

☐ Acceptable - All data within acceptance criteria

☐ Unacceptable - Any data **NOT** within acceptance criteria (explain in Remarks)

Reviewed By:

Test Coordinator Date Time

Plant Operations Review:

All Data Within Acceptance Criteria?	☐ Yes	☐ No
Instrumentation Available for Service?	☐ Yes	☐ No
Potential Reportable Occurrence?	☐ Yes	☐ No
LCO Action Statement Entered?	☐ Yes	☐ No

Corrective Action Taken:

Reviewed By:

Shift Supervisor Date Time

Division Surveillance Coordinator Review:

Reviewed By:

Division Surveillance Coordinator Date Time

Procedure Performance Data Sheet

Performers and Verifiers:

Name (Print)	Signature	Initials
George Thrugood	George Thurgood	GT

Remarks: ______________________________

1.0 Purpose and Scope

1.1 This procedure provides instructions for demonstrating operability of each remote shutdown monitoring instrumentation channel by performance of a CHANNEL CHECK, as required by Technical Specification 4.3.3.5.1 [ITS SR 3.3.4.1].

1.2 This procedure also provides instructions for demonstrating the operability of selected accident monitoring instrumentation by performance of a CHANNEL CHECK, as required by Technical Specification 4.3.3.6 [ITS SR 3.3.3.1].

2.0 Responsibilities

2.1 WHEN "_____” follows a step with an Initials header, THEN the performer shall enter initials to verify step completion.

2.2 WHEN "_____” follows a step with a Check header, THEN the performer shall enter a check mark in blank to verify step completion.

2.3 Immediately notify Shift Supervisor if any Acceptance Criteria can not be met during performance of this procedure.

2.4 The following shall review test results:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator

2.5 Shift Supervisor shall grant permission to perform test.

2.6 Plant Operations shall perform this procedure.

3.0 Precautions and Notes

3.1 Failure to meet the acceptance criteria of the test may require entry into LCO Action Statement 3.3.3.5 and/or 3.3.3.6 [ITS 3.3.3 and/or 3.3.4].

3.2 IF the total number of channels is less than the total number of channels indicated in Technical Specification Tables 3.3-9 and 3.3-10, THEN ensure the required Action Statement is applied.

3.3 Steps, which denote Acceptance Criteria, are annotated with letters **AC** in left-hand margin preceding step.

3.4 IF testing is terminated for any reason, THEN immediately notify Shift Supervisor.

3.5 IF Acceptance Criteria are NOT met for any part of this procedure OR this procedure can NOT be performed, THEN perform the following:

3.5.1 Immediately notify Shift Supervisor.

3.5.2 Continue procedure with concurrence of Shift Supervisor to discover any other problems OR terminate procedure as unacceptable.

3.5.3 Record discrepancies and time of discovery in Remarks section of Procedure Performance Data Sheet.

3.5.4 Ensure Shift Supervisor signs in Remarks section of Procedure Performance Data Sheet.

3.5.5 CETs located above a fuel assembly face adjacent to the core baffle are Core Baffle CETs and may indicate lower values when compared to other CET locations due to core design, bypass flow, and power distribution. This may result in temperature differences exceeding ≤ 60°F acceptance criteria.

3.6 IF QDPS indicates "↓ LO" OR "↑ HI", THEN the corresponding Plant Computer Points may be used to validate the associated QDPS indications noted within this procedure based on the following:

- Although the Plant Computer data point will show bad (blue), the value shown indicates the input that QDPS is receiving.
- The "↓ LO" OR "↑ HI" setpoints used by QDPS are set conservative with respect to the allowable values used to determine the acceptance criteria.
- IF the value indicated on Plant Computer is within the acceptance criteria for QDPS, THEN the data indicates the QDPS display is acceptable.

3.7 IF CET(s) have failed with the described conditions (Ref.7.4.12), THEN the following criteria may be used to validate operability of the RCS Subcooling Margin Monitor:

- IF a single CET is fluctuating between the hottest and coldest in its quadrant, THEN the quadrant average is valid provided that there are a minimum of 6 valid (quality code GOOD) CETs in the quadrant AND the quadrant gradient (difference between the hottest and coldest CET) is <60 °F.
- IF CET(s) fail High, Low, OR a CET is the quadrants hottest or coldest, THEN the quadrant average is valid provided that there are a minimum of 4 valid CETs in the quadrant.

3.8 <u>WHEN</u> recorded data from associated Plant Computer is required <u>AND</u> the Plant Computer data point indicates “LO” or “HI”, <u>THEN</u> perform the following at the Plant Computer:

3.8.1 Go to POINT INFO and enter data point.

3.8.2 <u>IF</u> point shows “******B”, <u>THEN</u> select VALUE/STATUS tab.

3.8.3 Scroll to the TEST MODE portion of the screen.

3.8.4 Click on GOOD and APPLY.

3.8.5 Read and record value.(point will show data with a cyan “T”)

3.8.6 <u>IF</u> data point still shows bad, <u>THEN</u> the point is inoperable.

3.8.7 Click on “OFF” for the TEST MODE, <u>THEN</u> click on APPLY.
Data should go back to “******B” after a small time delay.

Check

4.0 Prerequisites

4.1 Record the following on Procedure Performance Data Sheet:

- Unit number ✓
- Surveillance Test (ST) Number(s) ✓
- Work Activity Number ✓
- Reason for Test ✓

4.2 Verify Normalization is **NOT** installed in SSPS. ✓

4.3 Obtain Shift Supervisor's signature for administrative approval to perform this procedure on Procedure Performance Data Sheet. ✓

5.0 Procedure

CAUTION

IF any channel indication is NOT available, THEN the Shift Supervisor SHALL be immediately notified.

AC 5.1 Locate operating parameters as listed on Data Sheet 1, Remote Shutdown And Accident Monitoring Instrumentation Channel Checks. ✓

5.2 Observe the parameter indications and record on Data Sheet 1, Remote Shutdown And Accident Monitoring Instrumentation Channel Checks. ✓

AC 5.3 Locate operating parameters as listed on Data Sheet 2, CET Pair And Quadrant Operability. ✓

5.4 Observe the parameter indications and record on Data Sheet 2, CET Pair And Quadrant Operability. ✓

AC 5.5 Compare the channel indication with the "ACCEPTANCE CRITERIA" value listed, as applicable. _____

AC 5.6 Evaluate test results by comparing the data with the Acceptance Criteria listed in Section 6.0. _____

5.7 Record results of the evaluation and sign on the Procedure Performance Data Sheet. _____

5.8 IF the results of the evaluation are unsatisfactory, THEN notify the Shift Supervisor immediately. _____

Check

5.9 IF unable to perform this surveillance on an inoperable component, OR the component does NOT meet the acceptance criteria, THEN ensure an appropriate log entry is recorded that requires the satisfactory performance of this surveillance prior to the component being declared operable. (Reference 7.4.1) _____

5.10 Notify Shift Supervisor that channel checks are complete. _____

6.0 Acceptance Criteria

6.1 Channel indication for each item listed on Data Sheet 1 is available at the readout location listed. (Steps 5.1 and 5.3)

6.2 Channel indication is consistent with operating conditions and where applicable, within the maximum deviation allowed with other independent channels monitoring the same parameter. (Step 5.5)

6.3 Test results will be considered acceptable provided channel checks for Remote Shutdown Monitoring and Accident Monitoring instrumentation meet the requirements of Technical Specification 3.3.3.5 Table 3.3-9 and Technical Specification 3.3.3.6 Table 3.3-10, minimum channels operable [ITS 3.3.3 Table 3.3.3-1 and ITS 3.3.4 Table 3.3.4-1, required number of functions]. (Step 5.6)

6.4 Data Sheet 2 will be considered acceptable provided the operable instrumentation meets the requirements of Technical Specification Table 3.3-10 minimum channels operable [ITS 3.3.3 Table 3.3.3-1, required channels].

7.0 References

7.1 Technical Specifications

7.1.1 Technical Specification 3.3.3.5 [ITS 3.3.4]

7.1.2 Technical Specification 4.3.3.5.1 [ITS SR 3.3.4.1]

7.1.3 Technical Specification 3.3.3.6 [ITS 3.3.3]

7.1.4 Technical Specification 4.3.3.6 [ITS SR 3.3.3.1]

7.2 Regulatory Guides and Standards

7.2.1 Regulatory Guide 1.97

7.3 UFSAR

7.3.1 Section 7.4.1.9.1, Auxiliary Shutdown Panel

7.4 Commitments

7.4.1 LCTS Item 93000260, (SPR 930079/LER 93-002, Technical Specification 3.0.3 due to Two Channels of NIs inoperable)

7.4.2 LCTS Item 9302383-936 (SPR 932407/LER 93-014, Failure to fully meet Technical Specification Testing Requirements of containment hydrogen monitors)

7.4.3 LER 2-94-006, Inadequate Qualitative Acceptance Criteria for Accident Monitoring/Remote Shutdown Instrumentation

7.4.4 Letter ST-HS-HS-29349, S.E. Thomas to R.E. Masse, Revisions to Channel Check Procedure

7.4.5 Letter ST-HS-HS-29494, S.E. Thomas to R.E. Masse, Revisions to Channel Check Procedure

7.4.6 SPR 94-1500, Containment Wide Range Level Transmitter Acceptance

7.4.7 Criteria as specified within the procedure is outside of vendor recommended range

7.4.8 Letter ST-HS-HS-29644, R.F. Carroll to R. Brinkley, Extended Range Neutron Monitors N-45 and N-46

7.4.9 CR 94-1623, Incorrect Technical Specification References for AFW parameters

7.4.10 Letter ST-HS-HS-32364, T.C. Koser to Distribution, Amendment 77 to the Unit 1 Operating License & Amendment 66 to the Unit 2 Operating License

7.4.11 CREE #97-7687-3 Baffle Area CET Acceptance Criteria

7.4.12 CREE #00-9838-1 Evaluate QDPS RCS subcooling algorithm using various thermocouple single-failure criteria.

7.4.13 CREE #01-1928-4 Remote RVLIS Indications

7.5 Technical Standards and Manuals

None

7.6 Drawings

7.6.1 14926-0358 (1) 00001-AWN, TGX/THX Incore Thermocouple Locations

7.6.2 14926-0358 (2) 00001-AWN, TGX/THX Incore Thermocouple Locations

7.7 STPEGS Procedures and Policies

7.7.1 0PGP03-ZE-0004, Plant Surveillance Program

8.0 <u>Support Documents</u>

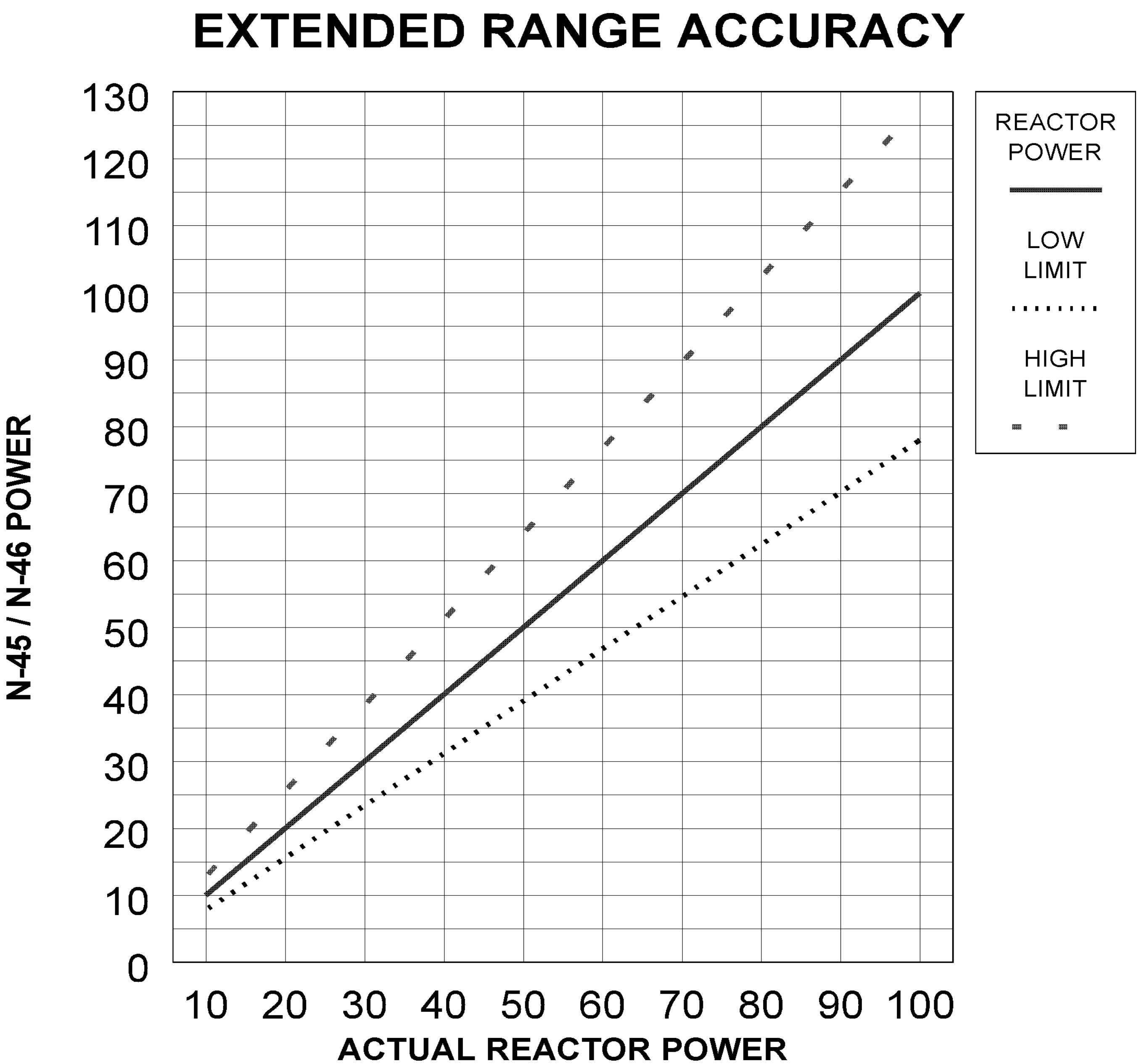
8.1 Addendum 1, Extended Range Accuracy

8.2 Addendum 2, Core Map of CET Pairs

8.3 Addendum 3, CET Core Map for Subcooling

8.4 Data Sheet 1, Remote Shutdown And Accident Monitoring Instrumentation Channel Checks

8.5 Data Sheet 2, CET Pair And Quadrant Operability



This graph is for the range of 10% to 100% power.
Determine Reactor Power using average Power Range NI's when ≥ 10%.
Verify N-45 / N-46 power indicates within Low and High Limits.
(i.e., 10% = 7.8% to 12.8%, 100% = 78% to 128%)

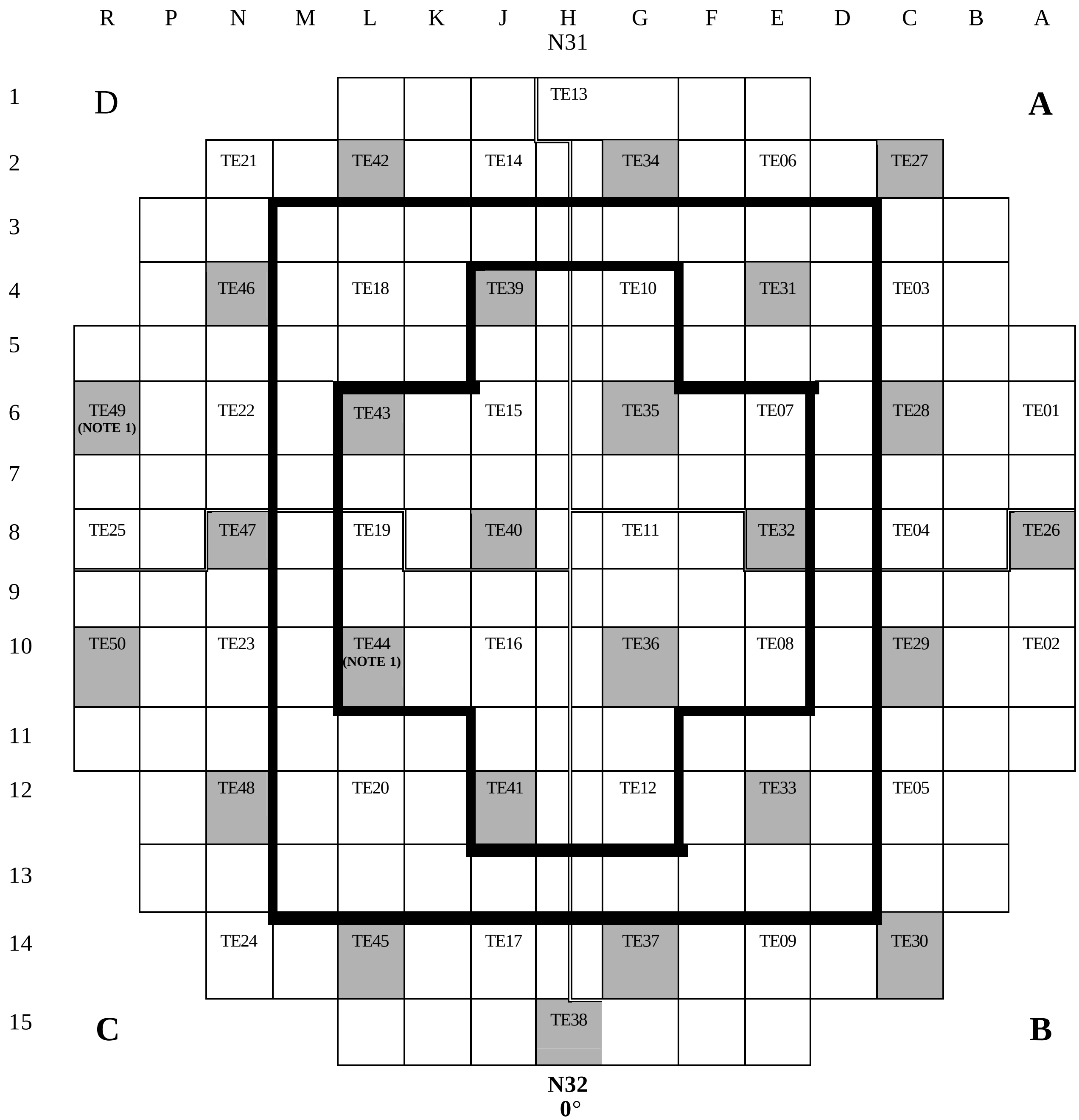
N31

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1	**D**							TE13							A
2			TE21		TE42		TE14		TE34		TE06		TE27		
3															
4			TE46		TE18		TE39		TE10		TE31		TE03		
5															
6	TE49 **(NOTE 1)**		TE22		TE43		TE15		TE35		TE07		TE28		TE01
7															
8	TE25		TE47		TE19		TE40		TE11		TE32		TE04		TE26
9															
10	TE50		TE23		TE44 **(NOTE 1)**		TE16		TE36		TE08		TE29		TE02
11															
12			TE48		TE20		TE41		TE12		TE33		TE05		
13															
14			TE24		TE45		TE17		TE37		TE09		TE30		
15	**C**							TE38							B

N32
0°

LEGEND: Non-Shaded = Channel A
Shaded = Channel C
" - - " - Quadrant Boundary for CET Shared Pairs
"▬" - Core Region Boundary

NOTE 1 - **(UNIT 2 ONLY)** DCP 99-15627-2 has capped and abandoned in place CET 44 and CET 49.



LEGEND: Non-Shaded = Channel A Shaded = Channel C

" - - " - Quadrant Boundary for Subcooling CETs "▬" - Core Region Boundary

NOTE 1 - **(UNIT 2 ONLY)** DCP 99-15627-2 has capped and abandoned in place CET 44 and CET 49.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
E/R FLUX- LOWER RNG	CONTROL ROOM	DET. DATA P. 4	NI-45A (1)	290494	(2)	4.3.3.6 [ITS SR 3.3.3.1]
			NI-46A (1)	298651		
E/R FLUX- UPPER RNG			NI-45 (3)	1.0E+2	(4)	
			NI-46 (3)	1.0E+2		
E/R FLUX - SUR			NI-45B	0.0	≤ 0.5 dpm MAX DEVIATION	
			NI-46B	0.0		
E/R PRESS AND W/R PRESS	ASP	DET. DATA P. 1	PT-405	2272	≤ 60 psig MAX DEVIATION	4.3.3.5.1 4.3.3.6 [ITS SR 3.3.4.1 SR 3.3.3.1]
			PT-407	2243		
			PT-406	2258		
RCS SUBCOOLING			SUBCOOL DPU A	23	≤ 15 °F MAX DEVIATION	4.3.3.6 [ITS SR 3.3.3.1]
			SUBCOOL DPU C	23		

Note (1) IF "↓ LO" OR "↑ HI", THEN record data from associated Plant Computer data points NINE0045A or NINE0046A as required.

Note (2) IF highest countrate is ≥ 1000 CPS, THEN the maximum deviation is by a factor of 10.

IF highest countrate is < 1000 CPS, THEN the maximum deviation is by a factor of 15.

Note (3) IF "↓ LO" OR "↑ HI", THEN record data from associated Plant Computer data points NINE0045 or NINE0046 as required.

Note (4) Use Addendum 1, Extended Range Accuracy, to assess channel operability.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
TC W/R	ASP	DET. DATA P.1	TE-414	560	≤ 22°F MAX DEVIATION (1)	4.3.3.5.1 4.3.3.6 [ITS SR 3.3.4.1 SR 3.3.3.1]
			TE-424	561		
			TE-434	562		
			TE-444	560		
TH W/R			TE-413	625	≤ 22°F MAX DEVIATION (1)	
			TE-423	623		
			TE-433	625		
			TE-443	624		

Note (1) IF loop low-flow (≤ 2 RCPs) conditions exist AND Max deviation is > 22°F between wide range indicators, THEN:

- IF narrow range indicator is on scale,
  THEN ensure ≤ 22°F deviation exists between wide range and corresponding narrow range.
  (NR indication is on Detector Data Page 2 of QDPS)

- IF narrow range indicator is NOT on scale,
  THEN a reading consistent with current operating conditions is SATISFACTORY.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
RVWL - TRN A	ASP	DET DATA P. 3 (1)	TRAIN A	sat	(2)	4.3.3.6 [ITS SR 3.3.3.1]
RVWL - TRN C			TRAIN C	sat		
PRZR LVL		DET DATA P. 3	LT-465	55.1	< 5% MAX DEVIATION	4.3.3.5.1 4.3.3.6 [ITS SR 3.3.4.1 SR 3.3.3.1]
			LT-466	57.0		
			LT-467	57.7		
			LT-468	55.4		
RX TRIP BKR STATUS		DET. DATA P. 4	TRN R (QDPS)	closed	INDICATING SAME	4.3.3.5.1 [ITS SR 3.3.4.1]
			TRAIN R (SWGR)	closed		
			TRN S (QDPS)	closed	INDICATING SAME	
			TRAIN S (SWGR)	closed		

Note (1) IF QDPS indication is inoperable, THEN Use local panel (ZRR-050) in conjunction with 0POP02-II-0002. (Ref. 7.4.13)

Note (2) Verify at least 1 sensor in upper section and 3 sensors in lower section of each train is operable. LOG SAT OR UNSAT.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
E/R FLUX-LOWER RNG	ASP	DET. DATA P. 4	NI-45A (1)	290494	(2)	4.3.3.5.1 [ITS SR 3.3.4.1]
			NI-46A (1)	298651		
E/R FLUX-UPPER RNG			NI-45 (3)	1.0E+2	(4)	
			NI-46 (3)	1.0E+2		
E/R FLUX-SUR			NI-45B	0.0	≤ .5 dpm MAX DEVIATION	
			NI-46B	0.0		

Note (1) IF "↓ LO" OR "↑ HI", THEN record data from associated Plant Computer data points NINE0045A or NINE0046A as required.

Note (2) IF highest countrate is ≥ 1000 CPS, THEN the maximum deviation is by a factor of 10.

IF highest countrate is < 1000 CPS, THEN the maximum deviation is by a factor of 15.

Note (3) IF "↓ LO" OR "↑ HI", THEN record data from associated Plant Computer data points NINE0045 or NINE0046 as required.

Note (4) Use Addendum 1, Extended Range Accuracy, to assess channel operability.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
SG LVL W/R	ASP	DET. DATA P. 5	LT-501	62.8	(Note 1)	4.3.3.5.1
			LT-502	63.5		4.3.3.6
			LT-503	62.5		[ITS SR 3.3.4.1
			LT-504	63.3		SR 3.3.3.1]

Note (1) Rx pwr 20% to 100% – ACCEPTANCE CRITERIA = **63**% ± 5% MAX DEVIATION

Rx pwr < 20% to 0% @ NOT – ACCEPTANCE CRITERIA = **69**% ± 5% MAX DEVIATION

Rx pwr 0% and < NOT – Evaluate indication for acceptability based on plant conditions (refer to 0POP03-ZG-0001, Addendum 4 for nominal SG LVL W/R level indication at temperatures < NOT)

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
SG PRESS	ASP	DET. DATA P. 6	PT-514	1032	≤ 40 psig between PT-7411 and PT-514/515/516	4.3.3.5.1 4.3.3.6 [ITS SR 3.3.4.1 SR 3.3.3.1]
			PT-515	1044		
			PT-516	1059		
			PT-7411	1035		
			PT-524	1037	≤ 40 psig between PT-7421 and PT-524/525/526	
			PT-525	1011		
			PT-526	1027		
			PT-7421	1052		
			PT-534	1031	≤ 40 psig between PT-7431 and PT-534/535/536	
			PT-535	1028		
			PT-536	1034		
			PT-7431	1043		
			PT-544	1020	≤ 40 psig between PT-7441 and PT-544/545/546	
			PT-545	1031		
			PT-546	1042		
			PT-7441	1034		

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
AFWST LVL	ASP	DET. DATA P. 6	LT-7716	$499x10^3$	15.858×10^3 gal	4.3.3.5.1 4.3.3.6
			LT-7717	$499x10^3$	(3%)	
			LT-7748	$499x10^3$	MAX DEVIATION	[ITS SR 3.3.4.1 SR 3.3.3.1]
CNTMT STATUS-EXTD RNG PRESS	ASP OR MCB	DET. DATA P. 7	PT-9759	1	$\leq$ 4 psig	4.3.3.6 [ITS SR 3.3.3.1]
			PT-9760	0	MAX DEVIATION (1)	
SUMP LVL N/R-NORMAL			LT-7839	48	$\geq$ 10 inches	
SUMP LVL N/R-SECONDARY			LT-7840	3	$\geq$ 2.5 inches	
CNTMT STATUS WTR LVL W/R			1(2)-LT-3925	0	0 inches (2)	
			1(2)-LT-3926	0		
			1(2)-LT-3927	0		

(1) IF "↓ LO", THEN ensure Plant Computer Points HCPE9759 and HCPE9760 $\geq$ -25 psig.

(2) IF "↓ LO", THEN the channel is inoperable.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
PLANT RADIATION SG BLOWDOWN	ASP OR MCB	DET. DATA P.7	RT-8022	4.3E-4	MAX DEVIATION <factor of 2 between QDPS and Plant Computer Points	4.3.3.6 [ITS SR 3.3.3.1]
			RARE8022	4.0E-4		
			RT-8023	3.9E-4		
			RARE8023	3.66E-4		
			RT-8024	3.7E-4		
			RARE8024	3.92E-4		
			RT-8025	3.9E-4		
			RARE8025	3.94E-4		
PLANT RADIATION STM LINE			RT-8046	2.1E-2		
			RARE8046	2.1E-2		
			RT-8047	2.0E-2		
			RARE8047	2.02E-2		
			RT-8048	2.2E-2		
			RARE8048	2.37E-2		
			RT-8049	1.4E-2		
			RARE8049	1.44E-2		
PLANT RADIATION CNTMT HIGH RANGE			RT-8050	1.9E-2	MAX DEVIATION < factor of 3	
			RT-8051	1.29E-2		

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
CETs QUAD D TRN A	ASP	T/C QUAD TEMP P. 3	TE14	640	≤ 60 °F between Operable Channels (2)	4.3.3.6 [ITS SR 3.3.3.1]
			TE15	631		
			TE18	635		
			TE21 (1)	590		
			TE22	624		
			TE25 (1)	598		
CETs QUAD D TRN C			TE39	631		
			TE40	635		
			TE42	644		
			TE43	635		
			TE46	649		
			TE49 (1)(3)	Note 3		
CETs QUAD C TRN A			TE16	630		
			TE17	640		
			TE19	636		
			TE20	631		
			TE23	626		
			TE24 (1)	598		
CETs QUAD C TRN C			**TE38** (1)	596		
			TE41	630		
			TE44 (3)	Note 3		
			TE45	630		
			TE47	635		
			TE48	649		
			TE50 (1)	600		

NOTE (1) Core baffle CETs are located above fuel assemblies face adjacent to the core baffle (indicated TE # in BOLD type above). Core baffle CETs may indicate lower values when compared to other CET locations due to core design, bypass flow, and power distribution. This may result in temperature differences exceeding 60°F.

NOTE (2) IF the difference between CET indications exceeds 60°F, THEN determine if one of the CETs being compared is face adjacent to the core baffle (indicated TE # in BOLD type above). The Core baffle CET(s) may be OPERABLE provided the Core Baffle CET(s) in question is reading ≤ 30°F difference when compared to other OPERABLE Core Baffle location CET(s). IF the ≤ 60°F difference between Operable Channels ACCEPTANCE CRITERIA can NOT be met for Core Baffle CETs **ONLY**, THEN the ≤ 30°F difference when compared to other OPERABLE Core Baffle CET(s) acceptance criteria is applicable.

NOTE (3) **(UNIT 2 ONLY)** DCP 99-15627-2 has capped and abandoned in place CET 44 and CET 49.

PARAMETER	QDPS DISPLAY LOCATION	QDPS PAGE	INSTR	INDICATION	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
CETs QUAD A TRN A	ASP	T/C QUAD TEMP P. 3	**TE01** (1)	599	≤ 60 °F between Operable Channels (2)	4.3.3.6 [ITS SR 3.3.3.1]
			TE03	644		
			TE04	629		
			TE06	626		
			TE07	633		
			TE10	632		
			TE13 (1)	599		
CETs QUAD A TRN C			**TE27** (1)	596		
			TE28	624		
			TE31	633		
			TE32	632		
			TE34	643		
			TE35	632		
CETs QUAD B TRN A			**TE02** (1)	600		
			TE05	648		
			TE08	633		
			TE09	641		
			TE11	634		
			TE12	642		
CETs QUAD B TRN C			**TE26** (1)	593		
			TE29	624		
			TE30 (1)	590		
			TE33	632		
			TE36	630		
			TE37	638		

NOTE 1 **-** Core baffle CETs are located above fuel assemblies face adjacent to the core baffle (indicated TE # in BOLD type above). Core baffle CETs may indicate lower values when compared to other CET locations due to core design, bypass flow, and power distribution. This may result in temperature differences exceeding 60°F.

NOTE 2 **-** IF the difference between CET indications exceeds 60°F, THEN determine if one of the CETs being compared is face adjacent to the core baffle (indicated TE # in BOLD type above). The Core baffle CET(s) may be OPERABLE provided the Core Baffle CET(s) in question is reading ≤ 30°F difference when compared to other OPERABLE Core Baffle location CET(s). IF the ≤ 60°F difference between Operable Channels ACCEPTANCE CRITERIA can NOT be met for Core Baffle CETs **ONLY**, THEN the ≤ 30°F difference when compared to other OPERABLE Core Baffle CET(s) acceptance criteria is applicable.

PARAMETER	LOCATION	INSTR	SAT/UNSAT	ACCEPTANCE CRITERIA	TECHNICAL SPECIFICATION
HYDROGEN MONITOR	MAB 60 FT	CM-AIT-4102	sat	INSTRUMENT FAILURE light OFF **AND** EITHER	4.6.4.1
		CM-AIT-4105	sat	STANDBY light LIT **OR** SAMPLE light LIT	[ITS SR 3.3.3.1]

1.0 Determine inoperable CETs from OAS log **AND** surveillance Data Sheet 1.

> NOTE
>
> This section ensures core radial temperature gradient can be adequately measured.

2.0 Circle in RED each of the **INOPERABLE** CETs for Channel A in Table 1 below:

TABLE 1

	Quadrant A	**Quadrant B**	**Quadrant C**	**Quadrant D**
Perimeter Area CETs	TE01	TE02	TE17	TE13*
	TE03	TE04*	TE20**	TE14
	TE04*	TE05	TE23	TE18**
	TE06	TE09	TE24	TE21
	TE13*		TE25*	TE22
				TE25*
Center Area CETs	TE07	TE08	TE16	TE15
	TE10	TE11*	TE19*	TE18**
	TE11*	TE12	TE20**	TE19*

* Denotes shared CETs (Shared CETs are located within the boundaries between quadrants and may be used in either quadrant) (Reference Addendum 2).

** May be used as a Perimeter Area CET or Center Area CET.

> NOTE
>
> - **NO** shared CETs SHALL be used in more than one Quadrant.
> - IF TE20 is used in a CET pair, THEN pairing is EITHER with TE24 OR TE16.
> - IF TE18 is used in a CET pair, THEN pairing is EITHER with TE21 OR TE15.

3.0 Determine Acceptance Criteria (**AC**) using Table 1 (above):

Initials

AC
- One operable CET in the Center Area **AND** one operable CET in the Perimeter Area for each quadrant. _____

4.0 Circle in RED each of the **INOPERABLE** CETs for Channel A in Table 2 (below):

TABLE 2

Quadrant A	Quadrant B	Quadrant C	Quadrant D
TE01	TE02	TE16	TE14
TE03	TE05	TE17	TE15
TE04	TE08	TE19	TE18
TE06	TE09	TE20	TE21
TE13	TE11	TE23	TE22
TE07	TE12	TE24	TE25
TE10			

NOTE

- Any combination of operable CETs in the same quadrant as listed in Table 2 (above) is acceptable.
- Refer to Addendum 3, Cet Core Map For Subcooling, when using Table 2 (above).

Initials

5.0 Determine Acceptance Criteria (**AC**) using Table 2 (above):

AC
- A minimum of one Quadrant contains at least four Operable CETs. _____

6.0 Determine inoperable CETs from OAS log **AND** surveillance Data Sheet 1.

> NOTE
>
> This section ensures core radial temperature gradient can be adequately measured.

7.0 Circle in RED each of the **INOPERABLE** CETs for Channel C in Table 3 (below):

TABLE 3

	Quadrant A	**Quadrant B**	**Quadrant C**	**Quadrant D**
Perimeter Area CETs	TE26 (1)	TE26 (1)	TE38 (1)	TE42
	TE27	TE29	TE45	TE46
	TE28	TE30	TE47 (1)	TE47 (1)
	TE31 (2)	TE33 (2)	TE48	TE49 (3)
	TE34	TE37	TE50	
		TE38 (1)		
Center Area CETs	TE31 (2)	TE32 (1)	TE40 (1)	TE39
	TE32 (1)	TE33 (2)	TE41	TE40 (1)
	TE35	TE36	TE44 (3)	TE43

NOTE 1 Denotes shared CETs (Shared CETs are located within the boundaries between quadrants and may be used in either quadrant) (Reference Addendum 2).

NOTE 2 May be used as a Perimeter Area CET or Center Area CET.

NOTE 3 - **(UNIT 2 ONLY)** DCP 99-15627-2 has capped and abandoned in place CET 44 and CET 49.

> NOTE
>
> - **NO** shared CETs SHALL used in more than one Quadrant.
> - IF TE31 is used in a CET pair, THEN pairing is EITHER with TE27 OR TE35.
> - IF TE33 is used in a CET pair, THEN pairing is EITHER with TE30 OR TE36.

8.0 Determine Acceptance Criteria (**AC**) using Table 3 (above):

Initials

AC • One operable CET in the Center Area **AND** one operable CET in the Perimeter Area for each quadrant. _____

9.0 Circle in RED each of the **INOPERABLE** CETs for Channel C in the Table 4 (below):

TABLE 4

Quadrant A	Quadrant B	Quadrant C	Quadrant D
TE27	TE26	TE38	TE39
TE28	TE29	TE41	TE40
TE31	TE30	TE44 (1)	TE42
TE32	TE33	TE45	TE43
TE34	TE36	TE48	TE46
TE35	TE37	TE47	TE49 (1)
		TE50	

NOTE 1 - **(UNIT 2 ONLY)** DCP 99-15627-2 has capped and abandoned in place CET 44 and CET 49.

<u>NOTE</u>

- Any combination of operable CETs in the same quadrant as listed in Table 4 (above) is acceptable.
- Refer to Addendum 3, Cet Core Map For Subcooling, when using Table 4.

<u>Initials</u>

10.0 Determine Acceptance Criteria (**AC**) using Table 4 (above):

AC • A minimum of one Quadrant contains at least four Operable CETs. _____

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE:	**REVIEW COMPLETED SURVEILLANCE**
JPM NO.:	**A3**
REVISION:	**2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	REVIEW COMPLETED SURVEILLANCE
JPM No.:	A3
Rev. No.:	2
STP Task:	41600, Perform Essential Cooling Water Inservice Test
STP Objective:	41600, Perform an Essential Cooling Water Pump Inservice Test in accordance with 0PSP03-EW-0017, 0018, or 0019
Related K/A Reference:	2.2.12 [3.0], Knowledge of Surveillance procedures
References:	0PSP03-EW-0018, Rev 28, Essential Cooling Water System Train B Testing
Task Normally Completed By:	RO
Method of Testing:	Actual Performance
Location of Testing:	N/A
Time Critical Task:	NO
Validation Time:	25 minutes

Required Materials (Tools/Equipment):

Calculator

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power during a "Train B" workweek. Essential Cooling Water System Train B testing per 0PSP03-EW-0018 is in progress. Essential Cooling Water Pump 1B was tested per Step 5.4 of 0PSP03-EW-0018. Unit 1 Essential Chillers are NOT in Cold Weather Alignment.

INITIATING CUE:

Perform a Peer Check of the data collected per Steps 5.4.1 through 5.4.14.4 of 0PSP03-EW-0018, Essential Cooling Water System Train B Testing, and determine if acceptance criteria are met taking into account any errors found.

THREE errors have been inserted into the surveillance, two (2) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY both critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count. All steps have been initialed or N/A'd appropriately in accordance with the data provided.

You are to take the following into account during your review:

- Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information).
- There are no errors associated with system alignment or configuration steps (i.e. steps either N/A'd or initialed relating to system alignment or configuration are to be considered correct).

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Both critical errors have been identified AND it is determined that the acceptance criteria for the test are NOT met.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

- 0PSP03-EW-0018, Essential Cooling Water System Train B Testing.

NOTES:

- The examiner is provided with a KEY of 0PSP03-EW-0018. Critical errors are identified on page 25 of 61 and on page 61 of 61; non-critical error is identified on page 19 of 61.

- The complete procedure is not provided to the applicant. The following applicable sections are provided to the applicant:

  - Table of Contents
  - Procedure Performance Data Sheet
  - Section 1.0 Purpose and Scope
  - Section 2.0 Responsibilities
  - Section 3.0 Precautions and Notes
  - Section 4.0 Prerequisites
  - Section 5.4 Testing Essential Cooling Water Pump 1B(2B) (Steps 5.4.1 through 5.4.14.4 are the only steps provided)
  - Addendum 1
  - Data Sheet 1

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

<u>SAT/UNSAT</u> Performance Step: 1 (C) *

Review the surveillance.

Standard:

Identifies the following ERRORS:

1) Incorrect Bay Level Correction Factor was taken from Addendum 1 in Step 5.4.6.

- *The correct Bay Level is 4.3*

*2) * Flows are incorrectly totaled on Data Sheet 1.*

- *The correct total is 297187*
- *The correct average is 14151.76*

*3) * Step 5.4.14.3 is incorrectly marked as "ECW Pump 1B Delta P is within Acceptable Range".*

- *ECW Pump 1B should be in the Required Action Low range.*

Comment:

- ***** Denotes Critical Error. Error #2 causes the incorrect flow range to be used in Table 2. Error #3 indicates that the pump is operable when it is in actuality inoperable and an LCO should be entered.

- Error #1 is <u>not</u> critical because it does not affect the outcome of the surveillance, only makes the pump closer to the limit (but still inoperable).

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

- Error #2 results in incorrect calculations for average flow on Table 1, TOTAL ECW SYSTEM FLOW (step 5.4.13), and use of the incorrect flow range (step 5.4.14.1). If the applicant considers this 2 or more errors, remind the applicant of Initiating Cue Assumptions. This is considered only 1 error.

- The student should find that the total ECW flow value determined in step 5.4.13 is incorrect and use the correct value to continue on to determine if the surveillance meets acceptance criteria.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Report the error to the Unit/Shift Supervisor.

Standard:

Informs the Unit/Shift Supervisor of the errors found and that the acceptance criteria of the procedure are NOT met.

Comment:

Cue:

The Shift Supervisor acknowledges the report.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A3, REVIEW COMPLETED SURVEILLANCE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: _________________________ **Signature ___________________________**

Date _____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power during a "Train B" workweek. Essential Cooling Water System Train B testing per 0PSP03-EW-0018 is in progress. Essential Cooling Water Pump 1B was tested per Step 5.4 of 0PSP03-EW-0018. Unit 1 Essential Chillers are NOT in Cold Weather Alignment.

INITIATING CUE:

Perform a Peer Check of the data collected per Steps 5.4.1 through 5.4.14.4 of 0PSP03-EW-0018, Essential Cooling Water System Train B Testing, and determine if acceptance criteria are met taking into account any errors found.

THREE errors have been inserted into the surveillance, two (2) Critical and one (1) Non-Critical. As a MINIMUM, you are to IDENTIFY both critical errors. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count. All steps have been initialed or N/A'd appropriately in accordance with the data provided.

You are to take the following into account during your review:

- Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information)
- There are no errors associated with system alignment or configuration steps (i.e. steps either N/A'd or initialed relating to system alignment or configuration are to be considered correct).

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Essential Cooling Water System Train B Testing			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 04/07/03

G.P. Ly	K.D. Regis	Crew 2B	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

Procedure Performance Data Sheet

Unit Number: 1	Work Activity Number: 218542 -ST: 86000716	
Technical Specification Reference: 3.7.4 [ITS 3.7.8] 4.0.5 [ITS 5.5.8] 4.3.2.1.1.c.7 [ITS SR 3.3.2.7.1c]		
Test Interval: Per the Surveillance Database	Test Performance Allowed in Plant Modes: 1, 2, 3, 4, 5, 6 and Core Offloaded to the Spent Fuel Pool	Train Reference: B

Reason for Test:

- ☒ Periodic Surveillance Test
- ☐ Maintenance Work Package # ____________________
- ☐ Other ____
- ☒ For Surveillance Credit
- ☐ Not for Surveillance Credit
- ☐ Increased Frequency Testing

Radiation Work Permit No.:	Fire Hazard Evaluation No.:	Equipment Clearance No.:
N/A	N/A	N/A

Administrative Approval to Perform Test:

James Madison	*Today*	*0001*
Shift Supervisor	Date	Time

Test Results Review:

Pump Test Results:

- ☐ Acceptable - All data within Acceptance Criteria
- ☐ Acceptable - Data within Alert Range (explain in Remarks Section)
- ☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Valve Test Results:

- ☐ Acceptable - All data within Acceptance Criteria
- ☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Reviewed by: ______________________________ ____________ ____________
Test Coordinator Date Time

Plant Operations Review:

All data within Acceptance Criteria?	☐ Yes	☐ No
Any pump data within Alert Range?	☐ Yes	☐ No
ECW Train B in Service?	☐ Yes	☐ No
Potential Reportable Occurrence?	☐ Yes	☐ No
LCO Action Statement Entered?	☐ Yes	☐ No

Reviewed by: ______________________________ ____________ ____________
Shift Supervisor Date Time

Procedure Performance Data Sheet

Division Surveillance Coordinator Review:

Reviewed by: ______________________________ ___________ ___________
Division Surveillance Coordinator Date Time

Section XI Coordinator:

Pump Test Results:
☐ Acceptable - All data within Acceptance Criteria
☐ Acceptable - Data within Alert Range (explain in Remarks Section)
☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Valve Test Results:
☐ Acceptable - (All data within Acceptance Criteria)
☐ Unacceptable - (Any data **NOT** within Acceptance Criteria)(explain in Remarks Section)

Corrective Action Taken: ______________________

____

Reviewed by: ______________________________ ___________ ___________
Section XI Coordinator Date Time

M&TE Used:

Description	STPEGS No.	Cal. Due Date
0-100 psig Test gage	*100-9-34*	*11-11-03*
Stopwatch	*100-713-12*	*12-10-03*
Vibration Instrument	*100-1351-1*	*03-21-04*
Vibration Instrument probe	*100-1351-1*	*03-21-04*

Procedure Performance Data Sheet

Performers and Verifiers:

Name (Print)	Signature	Initials	Sections Performed
Robert Miller	Robert Miller	*RM*	*Various Sections*
Ima Crabb	Ima Crabb	*IC*	*Section 5.2.4*
Paul Brown	Paul Brown	*PB*	*Various Sections*

Remarks: ____

1.0 Purpose and Scope

1.1 This procedure provides instructions to demonstrate components in the Essential Cooling Water System, required to perform a specific function in shutting down the Reactor to a Cold Shutdown Condition or mitigating the consequences of an accident, are Operable per Technical Specification 4.0.5 [ITS 5.5.8] and the Unit 1/Unit 2 Pump and Valve Inservice Test Plan.

1.2 Satisfactory performance of Section 5.4 will partially satisfy the testing requirements of a Slave Relay Test for ECW Pump 1B(2B) per Technical Specification 4.3.2.1.1.c.7 [ITS SR 3.3.2.7.1c].

1.3 This procedure provides instructions to verify the following pumps are operating properly by observing that pump performance is within the allowable range of Acceptance Criteria:

- Essential Cooling Water Pump 1B(2B)
- Essential Cooling Water Screen Wash Booster Pump 1B(2B)

1.4 This procedure provides instructions for verifying the following Essential Cooling Water System valves are Operable by cycling open and closed and verifying valve stroke time is within Acceptance Criteria:

- 1(2)-EW-FV-6936, ECW Blowdown Valve
- 1(2)-EW-FV-6924, ECW Screen Wash Booster Pump 1B(2B) Discharge Valve
- 1(2)-EW-MOV-0137, ECW Pump 1B(2B) Discharge Valve

1.5 This procedure provides instructions for verifying the following valves move to the fail-safe position upon loss of actuator power:

- 1(2)-EW-FV-6936, ECW Blowdown Valve
- 1(2)-EW-FV-6924, ECW Screen Wash Booster Pump 1B(2B) Discharge Valve

1.6 This procedure provides instructions for verifying the following check valves will pass full design accident flow:

- 1(2)-EW-0042, ECW Pump 1B(2B) Discharge Check Valve
- 1(2)-EW-0404, Emergency Backflush Check Valve
- 1(2)-EW-0254, ECW Screen Wash Booster Pump 1B(2B) Discharge Check Valve

1.7 This procedure provides instructions for manual operation of Self Cleaning Strainer Emergency Backflush Valve 1(2)-EW-0278 and ECW Pump 1B(2B) Discharge Strainer Backflush Throttle Valve 1(2)-EW-0189 through at least one cycle of operation.

1.8 This procedure verifies that ECW Pump 1B(2B) Room Fans and dampers operate during ECW Pump 1B(2B) operation.

1.9 This procedure verifies the ECW Self Cleaning Strainer starts on ECW Pump Start.

1.10 The Surveillance Test Completion Notice (TCN) specifies the scope of testing to be accomplished. IF no scope is specified, THEN test all components.

2.0 Responsibilities

2.1 Test Coordinator shall ensure that the procedure revision is correct and that all applicable Field Changes are incorporated.

2.2 Shift Supervisor shall grant permission for performance of this test.

2.3 This procedure shall be performed by Plant Operations.

2.4 WHEN "_____" (blank) follows a step, THEN the performer shall enter initials to verify step completion.

2.5 Plant Performance personnel may perform the vibration monitoring portion of this procedure on the ECW Pump.

2.6 Plant Performance personnel may perform the vibration monitoring portion of this procedure for the ECW Screen Wash Booster Pump (ECWSWBP).

2.7 I&C Maintenance shall perform venting of the ECW System flow instruments.

> NOTE
>
> After completion, procedure routing is per 0PGP03-ZE-0004, Plant Surveillance Program, and 0PGP03-ZA-0055, Plant Surveillance Scheduling.

2.8 The following shall review the test results:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator
- Section XI Coordinator

3.0 Precautions and Notes

3.1 IF one of the following occurs during performance of this test, THEN suspend the test AND restore Essential Cooling Water System to normal.

- Safety Injection Signal
- Loss of Offsite Power

3.2 IF either of the following conditions occur during testing of the ECW Pump, THEN suspend performance of the test until the condition is restored to the pre-test condition AND the Essential Cooling System is stabilized prior to continuing:

- Automatic start of the ECW Screen Wash Booster Pump
- Increasing temperatures from components supplied with ECW which may be an indication of inadequate ECW flow

3.3 IF during performance of this test, the ECW Self Cleaning Strainer differential pressure exceeds 5 psid as indicated by a Plant Computer alarm OR local indication on 1(2)-EW-PDI-6869, THEN the following shall be performed:

- Suspend testing
- Open 1(2)-EW-0189
- Start ECW Self Cleaning Strainer

3.3.1 WHEN strainer differential pressure is <5 psid, THEN perform the following:

- Stop the ECW Self Cleaning Strainer
- Close 1(2)-EW-0189
- Resume testing

3.4 This procedure should be reviewed in its entirety prior to performing the test.

3.5 Specific Reference Values incorporated in this procedure were obtained for the respective equipment on the following dates:

Component Description	Reference Value Date
Essential Cooling Water Pump 1B	03-02-03
ECW Screen Wash Booster Pump 1B	05-31-94
Essential Cooling Water Pump 2B	12-15-01
ECW Screen Wash Booster Pump 2B	08-03-94

3.6 Essential Cooling Water System flows from QDPS are indicated on QDPS Detail Data Menu Page 9.

3.7 Communications between the Control Room, ECW Intake Structure, and CCW Heat Exchanger Room shall be maintained during testing in which valves or control switches are **NOT** in normal alignment.

3.8 Valves subject to testing shall be closed/opened by normal operation and without preliminary or subsequent exercising or adjustments. Tightening of a valve by manual means after operation of a valve operator, cycling a valve to improve leakage or stroke time performance, and mechanical agitation (tapping) of valves are examples of activities **NOT** allowed. (Ref.7.4.4)

3.9 In order to ensure an air operated valve has sufficient time to reach normal air pressure prior to stroke timing the valve, approximately 2 minutes should have elapsed since the valve was last stroked.

3.10 The Valve Database, as referred to in this procedure, is the **currently approved** database used by Plant Operations to determine required valve positions. As of the Effective Date of this procedure, the ECO Database is the currently approved database. Future plans are a database within the Station MED system.

3.11 IF a discrepancy is found between AS FOUND position and REQUIRED POSITION as directed by a Step in this procedure, THEN the Shift Supervisor SHALL be notified to determine system/component operability or reportability status.

3.12 This procedure verifies the fail-safe position of valves 1(2)-EW-FV-6924 and 1(2)-EW-FV-6936.

3.12.1 Special timing of valves is **NOT** required since full stroke valve exercising in this procedure will de-energize the valves that have fail-safe positions.

3.12.2 The Solenoid valves tested in this procedure are spring loaded to vent air from air operated valve when the solenoid is de-energized.

3.13 IF Essential Cooling Water System Train B is shutdown, THEN testing of valves in Section 5.11 may be performed prior to starting the ECW Pump.

3.14 Acceptance Criteria steps are annotated with the letters **AC** in the left margin preceding the step.

3.15 IF this procedure can **NOT** be performed as written, THEN the procedure performer shall stop and immediately notify the Shift Supervisor.

3.16 IF any ECW Pump or ECW Screen Wash Booster Pump parameter falls in the Alert Range, THEN calibration of the affected instruments may be performed and the pump may be retested.

3.17 IF a valve with measured stroke times DOES **NOT** meet Acceptance Criteria AND DOES **NOT** exceed limiting values per Reference 7.8.3, THEN the valve **SHALL** be immediately retested OR declared inoperable per 0PGP03-ZE-0021, Inservice Testing Program for Valves. An Engineering evaluation **SHALL** be performed for each retested valve.

3.18 IF this procedure is terminated for any reason, THEN immediately notify the Shift Supervisor.

3.19 IF any Acceptance Criteria are **NOT** met, THEN immediately notify the Shift Supervisor AND document failure per 0PGP03-ZE-0004, Plant Surveillance Program.

Initials

4.0 Prerequisites

4.1 Ensure procedure revision is correct and all applicable Field Changes are incorporated. *RM*

4.2 This procedure may be performed in any Mode. Record the current plant Mode:

Mode *1* *RM*

4.3 Review Operability Assessment System (OAS) to ensure no equipment is out of service that could conflict with test completion or cause unexpected multiple trains to be inoperable while performing this test. *RM*

4.4 Essential Cooling Water System Train B is in operation or available for operation per 0POP02-EW-0001, Essential Cooling Water Operation. *RM*

4.5 Verify I&C Maintenance personnel are available for performance of instrument venting. *RM*

4.6 Verify qualified personnel are available for performance of ECW Pump vibration measurement. *RM*

4.7 For ECW pump testing, obtain the following test instrumentation:

- Test Gage with a range of 0 to 100 psig with an accuracy of ± 0.1% of full scale to measure ECW Pump 1B(2B) discharge pressure. (Ref. 7.4.2) *RM*

- A vibration instrument with an accuracy ± 5% of full scale to measure vibration velocity in in/sec. *RM*

4.8 For ECW Screen Wash Booster Pump testing, obtain the following test instrumentation:

- A vibration instrument with an accuracy ± 5% of full scale to measure vibration velocity in in/sec. *RM*

4.9 For any valve timing, obtain a calibrated stopwatch accurate to ± 1%. *RM*

Initials

4.10 Ensure ECW System pumps to be operated are inspected and acceptable for operation per the criteria established in 0POP01-ZQ-0022, Plant Operations Shift Routines.

- Essential Cooling Water Pump 1B(2B) *RM*
- ECW Screen Wash Booster Pump 1B(2B) *RM*

4.11 IF this procedure is being performed to demonstrate post-maintenance operability OR increased frequency testing of an Essential Cooling Water System component, THEN N/A the applicable subsection(s) for the component(s) **NOT** being tested, OTHERWISE N/A this step. *N/A*

4.12 IF this procedure is being performed for scheduled surveillance testing AND **NOT** all components are being tested, THEN N/A applicable sub-section(s)for any component **NOT** being tested. OTHERWISE N/A this step. *N/A*

4.13 Evaluate current plant conditions and note in the Remarks Section of the PPDS any changes in Work Risk Assessment due to special plant conditions. *RM*

Work Risk Assessment by Plant Mode

Reactor Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
NONE	NONE	NONE	NONE	NONE	NONE	NONE

Turbine Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
NONE	NONE	NONE	NONE	NONE	NONE	NONE

ESF Actuation Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
LOW	LOW	LOW	LOW	LOW	LOW	LOW

Initials

4.14 Record the following or "N/A", as applicable, on the PPDS:

- Unit Number
- Work Activity Number
- Surveillance Test (ST) Number(s)
- Reason for Test
- M&TE Data for vibration instrument
- M&TE Data for 0-100 psig test gage
- M&TE Data for stopwatch _RM_

4.15 Notify the Shift Supervisor to review Technical Specifications LCO 3.7.4 [ITS 3.7.8] and LCOs for systems affected by ECW for action requirements prior to performing this surveillance. _RM_

4.16 Obtain Shift Supervisor signature on PPDS for administrative approval to perform test. _RM_

Initials

5.4 Testing Essential Cooling Water Pump 1B(2B)

> NOTE
>
> Placing ECW Self Cleaning Strainer handswitch in "STOP" will cause ESF Status Monitoring Lampbox 2M22 BYP/INOP "ECW STRN 1B(2B)" to alarm.

5.4.1 Remove ECW Self Cleaning Strainer 1B(2B) from service by placing "ECW SELF CLEANING STRAINER 1B(2B)" handswitch in "STOP". {ECWIS, MCC E1B3(E2B3)/C1} *RM*

5.4.2 IF ECW Self Cleaning Strainer 1B(2B) Normal Backflush is in service, THEN perform the following, OTHERWISE mark the following as N/A:

5.4.2.1 Record REQUIRED POSITION, including the throttled position and lock status, of "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE" from Valve Database here AND in Step 5.6.3.
{ECWIS, Room 105(102)}

REQUIRED POSITION *N/A* *N/A*

5.4.2.2 WHEN Step 5.4.2.4 is performed, THEN RECORD the AS FOUND position, including the throttled position and lock status, of "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE". {ECWIS, Room 105(102)}

AS FOUND *N/A* *N/A*

5.4.2.3 IF the REQUIRED POSITION recorded in Step 5.4.2.1 AND the AS FOUND position recorded in Step 5.4.2.2 are different, THEN NOTIFY the Shift Supervisor, OTHERWISE N/A this Step. *N/A*

AC 5.4.2.4 Close "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE". {ECWIS, Room 105(102)} *N/A*

5.4.3 RECORD the start time of the 5 minute system stabilization period.

0145 *RM*

Initials

5.4.4 WHEN at least 5 minutes have passed, THEN record the end time of the 5 minute system stabilization period.

0152 *RM*

NOTE

- Actual indicated ECW Pump Bay Level should be recorded and **NOT** corrected for elevation.
- Normal ECW Pump Bay Level is 15.5 to 16.0 feet.

5.4.5 Record ECW Pump Bay Level "BAY LVL LI-6921": {CP002}

ECW Pump Bay Level *15.9* feet (LI-6921) *RM*

5.4.6 Using ECW Pump Bay Level recorded in Step 5.4.5 and Addendum 1, Essential Cooling Water Pump Bay Level Correction Factor, record the Bay Level Correction Factor for ECW Pump 1B(2B):

Bay Level Correction Factor *4.4* psig *RM*

5.4.7 Record ECW Pump 1B(2B) discharge pressure from 0-100 psig Test Gage at test connection for "1(2)-EW-PI-6885 ECW PUMP 1B(2B) DISCHARGE PRESSURE INDICATOR".

ECW Pump Discharge Pressure *49.5* psig *RM*

NOTE

The Bay Level Correction Factor value is ADDED to the ECW pump discharge pressure to compensate for the difference in the discharge pressure reading (as measured at centerline of the ECW pump horizontal discharge piping) and actual discharge pressure at the outlet of the ECW pump impeller (minus the suction pressure that is derived from bay level). (Reference: Addendum 1, Essential Cooling Water Pump Bay Level Correction Factor)

5.4.8 Calculate ECW Pump 1B(2B) Delta P using the following formula:

49.5 psig +	*4.4* psig =	*53.9* psig		*RM*
Disch Press (Step 5.4.7)	Bay Level Corr Factor (Step 5.4.6)	Delta P		

Initials

5.4.9 Record ECW flow from the following components in Table 1 (ECW System Flow):

- ECW Pump Lube Water flow from 1(2)-EW-FI-6948, {ECWIS} _RM_
- Flow to CCW Pump Supplementary Cooler "TRN B FT 6866" (QDPS) _RM_
- ECW Flow to "ESF DG 12(22) FT 6865" (QDPS) _RM_

5.4.10 Record ECW flow from Essential Chiller in Table 1 (ECW System Flow) AND mark step **NOT** performed as N/A:

5.4.10.1 IF Train B Essential Chiller is in normal alignment, THEN record the following:

- "TRN B CHLR 12B(22B) FT 6905" (QDPS) _RM_

5.4.10.2 IF Train B Essential Chiller is in Cold Weather alignment, THEN record the following: {MAB 10', Room 067E}

- "1(2)-EW-FI-6905C ESSENTIAL CHILLER 12B(22B) ECW RETURN BYPASS FLOW INDICATOR" _N/A_

5.4.11 Determine ECW flow from CCW Heat Exchanger 1B(2B) as follows:

5.4.11.1 Record ECW flow from CCW Heat Exchanger 1B(2B) QDPS "TRN B FT6863" on Data Sheet 1 (Essential Cooling Water Flow from CCW Heat Exchanger) at approximately 30 second intervals until 21 flows have been recorded. (Detail Data Menu Page 9) _RM_

5.4.11.2 After 21 flows have been recorded, then add the individual flows and record total on Data Sheet 1. _RM_

5.4.11.3 Calculate and record the average ECW Flow from CCW Heat Exchanger in AVERAGE block of Data Sheet 1. _RM_

5.4.11.4 Sign and Date Performance of Data Sheet 1. _RM_

Initials

5.4.12 Record the AVERAGE ECW Flow from CCW Heat Exchanger from Data Sheet 1 in Table 1, ECW System Flow. *RM*

5.4.13 Calculate and record Total ECW System Flow in Table 1, ECW System Flow. *RM*

Table 1: ECW System Flow

Component	ECW Flow	Units
ECW Pump 1B(2B) Lube Water	*10.8*	gpm
ECW Flow to Essen Chlr 12B(22B)	*1230*	gpm
ECW Flow to CCW Pump Cooler	*50*	gpm
ECW Flow to ESF DG 12(22)	*1753*	gpm
ECW Flow to CCW HX (AVERAGE from Data Sheet 1)	*14651.76*	gpm
TOTAL ECW SYSTEM FLOW =	*17695.56*	gpm

5.4.14 IF performing this test in **Unit 1**, THEN perform the following, OTHERWISE N/A Steps 5.4.14.1 through 5.4.14.7:

5.4.14.1 Determine ECW Total Flow Range of Table 2: ECW Pump 1B Reference Values, for the Total ECW System Flow recorded in Table 1: ECW System Flow.

ECW Total Flow Range *17650-17699* gpm *RM*

5.4.14.2 Record ECW Pump 1B Delta P from Step 5.4.8 in Table 2: ECW Pump 1B Reference Values, at the corresponding ECW Total Flow Range determined in Step 5.4.14.1. *RM*

Table 2: ECW Pump 1B Reference Values

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
15,700-15,749	62.0	*N/A*	dP< 57.7	57.7 <=dP< 58.9	58.9 <=dP<= 68.2	dP> 68.2
15,750-15,799	61.9		dP< 57.6	57.6 <=dP< 58.8	58.8 <=dP<= 68.1	dP> 68.1
15,800-15,849	61.8		dP< 57.4	57.4 <=dP< 58.7	58.7 <=dP<= 67.9	dP> 67.9
15,850-15,899	61.6		dP< 57.3	57.3 <=dP< 58.6	58.6 <=dP<= 67.8	dP> 67.8
15,900-15,949	61.5		dP< 57.2	57.2 <=dP< 58.4	58.4 <=dP<= 67.6	dP> 67.6
15,950-15,999	61.4		dP< 57.1	57.1 <=dP< 58.3	58.3 <=dP<= 67.5	dP> 67.5
16,000-16,049	61.2		dP< 56.9	56.9 <=dP< 58.2	58.2 <=dP<= 67.3	dP> 67.3
16,050-16,099	61.1		dP< 56.8	56.8 <=dP< 58.0	58.0 <=dP<= 67.2	dP> 67.2
16,100-16,149	60.9		dP< 56.7	56.7 <=dP< 57.9	57.9 <=dP<= 67.0	dP> 67.0
16,150-16,199	60.8		dP< 56.6	56.6 <=dP< 57.8	57.8 <=dP<= 66.9	dP> 66.9
16,200-16,249	60.7		dP< 56.4	56.4 <=dP< 57.6	57.6 <=dP<= 66.7	dP> 66.7
16,250-16,299	60.5		dP< 56.3	56.3 <=dP< 57.5	57.5 <=dP<= 66.6	dP> 66.6
16,300-16,349	60.4		dP< 56.2	56.2 <=dP< 57.4	57.4 <=dP<= 66.4	dP> 66.4
16,350-16,399	60.3		dP< 56.0	56.0 <=dP< 57.3	57.3 <=dP<= 66.3	dP> 66.3
16,400-16,449	60.1		dP< 55.9	55.9 <=dP< 57.1	57.1 <=dP<= 66.1	dP> 66.1
16,450-16,499	60.0		dP< 55.8	55.8 <=dP< 57.0	57.0 <=dP<= 66.0	dP> 66.0
16,500-16,549	59.9		dP< 55.7	55.7 <=dP< 56.9	56.9 <=dP<= 65.8	dP> 65.8
16,550-16,599	59.7		dP< 55.5	55.5 <=dP< 56.7	56.7 <=dP<= 65.7	dP> 65.7
16,600-16,649	59.6		dP< 55.4	55.4 <=dP< 56.6	56.6 <=dP<= 65.5	dP> 65.5
16,650-16,699	59.4		dP< 55.3	55.3 <=dP< 56.5	56.5 <=dP<= 65.4	dP> 65.4
16,700-16,749	59.3		dP< 55.2	55.2 <=dP< 56.3	56.3 <=dP<= 65.2	dP> 65.2
16,750-16,799	59.2		dP< 55.0	55.0 <=dP< 56.2	56.2 <=dP<= 65.1	dP> 65.1
16,800-16,849	59.0		dP< 54.9	54.9 <=dP< 56.1	56.1 <=dP<= 64.9	dP> 64.9
16,850-16,899	58.9		dP< 54.8	54.8 <=dP< 56.0	56.0 <=dP<= 64.8	dP> 64.8
16,900-16,949	58.8		dP< 54.6	54.6 <=dP< 55.8	55.8 <=dP<= 64.6	dP> 64.6
16,950-16,999	58.6		dP< 54.5	54.5 <=dP< 55.7	55.7 <=dP<= 64.5	dP> 64.5
17,000-17,049	58.5		dP< 54.4	54.4 <=dP< 55.6	55.6 <=dP<= 64.3	dP> 64.3
17,050-17,099	58.4		dP< 54.3	54.3 <=dP< 55.4	55.4 <=dP<= 64.2	dP> 64.2
17,100-17,149	58.2		dP< 54.1	54.1 <=dP< 55.3	55.3 <=dP<= 64.0	dP> 64.0
17,150-17,199	58.0	*N/A*	dP< 53.9	53.9 <=dP< 55.1	55.1 <=dP<= 63.7	dP> 63.7

Table 2: ECW Pump 1B Reference Values

(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
17,200-17,249	57.7	*N/A*	dP< 53.7	53.7 <=dP< 54.9	54.9 <=dP<= 63.5	dP> 63.5
17,250-17,299	57.5		dP< 53.5	53.5 <=dP< 54.6	54.6 <=dP<= 63.3	dP> 63.3
17,300-17,349	57.3		dP< 53.3	53.3 <=dP< 54.4	54.4 <=dP<= 63.0	dP> 63.0
17,350-17,399	57.1		dP< 53.1	53.1 <=dP< 54.2	54.2 <=dP<= 62.8	dP> 62.8
17,400-17,449	56.9		dP< 52.9	52.9 <=dP< 54.0	54.0 <=dP<= 62.6	dP> 62.6
17,450-17,499	56.7		dP< 52.7	52.7 <=dP< 53.8	53.8 <=dP<= 62.3	dP> 62.3
17,500-17,549	56.4		dP< 52.5	52.5 <=dP< 53.6	53.6 <=dP<= 62.1	dP> 62.1
17,550-17,599	56.2		dP< 52.3	52.3 <=dP< 53.4	53.4 <=dP<= 61.9	dP> 61.9
17,600-17,649	56.0	*N/A*	dP< 52.1	52.1 <=dP< 53.2	53.2 <=dP<= 61.6	dP> 61.6
17,650-17,699	55.8	*53.9*	dP< 51.9	51.9 <=dP< 53.0	53.0 <=dP<= 61.4	dP> 61.4
17,700-17,749	55.6	*N/A*	dP< 51.7	51.7 <=dP< 52.8	52.8 <=dP<= 61.2	dP> 61.2
17,750-17,799	55.4		dP< 51.5	51.5 <=dP< 52.6	52.6 <=dP<= 60.9	dP> 60.9
17,800-17,849	55.2		dP< 51.3	51.3 <=dP< 52.4	52.4 <=dP<= 60.7	dP> 60.7
17,850-17,899	54.9		dP< 51.1	51.1 <=dP< 52.2	52.2 <=dP<= 60.4	dP> 60.4
17,900-17,949	54.7		dP< 50.9	50.9 <=dP< 52.0	52.0 <=dP<= 60.2	dP> 60.2
17,950-17,999	54.5		dP< 50.7	50.7 <=dP< 51.8	51.8 <=dP<= 60.0	dP> 60.0
18,000-18,049	54.3		dP< 50.5	50.5 <=dP< 51.6	51.6 <=dP<= 59.7	dP> 59.7
18,050-18,099	54.1		dP< 50.3	50.3 <=dP< 51.4	51.4 <=dP<= 59.5	dP> 59.5
18,100-18,149	54.0		dP< 50.2	50.2 <=dP< 51.3	51.3 <=dP<= 59.4	dP> 59.4
18,150-18,199	53.8		dP< 50.1	50.1 <=dP< 51.1	51.1 <=dP<= 59.2	dP> 59.2
18,200-18,249	53.7		dP< 49.9	49.9 <=dP< 51.0	51.0 <=dP<= 59.0	dP> 59.0
18,250-18,299	53.5		dP< 49.8	49.8 <=dP< 50.8	50.8 <=dP<= 58.9	dP> 58.9
18,300-18,349	53.4		dP< 49.6	49.6 <=dP< 50.7	50.7 <=dP<= 58.7	dP> 58.7
18,350-18,399	53.2		dP< 49.5	49.5 <=dP< 50.6	50.6 <=dP<= 58.5	dP> 58.5
18,400-18,449	53.1		dP< 49.4	49.4 <=dP< 50.4	50.4 <=dP<= 58.4	dP> 58.4
18,450-18,499	52.9		dP< 49.2	49.2 <=dP< 50.3	50.3 <=dP<= 58.2	dP> 58.2
18,500-18,549	52.8		dP< 49.1	49.1 <=dP< 50.1	50.1 <=dP<= 58.1	dP> 58.1
18,550-18,599	52.6		dP< 48.9	48.9 <=dP< 50.0	50.0 <=dP<= 57.9	dP> 57.9
18,600-18,649	52.5		dP< 48.8	48.8 <=dP< 49.9	49.9 <=dP<= 57.7	dP> 57.7
18,650-18,699	52.3	*N/A*	dP< 48.7	48.7 <=dP< 49.7	49.7 <=dP<= 57.6	dP> 57.6

Table 2: ECW Pump 1B Reference Values

(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
18,700-18,749	52.2	*N/A*	dP< 48.5	48.5 <=dP< 49.6	49.6 <=dP<= 57.4	dP> 57.4
18,750-18,799	52.0		dP< 48.4	48.4 <=dP< 49.4	49.4 <=dP<= 57.2	dP> 57.2
18,800-18,849	51.9		dP< 48.2	48.2 <=dP< 49.3	49.3 <=dP<= 57.1	dP> 57.1
18,850-18,899	51.7		dP< 48.1	48.1 <=dP< 49.1	49.1 <=dP<= 56.9	dP> 56.9
18,900-18,949	51.6		dP< 48.0	48.0 <=dP< 49.0	49.0 <=dP<= 56.7	dP> 56.7
18,950-18,999	51.4		dP< 47.8	47.8 <=dP< 48.9	48.9 <=dP<= 56.6	dP> 56.6
19,000-19,049	51.3		dP< 47.7	47.7 <=dP< 48.7	48.7 <=dP<= 56.4	dP> 56.4
19,050-19,099	51.1		dP< 47.6	47.6 <=dP< 48.6	48.6 <=dP<= 56.2	dP> 56.2
19,100-19,149	51.0		dP< 47.4	47.4 <=dP< 48.4	48.4 <=dP<= 56.1	dP> 56.1
19,150-19,199	50.8		dP< 47.3	47.3 <=dP< 48.3	48.3 <=dP<= 55.9	dP> 55.9
19,200-19,249	50.6		dP< 47.1	47.1 <=dP< 48.1	48.1 <=dP<= 55.7	dP> 55.7
19,250-19,299	50.4		dP< 46.9	46.9 <=dP< 47.9	47.9 <=dP<= 55.4	dP> 55.4
19,300-19,349	50.2		dP< 46.7	46.7 <=dP< 47.7	47.7 <=dP<= 55.2	dP> 55.2
19,350-19,399	50.0		dP< 46.5	46.5 <=dP< 47.5	47.5 <=dP<= 55.0	dP> 55.0
19,400-19,449	49.8		dP< 46.3	46.3 <=dP< 47.3	47.3 <=dP<= 54.8	dP> 54.8
19,450-19,499	49.6		dP< 46.1	46.1 <=dP< 47.1	47.1 <=dP<= 54.5	dP> 54.5
19,500-19,549	49.4		dP< 45.9	45.9 <=dP< 46.9	46.9 <=dP<= 54.3	dP> 54.3
19,550-19,599	49.2		dP< 45.7	45.7 <=dP< 46.7	46.7 <=dP<= 54.1	dP> 54.1
19,600-19,649	49.0		dP< 45.5	45.5 <=dP< 46.5	46.5 <=dP<= 53.9	dP> 53.9
19,650-19,699	48.8		dP< 45.3	45.3 <=dP< 46.3	46.3 <=dP<= 53.6	dP> 53.6
19,700-19,749	48.5		dP< 45.1	45.1 <=dP< 46.1	46.1 <=dP<= 53.4	dP> 53.4
19,750-19,799	48.3		dP< 45.0	45.0 <=dP< 45.9	45.9 <=dP<= 53.2	dP> 53.2
19,800-19,849	48.1		dP< 44.8	44.8 <=dP< 45.7	45.7 <=dP<= 53.0	dP> 53.0
19,850-19,899	47.9		dP< 44.6	44.6 <=dP< 45.5	45.5 <=dP<= 52.7	dP> 52.7
19,900-19,949	47.7		dP< 44.4	44.4 <=dP< 45.3	45.3 <=dP<= 52.5	dP> 52.5
19,950-19,999	47.5		dP< 44.2	44.2 <=dP< 45.1	45.1 <=dP<= 52.3	dP> 52.3
20,000-20,049	47.3		dP< 44.0	44.0 <=dP< 44.9	44.9 <=dP<= 52.0	dP> 52.0
20,050-20,099	47.1		dP< 43.8	43.8 <=dP< 44.8	44.8 <=dP<= 51.8	dP> 51.8
20,100-20,149	46.9		dP< 43.6	43.6 <=dP< 44.6	44.6 <=dP<= 51.6	dP> 51.6
20,150-20,199	46.7	*N/A*	dP< 43.4	43.4 <=dP< 44.4	44.4 <=dP<= 51.4	dP> 51.4

Initials

Table 2: ECW Pump 1B Reference Values
(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
20,200-20,249	46.5	*N/A*	dP< 43.2	43.2 <=dP< 44.2	44.2 <=dP<= 51.1	dP> 51.1
20,250-20,299	46.3		dP< 43.0	43.0 <=dP< 44.0	44.0 <=dP<= 50.9	dP> 50.9
20,300-20,349	46.1		dP< 42.9	42.9 <=dP< 43.8	43.8 <=dP<= 50.7	dP> 50.7
20,350-20,399	45.9		dP< 42.7	42.7 <=dP< 43.6	43.6 <=dP<= 50.5	dP> 50.5
20,400-20,449	45.7		dP< 42.5	42.5 <=dP< 43.4	43.4 <=dP<= 50.2	dP> 50.2
20,450-20,500	45.5	*N/A*	dP< 42.3	42.3 <=dP< 43.2	43.2 <=dP<= 50.0	dP> 50.0

AC 5.4.14.3 Complete the following and mark steps that **DO NOT** apply N/A:

a. ECW Pump 1B Delta P is within Acceptable Range. *RM*

b. ECW Pump 1B Delta P is within Required Action High. *N/A*

c. ECW Pump 1B Delta P is within Alert Range Low. *N/A*

d. ECW Pump 1B Delta P is within Required Action Low. *N/A* *

5.4.14.4 IF Total ECW System Delta P is within a Required Action Range, THEN immediately notify Shift Supervisor, OTHERWISE mark this step N/A. *N/A* *

5.4.14.5 Measure the unfiltered vibration velocity (V) at indicated test points (Addendum 2, Vibration Test Point Locations and Instructions) and record vibration in Table 3: Unit 1 ECW Pump 1B Vibration Data. *RM*

Bay Level LI-6921 feet	Bay Level Correction Factor
15.0	4.7
15.1	4.7
15.2	4.6
15.3	4.6
15.4	4.6
15.5	4.5
15.6	4.5
15.7	4.4
15.8	4.4
15.9	4.3
16.0	4.3
16.1	4.3
16.2	4.2
16.3	4.2
16.4	4.1
16.5	4.1

NOTE: Values in the above table were calculated using the following:

ECW Bay Level Correction Factor

Bay Level Correction Factor = 0.43psi/ft x (26ft - ECW Bay Level)

	Step 5.4.11	Step 5.5.6
1	*14016*	*N/A*
2	*14300*	
3	*14206*	
4	*14078*	
5	*14126*	
6	*14115*	
7	*13935*	
8	*14115*	
9	*14292*	
10	*14254*	
11	*14180*	
12	*14158*	
13	*14184*	
14	*14167*	
15	*14126*	
16	*14111*	
17	*14253*	
18	*14053*	
19	*14191*	
20	*14158*	
21	*14169*	
TOTAL =	*307687*	
AVERAGE	*14651.76*	*N/A*

NOTE: IF Column is **NOT** used, THEN it may be marked as N/A.

Step 5.4.11 Performed by *Robert Miller* Date *Today*

Step 5.5.6 Performed by *N/A* Date *N/A*

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Essential Cooling Water System Train B Testing			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 04/07/03

G.P. Ly	K.D. Regis	Crew 2B	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

Procedure Performance Data Sheet

Unit Number: 1	Work Activity Number: 218542 -ST: 86000716	
Technical Specification Reference: 3.7.4 [ITS 3.7.8] 4.0.5 [ITS 5.5.8] 4.3.2.1.1.c.7 [ITS SR 3.3.2.7.1c]		
Test Interval: Per the Surveillance Database	Test Performance Allowed in Plant Modes: 1, 2, 3, 4, 5, 6 and Core Offloaded to the Spent Fuel Pool	Train Reference: B

Reason for Test:

☒ Periodic Surveillance Test
☐ Maintenance Work Package # ____________________
☐ Other ____

☒ For Surveillance Credit
☐ Not for Surveillance Credit
☐ Increased Frequency Testing

Radiation Work Permit No.:	Fire Hazard Evaluation No.:	Equipment Clearance No.:
N/A	N/A	N/A

Administrative Approval to Perform Test:

James Madison — Shift Supervisor
Today — Date
0001 — Time

Test Results Review:

Pump Test Results:
☐ Acceptable - All data within Acceptance Criteria
☐ Acceptable - Data within Alert Range (explain in Remarks Section)
☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Valve Test Results:
☐ Acceptable - All data within Acceptance Criteria
☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Reviewed by: ______________________________ ____________ ____________
Test Coordinator Date Time

Plant Operations Review:

All data within Acceptance Criteria?	☐ Yes	☐ No
Any pump data within Alert Range?	☐ Yes	☐ No
ECW Train B in Service?	☐ Yes	☐ No
Potential Reportable Occurrence?	☐ Yes	☐ No
LCO Action Statement Entered?	☐ Yes	☐ No

Reviewed by: ______________________________ ____________ ____________
Shift Supervisor Date Time

KEY

This procedure, when complete, shall be retained for the life of the plant.

Procedure Performance Data Sheet

Division Surveillance Coordinator Review:

Reviewed by: ______________________________ ____________ ____________
Division Surveillance Coordinator Date Time

Section XI Coordinator:

Pump Test Results:

☐ Acceptable - All data within Acceptance Criteria
☐ Acceptable - Data within Alert Range (explain in Remarks Section)
☐ Unacceptable - Any data **NOT** within Acceptance Criteria (explain in Remarks Section)

Valve Test Results:

☐ Acceptable - (All data within Acceptance Criteria)
☐ Unacceptable - (Any data **NOT** within Acceptance Criteria)(explain in Remarks Section)

Corrective Action Taken: ______________________________

____

Reviewed by: ______________________________ ____________ ____________
Section XI Coordinator Date Time

M&TE Used:

Description	STPEGS No.	Cal. Due Date
0-100 psig Test gage	*100-9-34*	*11-11-03*
Stopwatch	*100-713-12*	*12-10-03*
Vibration Instrument	*100-1351-1*	*03-21-04*
Vibration Instrument probe	*100-1351-1*	*03-21-04*

Procedure Performance Data Sheet

Performers and Verifiers:

Name (Print)	Signature	Initials	Sections Performed
Robert Miller	Robert Miller	*RM*	*Various Sections*
Ima Crabb	*Ima Crabb*	*IC*	*Section 5.2.4*
Paul Brown	Paul Brown	*PB*	*Various Sections*

Remarks: ____

This procedure, when complete, shall be retained for the life of the plant.

1.0 Purpose and Scope

1.1 This procedure provides instructions to demonstrate components in the Essential Cooling Water System, required to perform a specific function in shutting down the Reactor to a Cold Shutdown Condition or mitigating the consequences of an accident, are Operable per Technical Specification 4.0.5 [ITS 5.5.8] and the Unit 1/Unit 2 Pump and Valve Inservice Test Plan.

1.2 Satisfactory performance of Section 5.4 will partially satisfy the testing requirements of a Slave Relay Test for ECW Pump 1B(2B) per Technical Specification 4.3.2.1.1.c.7 [ITS SR 3.3.2.7.1c].

1.3 This procedure provides instructions to verify the following pumps are operating properly by observing that pump performance is within the allowable range of Acceptance Criteria:

- Essential Cooling Water Pump 1B(2B)
- Essential Cooling Water Screen Wash Booster Pump 1B(2B)

1.4 This procedure provides instructions for verifying the following Essential Cooling Water System valves are Operable by cycling open and closed and verifying valve stroke time is within Acceptance Criteria:

- 1(2)-EW-FV-6936, ECW Blowdown Valve
- 1(2)-EW-FV-6924, ECW Screen Wash Booster Pump 1B(2B) Discharge Valve
- 1(2)-EW-MOV-0137, ECW Pump 1B(2B) Discharge Valve

1.5 This procedure provides instructions for verifying the following valves move to the fail-safe position upon loss of actuator power:

- 1(2)-EW-FV-6936, ECW Blowdown Valve
- 1(2)-EW-FV-6924, ECW Screen Wash Booster Pump 1B(2B) Discharge Valve

1.6 This procedure provides instructions for verifying the following check valves will pass full design accident flow:

- 1(2)-EW-0042, ECW Pump 1B(2B) Discharge Check Valve
- 1(2)-EW-0404, Emergency Backflush Check Valve
- 1(2)-EW-0254, ECW Screen Wash Booster Pump 1B(2B) Discharge Check Valve

1.7 This procedure provides instructions for manual operation of Self Cleaning Strainer Emergency Backflush Valve 1(2)-EW-0278 and ECW Pump 1B(2B) Discharge Strainer Backflush Throttle Valve 1(2)-EW-0189 through at least one cycle of operation.

1.8 This procedure verifies that ECW Pump 1B(2B) Room Fans and dampers operate during ECW Pump 1B(2B) operation.

1.9 This procedure verifies the ECW Self Cleaning Strainer starts on ECW Pump Start.

1.10 The Surveillance Test Completion Notice (TCN) specifies the scope of testing to be accomplished. IF no scope is specified, THEN test all components.

2.0 Responsibilities

2.1 Test Coordinator shall ensure that the procedure revision is correct and that all applicable Field Changes are incorporated.

2.2 Shift Supervisor shall grant permission for performance of this test.

2.3 This procedure shall be performed by Plant Operations.

2.4 WHEN "_____" (blank) follows a step, THEN the performer shall enter initials to verify step completion.

2.5 Plant Performance personnel may perform the vibration monitoring portion of this procedure on the ECW Pump.

2.6 Plant Performance personnel may perform the vibration monitoring portion of this procedure for the ECW Screen Wash Booster Pump (ECWSWBP).

2.7 I&C Maintenance shall perform venting of the ECW System flow instruments.

NOTE

After completion, procedure routing is per 0PGP03-ZE-0004, Plant Surveillance Program, and 0PGP03-ZA-0055, Plant Surveillance Scheduling.

2.8 The following shall review the test results:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator
- Section XI Coordinator

3.0 Precautions and Notes

3.1 IF one of the following occurs during performance of this test, THEN suspend the test AND restore Essential Cooling Water System to normal.

- Safety Injection Signal
- Loss of Offsite Power

3.2 IF either of the following conditions occur during testing of the ECW Pump, THEN suspend performance of the test until the condition is restored to the pre-test condition AND the Essential Cooling System is stabilized prior to continuing:

- Automatic start of the ECW Screen Wash Booster Pump
- Increasing temperatures from components supplied with ECW which may be an indication of inadequate ECW flow

3.3 IF during performance of this test, the ECW Self Cleaning Strainer differential pressure exceeds 5 psid as indicated by a Plant Computer alarm OR local indication on 1(2)-EW-PDI-6869, THEN the following shall be performed:

- Suspend testing
- Open 1(2)-EW-0189
- Start ECW Self Cleaning Strainer

3.3.1 WHEN strainer differential pressure is <5 psid, THEN perform the following:

- Stop the ECW Self Cleaning Strainer
- Close 1(2)-EW-0189
- Resume testing

3.4 This procedure should be reviewed in its entirety prior to performing the test.

3.5 Specific Reference Values incorporated in this procedure were obtained for the respective equipment on the following dates:

Component Description	Reference Value Date
Essential Cooling Water Pump 1B	03-02-03
ECW Screen Wash Booster Pump 1B	05-31-94
Essential Cooling Water Pump 2B	12-15-01
ECW Screen Wash Booster Pump 2B	08-03-94

3.6 Essential Cooling Water System flows from QDPS are indicated on QDPS Detail Data Menu Page 9.

3.7 Communications between the Control Room, ECW Intake Structure, and CCW Heat Exchanger Room shall be maintained during testing in which valves or control switches are **NOT** in normal alignment.

3.8 Valves subject to testing shall be closed/opened by normal operation and without preliminary or subsequent exercising or adjustments. Tightening of a valve by manual means after operation of a valve operator, cycling a valve to improve leakage or stroke time performance, and mechanical agitation (tapping) of valves are examples of activities **NOT** allowed. (Ref.7.4.4)

3.9 In order to ensure an air operated valve has sufficient time to reach normal air pressure prior to stroke timing the valve, approximately 2 minutes should have elapsed since the valve was last stroked.

3.10 The Valve Database, as referred to in this procedure, is the **currently approved** database used by Plant Operations to determine required valve positions. As of the Effective Date of this procedure, the ECO Database is the currently approved database. Future plans are a database within the Station MED system.

3.11 <u>IF</u> a discrepancy is found between AS FOUND position and REQUIRED POSITION as directed by a Step in this procedure, <u>THEN</u> the Shift Supervisor SHALL be notified to determine system/component operability or reportability status.

3.12 This procedure verifies the fail-safe position of valves 1(2)-EW-FV-6924 and 1(2)-EW-FV-6936.

3.12.1 Special timing of valves is **NOT** required since full stroke valve exercising in this procedure will de-energize the valves that have fail-safe positions.

3.12.2 The Solenoid valves tested in this procedure are spring loaded to vent air from air operated valve when the solenoid is de-energized.

3.13 IF Essential Cooling Water System Train B is shutdown, THEN testing of valves in Section 5.11 may be performed prior to starting the ECW Pump.

3.14 Acceptance Criteria steps are annotated with the letters **AC** in the left margin preceding the step.

3.15 IF this procedure can **NOT** be performed as written, THEN the procedure performer shall stop and immediately notify the Shift Supervisor.

3.16 IF any ECW Pump or ECW Screen Wash Booster Pump parameter falls in the Alert Range, THEN calibration of the affected instruments may be performed and the pump may be retested.

3.17 IF a valve with measured stroke times DOES **NOT** meet Acceptance Criteria AND DOES **NOT** exceed limiting values per Reference 7.8.3, THEN the valve **SHALL** be immediately retested OR declared inoperable per 0PGP03-ZE-0021, Inservice Testing Program for Valves. An Engineering evaluation **SHALL** be performed for each retested valve.

3.18 IF this procedure is terminated for any reason, THEN immediately notify the Shift Supervisor.

3.19 IF any Acceptance Criteria are **NOT** met, THEN immediately notify the Shift Supervisor AND document failure per 0PGP03-ZE-0004, Plant Surveillance Program.

Initials

4.0 Prerequisites

4.1 Ensure procedure revision is correct and all applicable Field Changes are incorporated. _RM_

4.2 This procedure may be performed in any Mode. Record the current plant Mode:

Mode ___*1*___ _RM_

4.3 Review Operability Assessment System (OAS) to ensure no equipment is out of service that could conflict with test completion or cause unexpected multiple trains to be inoperable while performing this test. _RM_

4.4 Essential Cooling Water System Train B is in operation or available for operation per 0POP02-EW-0001, Essential Cooling Water Operation. _RM_

4.5 Verify I&C Maintenance personnel are available for performance of instrument venting. _RM_

4.6 Verify qualified personnel are available for performance of ECW Pump vibration measurement. _RM_

4.7 For ECW pump testing, obtain the following test instrumentation:

- Test Gage with a range of 0 to 100 psig with an accuracy of ± 0.1% of full scale to measure ECW Pump 1B(2B) discharge pressure. (Ref. 7.4.2) _RM_
- A vibration instrument with an accuracy ± 5% of full scale to measure vibration velocity in in/sec. _RM_

4.8 For ECW Screen Wash Booster Pump testing, obtain the following test instrumentation:

- A vibration instrument with an accuracy ± 5% of full scale to measure vibration velocity in in/sec. _RM_

4.9 For any valve timing, obtain a calibrated stopwatch accurate to ± 1%. _RM_

Initials

4.10 Ensure ECW System pumps to be operated are inspected and acceptable for operation per the criteria established in 0POP01-ZQ-0022, Plant Operations Shift Routines.

- Essential Cooling Water Pump 1B(2B) *RM*
- ECW Screen Wash Booster Pump 1B(2B) *RM*

4.11 IF this procedure is being performed to demonstrate post-maintenance operability OR increased frequency testing of an Essential Cooling Water System component, THEN N/A the applicable subsection(s) for the component(s) **NOT** being tested, OTHERWISE N/A this step. *N/A*

4.12 IF this procedure is being performed for scheduled surveillance testing AND **NOT** all components are being tested, THEN N/A applicable sub-section(s)for any component **NOT** being tested. OTHERWISE N/A this step. *N/A*

4.13 Evaluate current plant conditions and note in the Remarks Section of the PPDS any changes in Work Risk Assessment due to special plant conditions. *RM*

Work Risk Assessment by Plant Mode

Reactor Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
NONE	NONE	NONE	NONE	NONE	NONE	NONE

Turbine Trip Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
NONE	NONE	NONE	NONE	NONE	NONE	NONE

ESF Actuation Potential:

Mode 1	Mode 2	Mode 3	Mode 4	Mode 5	Mode 6	No Mode
LOW	LOW	LOW	LOW	LOW	LOW	LOW

Initials

4.14 Record the following or "N/A", as applicable, on the PPDS:

- Unit Number
- Work Activity Number
- Surveillance Test (ST) Number(s)
- Reason for Test
- M&TE Data for vibration instrument
- M&TE Data for 0-100 psig test gage
- M&TE Data for stopwatch _RM_

4.15 Notify the Shift Supervisor to review Technical Specifications LCO 3.7.4 [ITS 3.7.8] and LCOs for systems affected by ECW for action requirements prior to performing this surveillance. _RM_

4.16 Obtain Shift Supervisor signature on PPDS for administrative approval to perform test. _RM_

Initials

5.4 Testing Essential Cooling Water Pump 1B(2B)

> NOTE
>
> Placing ECW Self Cleaning Strainer handswitch in “STOP” will cause ESF Status Monitoring Lampbox 2M22 BYP/INOP “ECW STRN 1B(2B)” to alarm.

5.4.1 Remove ECW Self Cleaning Strainer 1B(2B) from service by placing "ECW SELF CLEANING STRAINER 1B(2B)" handswitch in “STOP”. {ECWIS, MCC E1B3(E2B3)/C1} *RM*

5.4.2 IF ECW Self Cleaning Strainer 1B(2B) Normal Backflush is in service, THEN perform the following, OTHERWISE mark the following as N/A:

5.4.2.1 Record REQUIRED POSITION, including the throttled position and lock status, of "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE" from Valve Database here AND in Step 5.6.3. {ECWIS, Room 105(102)}

REQUIRED POSITION *N/A* *N/A*

5.4.2.2 WHEN Step 5.4.2.4 is performed, THEN RECORD the AS FOUND position, including the throttled position and lock status, of "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE". {ECWIS, Room 105(102)}

AS FOUND *N/A* *N/A*

5.4.2.3 IF the REQUIRED POSITION recorded in Step 5.4.2.1 AND the AS FOUND position recorded in Step 5.4.2.2 are different, THEN NOTIFY the Shift Supervisor, OTHERWISE N/A this Step. *N/A*

AC 5.4.2.4 Close "1(2)-EW-0189 ECW PUMP 1B(2B) DISCHARGE STRAINER BACKFLUSH THROTTLE VALVE". {ECWIS, Room 105(102)} *N/A*

5.4.3 RECORD the start time of the 5 minute system stabilization period.

0145 *RM*

Initials

5.4.4 WHEN at least 5 minutes have passed, THEN record the end time of the 5 minute system stabilization period.

0152 *RM*

> NOTE
>
> - Actual indicated ECW Pump Bay Level should be recorded and **NOT** corrected for elevation.
> - Normal ECW Pump Bay Level is 15.5 to 16.0 feet.

KEY

5.4.5 Record ECW Pump Bay Level "BAY LVL LI-6921": {CP002}

ECW Pump Bay Level *15.9* feet (LI-6921) *RM*

5.4.6 Using ECW Pump Bay Level recorded in Step 5.4.5 and Addendum 1, Essential Cooling Water Pump Bay Level Correction Factor, record the Bay Level Correction Factor for ECW Pump 1B(2B):

Non-Critical Error:
Correct value is **4.3**

Bay Level Correction Factor *4.4* psig *RM*

5.4.7 Record ECW Pump 1B(2B) discharge pressure from 0-100 psig Test Gage at test connection for "1(2)-EW-PI-6885 ECW PUMP 1B(2B) DISCHARGE PRESSURE INDICATOR".

ECW Pump Discharge Pressure *49.5* psig *RM*

> NOTE
>
> The Bay Level Correction Factor value is ADDED to the ECW pump discharge pressure to compensate for the difference in the discharge pressure reading (as measured at centerline of the ECW pump horizontal discharge piping) and actual discharge pressure at the outlet of the ECW pump impeller (minus the suction pressure that is derived from bay level). (Reference: Addendum 1, Essential Cooling Water Pump Bay Level Correction Factor)

5.4.8 Calculate ECW Pump 1B(2B) Delta P using the following formula:

49.5 psig +	*4.4* psig =	*53.9* psig	*RM*
Disch Press (Step 5.4.7)	Bay Level Corr Factor (Step 5.4.6)	Delta P	

Errors carried forward

Initials

5.4.9 Record ECW flow from the following components in Table 1 (ECW System Flow):

- ECW Pump Lube Water flow from 1(2)-EW-FI-6948, {ECWIS} *RM*
- Flow to CCW Pump Supplementary Cooler "TRN B FT 6866" (QDPS) *RM*
- ECW Flow to "ESF DG 12(22) FT 6865" (QDPS) *RM*

5.4.10 Record ECW flow from Essential Chiller in Table 1 (ECW System Flow) AND mark step **NOT** performed as N/A:

5.4.10.1 IF Train B Essential Chiller is in normal alignment, THEN record the following:

- "TRN B CHLR 12B(22B) FT 6905" (QDPS) *RM*

5.4.10.2 IF Train B Essential Chiller is in Cold Weather alignment, THEN record the following: {MAB 10', Room 067E}

- "1(2)-EW-FI-6905C ESSENTIAL CHILLER 12B(22B) ECW RETURN BYPASS FLOW INDICATOR" *N/A*

5.4.11 Determine ECW flow from CCW Heat Exchanger 1B(2B) as follows:

5.4.11.1 Record ECW flow from CCW Heat Exchanger 1B(2B) QDPS "TRN B FT6863" on Data Sheet 1 (Essential Cooling Water Flow from CCW Heat Exchanger) at approximately 30 second intervals until 21 flows have been recorded. (Detail Data Menu Page 9) *RM*

5.4.11.2 After 21 flows have been recorded, then add the individual flows and record total on Data Sheet 1. *RM*

5.4.11.3 Calculate and record the average ECW Flow from CCW Heat Exchanger in AVERAGE block of Data Sheet 1. *RM*

5.4.11.4 Sign and Date Performance of Data Sheet 1. *RM*

Initials

5.4.12 Record the AVERAGE ECW Flow from CCW Heat Exchanger from Data Sheet 1 in Table 1, ECW System Flow. *RM*

5.4.13 Calculate and record Total ECW System Flow in Table 1, ECW System Flow. *RM*

Table 1: ECW System Flow

Component	ECW Flow	Units
ECW Pump 1B(2B) Lube Water	*10.8*	gpm
ECW Flow to Essen Chlr 12B(22B)	*1230*	gpm
ECW Flow to CCW Pump Cooler	*50*	gpm
ECW Flow to ESF DG 12(22)	*1753*	gpm
ECW Flow to CCW HX (AVERAGE from Data Sheet 1)	*14651.76*	gpm
TOTAL ECW SYSTEM FLOW =	*17695.56*	gpm

Error Carried Forward Correct value: 14151.76 gpm

Error Carried Forward Correct value: 17195.56 gpm

5.4.14 IF performing this test in **Unit 1**, THEN perform the following, OTHERWISE N/A Steps 5.4.14.1 through 5.4.14.7:

5.4.14.1 Determine ECW Total Flow Range of Table 2: ECW Pump 1B Reference Values, for the Total ECW System Flow recorded in Table 1: ECW System Flow.

ECW Total Flow Range *17650-17699* gpm *RM*

Error Carried Forward Correct range: 17150 - 17199

5.4.14.2 Record ECW Pump 1B Delta P from Step 5.4.8 in Table 2: ECW Pump 1B Reference Values, at the corresponding ECW Total Flow Range determined in Step 5.4.14.1. *RM*

Table 2: ECW Pump 1B Reference Values

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
15,700-15,749	62.0	*N/A*	dP< 57.7	57.7 <=dP< 58.9	58.9 <=dP<= 68.2	dP> 68.2
15,750-15,799	61.9		dP< 57.6	57.6 <=dP< 58.8	58.8 <=dP<= 68.1	dP> 68.1
15,800-15,849	61.8		dP< 57.4	57.4 <=dP< 58.7	58.7 <=dP<= 67.9	dP> 67.9
15,850-15,899	61.6		dP< 57.3	57.3 <=dP< 58.6	58.6 <=dP<= 67.8	dP> 67.8
15,900-15,949	61.5		dP< 57.2	57.2 <=dP< 58.4	58.4 <=dP<= 67.6	dP> 67.6
15,950-15,999	61.4		dP< 57.1	57.1 <=dP< 58.3	58.3 <=dP<= 67.5	dP> 67.5
16,000-16,049	61.2		dP< 56.9	56.9 <=dP< 58.2	58.2 <=dP<= 67.3	dP> 67.3
16,050-16,099	61.1		dP< 56.8	56.8 <=dP< 58.0	58.0 <=dP<= 67.2	dP> 67.2
16,100-16,149	60.9		dP< 56.7	56.7 <=dP< 57.9	57.9 <=dP<= 67.0	dP> 67.0
16,150-16,199	60.8		dP< 56.6	56.6 <=dP< 57.8	57.8 <=dP<= 66.9	dP> 66.9
16,200-16,249	60.7		dP< 56.4	56.4 <=dP< 57.6	57.6 <=dP<= 66.7	dP> 66.7
16,250-16,299	60.5		dP< 56.3	56.3 <=dP< 57.5	57.5 <=dP<= 66.6	dP> 66.6
16,300-16,349	60.4		dP< 56.2	56.2 <=dP< 57.4	57.4 <=dP<= 66.4	dP> 66.4
16,350-16,399	60.3		dP< 56.0	56.0 <=dP< 57.3	57.3 <=dP<= 66.3	dP> 66.3
16,400-16,449	60.1		dP< 55.9	55.9 <=dP< 57.1	57.1 <=dP<= 66.1	dP> 66.1
16,450-16,499	60.0		dP< 55.8	55.8 <=dP< 57.0	57.0 <=dP<= 66.0	dP> 66.0
16,500-16,549	59.9		dP< 55.7	55.7 <=dP< 56.9	56.9 <=dP<= 65.8	dP> 65.8
16,550-16,599	59.7		dP< 55.5	55.5 <=dP< 56.7	56.7 <=dP<= 65.7	dP> 65.7
16,600-16,649	59.6		dP< 55.4	55.4 <=dP< 56.6	56.6 <=dP<= 65.5	dP> 65.5
16,650-16,699	59.4		dP< 55.3	55.3 <=dP< 56.5	56.5 <=dP<= 65.4	dP> 65.4
16,700-16,749	59.3		dP< 55.2	55.2 <=dP< 56.3	56.3 <=dP<= 65.2	dP> 65.2
16,750-16,799	59.2		dP< 55.0	[illegible]	[illegible].2 <=dP<= 65.1	dP> 65.1
16,800-16,849	59.0		dP< 54.9	[illegible]	[illegible].1 <=dP<= 64.9	dP> 64.9
16,850-16,899	58.9		dP< 54.8	[illegible]	[illegible].0 <=dP<= 64.8	dP> 64.8
16,900-16,949	58.8		dP< 54.6	[illegible]	[illegible].8 <=dP<= 64.6	dP> 64.6
16,950-16,999	58.6		dP< 54.5	54.5 <=dP< 55.7	55.7 <=dP<= 64.5	dP> 64.5
17,000-17,049	58.5		dP< 54.4	54.4 <=dP< 55.6	55.6 <=dP<= 64.3	dP> 64.3
17,050-17,099	58.4		dP< 54.3	54.3 <=dP< 55.4	55.4 <=dP<= 64.2	dP> 64.2
17,100-17,149	58.2	*N/A*	dP< 54.1	54.1 <=dP< 55.3	55.3 <=dP<= 64.0	dP> 64.0
17,150-17,199	58.0	**53.8**	dP< 53.9	53.9 <=dP< 55.1	55.1 <=dP<= 63.7	dP> 63.7

Correct range for Delta P: Test Delta P is within the Required Action Low

Table 2: ECW Pump 1B Reference Values

(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
17,200-17,249	57.7	*N/A*	dP< 53.7	53.7 <=dP< 54.9	54.9 <=dP<= 63.5	dP> 63.5
17,250-17,299	57.5		dP< 53.5	53.5 <=dP< 54.6	54.6 <=dP<= 63.3	dP> 63.3
17,300-17,349	57.3		dP< 53.3	53.3 <=dP< 54.4	54.4 <=dP<= 63.0	dP> 63.0
17,350-17,399	57.1		dP< 53.1	53.1 <=dP< 54.2	54.2 <=dP<= 62.8	dP> 62.8
17,400-17,449	56.9		dP< 52.9	52.9 <=dP< 54.0	54.0 <=dP<= 62.6	dP> 62.6
17,450-17,499	56.7		dP< 52.7	52.7 <=dP< 53.8	53.8 <=dP<= 62.3	dP> 62.3
17,500-17,549	56.4		dP< 52.5	52.5 <=dP< 53.6	53.6 <=dP<= 62.1	dP> 62.1
17,550-17,599	56.2		dP< 52.3	52.3 <=dP< 53.4	53.4 <=dP<= 61.9	dP> 61.9
17,600-17,649	56.0	*N/A*	dP< 52.1	52.1 <=dP< 53.2	53.2 <=dP<= 61.6	dP> 61.6
17,650-17,699	55.8	*53.9*	dP< 51.9	51.9 <=dP< 53.0	53.0 <=dP<= 61.4	dP> 61.4
17,700-17,749	55.6	*N/A*	dP< 51.7	51.7 <=dP< 52.8	52.8 <=dP<= 61.2	dP> 61.2
17,750-17,799	55.4		dP< 51.5	51.5 <=dP< 52.6	52.6 <=dP<= 60.9	dP> 60.9
17,800-17,849	55.2		dP< 51.3	51.3 <=dP< 52.4	52.4 <=dP<= 60.7	dP> 60.7
17,850-17,899	54.9		dP< 51.1	51.1 <=dP< 52.2	52.2 <=dP<= 60.4	dP> 60.4
17,900-17,949	54.7		dP< 50.9	50.9 <=dP< 52.0	52.0 <=dP<= 60.2	dP> 60.2
17,950-17,999	54.5		dP< 50.7	50.7 <=dP< 51.8	51.8 <=dP<= 60.0	dP> 60.0
18,000-18,049	54.3		dP< 50.5	50.5 <=dP< 51.6	51.6 <=dP<= 59.7	dP> 59.7
18,050-18,099	54.1		dP< 50.3	50.3 <=dP< 51.4	51.4 <=dP<= 59.5	dP> 59.5
18,100-18,149	54.0		dP< 50.2	50.2 <=dP< 51.3	51.3 <=dP<= 59.4	dP> 59.4
18,150-18,199	53.8		dP< 50.1	50.1 <=dP< 51.1	51.1 <=dP<= 59.2	dP> 59.2
18,200-18,249	53.7		dP< 49.9	49.9 <=dP< 51.0	51.0 <=dP<= 59.0	dP> 59.0
18,250-18,299	53.5		dP< 49.8	49.8 <=dP< 50.8	50.8 <=dP<= 58.9	dP> 58.9
18,300-18,349	53.4		dP< 49.6	49.6 <=dP< 50.7	50.7 <=dP<= 58.7	dP> 58.7
18,350-18,399	53.2		dP< 49.5	49.5 <=dP< 50.6	50.6 <=dP<= 58.5	dP> 58.5
18,400-18,449	53.1		dP< 49.4	49.4 <=dP< 50.4	50.4 <=dP<= 58.4	dP> 58.4
18,450-18,499	52.9		dP< 49.2	49.2 <=dP< 50.3	50.3 <=dP<= 58.2	dP> 58.2
18,500-18,549	52.8		dP< 49.1	49.1 <=dP< 50.1	50.1 <=dP<= 58.1	dP> 58.1
18,550-18,599	52.6		dP< 48.9	48.9 <=dP< 50.0	50.0 <=dP<= 57.9	dP> 57.9
18,600-18,649	52.5		dP< 48.8	48.8 <=dP< 49.9	49.9 <=dP<= 57.7	dP> 57.7
18,650-18,699	52.3	*N/A*	dP< 48.7	48.7 <=dP< 49.7	49.7 <=dP<= 57.6	dP> 57.6

Table 2: ECW Pump 1B Reference Values
(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
18,700-18,749	52.2	*N/A*	dP< 48.5	48.5 <=dP< 49.6	49.6 <=dP<= 57.4	dP> 57.4
18,750-18,799	52.0		dP< 48.4	48.4 <=dP< 49.4	49.4 <=dP<= 57.2	dP> 57.2
18,800-18,849	51.9		dP< 48.2	48.2 <=dP< 49.3	49.3 <=dP<= 57.1	dP> 57.1
18,850-18,899	51.7		dP< 48.1	48.1 <=dP< 49.1	49.1 <=dP<= 56.9	dP> 56.9
18,900-18,949	51.6		dP< 48.0	48.0 <=dP< 49.0	49.0 <=dP<= 56.7	dP> 56.7
18,950-18,999	51.4		dP< 47.8	47.8 <=dP< 48.9	48.9 <=dP<= 56.6	dP> 56.6
19,000-19,049	51.3		dP< 47.7	47.7 <=dP< 48.7	48.7 <=dP<= 56.4	dP> 56.4
19,050-19,099	51.1		dP< 47.6	47.6 <=dP< 48.6	48.6 <=dP<= 56.2	dP> 56.2
19,100-19,149	51.0		dP< 47.4	47.4 <=dP< 48.4	48.4 <=dP<= 56.1	dP> 56.1
19,150-19,199	50.8		dP< 47.3	47.3 <=dP< 48.3	48.3 <=dP<= 55.9	dP> 55.9
19,200-19,249	50.6		dP< 47.1	47.1 <=dP< 48.1	48.1 <=dP<= 55.7	dP> 55.7
19,250-19,299	50.4		dP< 46.9	46.9 <=dP< 47.9	47.9 <=dP<= 55.4	dP> 55.4
19,300-19,349	50.2		dP< 46.7	46.7 <=dP< 47.7	47.7 <=dP<= 55.2	dP> 55.2
19,350-19,399	50.0		dP< 46.5	46.5 <=dP< 47.5	47.5 <=dP<= 55.0	dP> 55.0
19,400-19,449	49.8		dP< 46.3	46.3 <=dP< 47.3	47.3 <=dP<= 54.8	dP> 54.8
19,450-19,499	49.6		dP< 46.1	46.1 <=dP< 47.1	47.1 <=dP<= 54.5	dP> 54.5
19,500-19,549	49.4		dP< 45.9	45.9 <=dP< 46.9	46.9 <=dP<= 54.3	dP> 54.3
19,550-19,599	49.2		dP< 45.7	45.7 <=dP< 46.7	46.7 <=dP<= 54.1	dP> 54.1
19,600-19,649	49.0		dP< 45.5	45.5 <=dP< 46.5	46.5 <=dP<= 53.9	dP> 53.9
19,650-19,699	48.8		dP< 45.3	45.3 <=dP< 46.3	46.3 <=dP<= 53.6	dP> 53.6
19,700-19,749	48.5		dP< 45.1	45.1 <=dP< 46.1	46.1 <=dP<= 53.4	dP> 53.4
19,750-19,799	48.3		dP< 45.0	45.0 <=dP< 45.9	45.9 <=dP<= 53.2	dP> 53.2
19,800-19,849	48.1		dP< 44.8	44.8 <=dP< 45.7	45.7 <=dP<= 53.0	dP> 53.0
19,850-19,899	47.9		dP< 44.6	44.6 <=dP< 45.5	45.5 <=dP<= 52.7	dP> 52.7
19,900-19,949	47.7		dP< 44.4	44.4 <=dP< 45.3	45.3 <=dP<= 52.5	dP> 52.5
19,950-19,999	47.5		dP< 44.2	44.2 <=dP< 45.1	45.1 <=dP<= 52.3	dP> 52.3
20,000-20,049	47.3		dP< 44.0	44.0 <=dP< 44.9	44.9 <=dP<= 52.0	dP> 52.0
20,050-20,099	47.1		dP< 43.8	43.8 <=dP< 44.8	44.8 <=dP<= 51.8	dP> 51.8
20,100-20,149	46.9		dP< 43.6	43.6 <=dP< 44.6	44.6 <=dP<= 51.6	dP> 51.6
20,150-20,199	46.7	*N/A*	dP< 43.4	43.4 <=dP< 44.4	44.4 <=dP<= 51.4	dP> 51.4

Initials

Table 2: ECW Pump 1B Reference Values
(continued from previous page)

ECW Total Flow Range	Ref. Delta P	Test Delta P	Required Action Low	Alert Range Low	Acceptable Range	Required Action High
20,200-20,249	46.5	*N/A*	dP< 43.2	43.2 <=dP< 44.2	44.2 <=dP<= 51.1	dP> 51.1
20,250-20,299	46.3		dP< 43.0	43.0 <=dP< 44.0	44.0 <=dP<= 50.9	dP> 50.9
20,300-20,349	46.1		dP< 42.9	42.9 <=dP< 43.8	43.8 <=dP<= 50.7	dP> 50.7
20,350-20,399	45.9		dP< 42.7	42.7 <=dP< 43.6	43.6 <=dP<= 50.5	dP> 50.5
20,400-20,449	45.7		dP< 42.5	42.5 <=dP< 43.4	43.4 <=dP<= 50.2	dP> 50.2
20,450-20,500	45.5	*N/A*	dP< 42.3	42.3 <=dP< 43.2	43.2 <=dP<= 50.0	dP> 50.0

KEY

AC

Critical Error: (Acceptance Criteria **NOT** met)

(The items marked with an "*" are the **Critical Error** portions)

Should be N/A
(Non-Critical Portion)

Should be initialed
(Critical Portion)

5.4.14.3 Complete the following and mark steps that **DO NOT** apply N/A:

a. ECW Pump 1B Delta P is within Acceptable Range. *RM*

b. ECW Pump 1B Delta P is within Required Action High. *N/A*

c. ECW Pump 1B Delta P is within Alert Range Low. *N/A*

d. ECW Pump 1B Delta P is within Required Action Low. *N/A* *

5.4.14.4 IF Total ECW System Delta P is within a Required Action Range, THEN immediately notify Shift Supervisor, OTHERWISE mark this step N/A. *N/A* *

5.4.14.5 Measure the unfiltered vibration velocity (V) at indicated test points (Addendum 2, Vibration Test Point Locations and Instructions) and record vibration in Table 3: Unit 1 ECW Pump 1B Vibration Data. *RM*

Please Note:
When performing a PEER CHECK, the Peer-Checker MAY or MAY NOT cross out, initial, and enter the correct information. The Peer-Checker may choose to point out the errors to the Original Performer and have that person make the necessary corrections instead of making the corrections themselves. Either way is acceptable.

Bay Level LI-6921 feet	Bay Level Correction Factor
15.0	4.7
15.1	4.7
15.2	4.6
15.3	4.6
15.4	4.6
15.5	4.5
15.6	4.5
15.7	4.4
15.8	4.4
15.9	4.3
16.0	4.3
16.1	4.3
16.2	4.2
16.3	4.2
16.4	4.1
16.5	4.1

NOTE: Values in the above table were calculated using the following:

ECW Bay Level Correction Factor

Bay Level Correction Factor = 0.43psi/ft x (26ft - ECW Bay Level)

Data Sheet 1	Essential Cooling Water Flow from CCW Heat Exchanger	Page 1 of 1

	Step 5.4.11	Step 5.5.6
1	*14016*	*N/A*
2	*14300*	
3	*14206*	
4	*14078*	
5	*14126*	
6	*14115*	
7	*13935*	
8	*14115*	
9	*14292*	
10	*14254*	
11	*14180*	
12	*14158*	
13	*14184*	
14	*14167*	
15	*14126*	
16	*14111*	
17	*14253*	
18	*14053*	
19	*14191*	
20	*14158*	
21	*14169*	
TOTAL =	*307687*	
AVERAGE	*14651.76*	*N/A*

CRITICAL ERROR
Correct value:
297187

Error Carried Forward
Correct value:
14151.76

NOTE: <u>IF</u> Column is <u>**NOT**</u> used, <u>THEN</u> it may be marked as N/A.

Step 5.4.11 Performed by *Robert Miller* Date *Today*

Step 5.5.6 Performed by *N/A* Date *N/A*

NUCLEAR TRAINING DEPARTMENT

JOB PERFORMANCE MEASURE

TITLE:	**DETERMINE RADIOLOGICAL REQUIREMENTS TO ENTER A HIGH RAD AREA**
JPM NO.:	**A4**
REVISION:	**2**
LOCATION:	**UNIT 1 OR 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	DETERMINE RADIOLOGICAL REQUIREMENTS TO ENTER A HIGH RAD AREA
JPM No.:	A4
Rev. No:	2
STP Task:	T49250, Place in or remove a mixed bed or cation bed demineralizer.
STP Objective:	NLO49250, When directed by designated Control Room personnel, remove/place in service a CVCS mixed bed demineralizer in accordance with 0POP02-CV-0004.
Related K/ A Reference:	G 2.3.10 [2.9/3.3] Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.
References:	Technical Specification 6.12.2 0POP02-CV-0005, Rev. 18, CVCS Pre-Start System Alignment 0PGP03-ZR-0051, Rev. 14, Radiological Access and Work Controls
Task Normally Completed By:	PO
Method of Testing:	Simulated
Location of Testing:	Unit 1 or 2 RCA
Time Critical Task:	NO
Validation Time:	15 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is initially increasing power from an unplanned shutdown. Mixed Bed Demineralizer 1(2) "B" was recently placed in service and subsequently removed when an increase in RCS leakage was observed. 1(2) CV-0430, the demineralizer "B" inlet vent valve is suspected of causing the leakage because it was recently replaced.

INITIATING CUE:

The Unit Supervisor directs you to find the location of the valve and to determine the radiological entry requirements necessary to access the valve itself.

- It is not necessary to go to the valve's location.
- You are to discuss all requirements with the evaluator.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines valve is in Room 244T, and discusses the radiological requirements for entering a GRAVE DANGER, Very High Radiation Area (VHRA)/Locked High Radiation Area (LHRA).

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

The Evaluator is provided with a Radiological Area maps handout for the MAB 60' elevation that this JPM is based on. The applicant may access current survey maps by either contacting the HP desk or observing them on the wall to the men's RCA access, if posted. Once the applicant has located the correct map, provide the handout.

NOTES:

1. This JPM should be given as the first JPM prior to entering the RCA. It should be performed in conjunction with, and just prior to, JPM P1, "Perform Channel Check and Source Check of RT-8038".

2. This JPM is based on the handout maps provided. The JPM may be performed in its entirety outside of the RCA. The applicant may want to enter the RCA to locate the valve access area; however, this JPM is based on the handout maps provided which may differ with current conditions.

3. The applicant may ask Health Physics personnel which procedure or reference the requirements for entry are located and where this procedure can be obtained. The student CAN NOT ask other personnel what the entry requirements are.

4. **The NRC Evaluator will use the following for RCA access:**

   Unit 1: RWP- 2003-0-0003, Rev.1, and use 9701 for the WAN

   Unit 2: RWP- 2003-0-0003, Rev.1, and use 9702 for the WAN

5. There is **no** answer KEY associated with this JPM. Answer information is included within the JPM.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT **Performance Step:** 1

Access references to determine valve location.

Standard:

Accesses ORACLE or the Chemical and Volume Control Procedure (0POP02-CV-0005), to determine location of valve.

Comment:

Applicant may know location from memory or may determine location using a computer either inside or outside of the RCA. If 0POP02-CV-0005, Chemical and Volume Control System Pre-Start System Alignment, is used, Lineup 2, Page 35 of 38 (procedure page 55 of 83) gives location of valve.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Determine valve location.

Standard:

Determines 1(2) CV-0430 is in the MAB Room 244T Valve Pit.

Comment:

1) Room 244T is accessed from Room 329, Demineralizer access area on the MAB 60' elevation.

2) Room 244T is a valve pit, with a shielding plug as its access point.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3(C)

Determine Room Radiological Conditions for Room 244T.

Standard:

Determines that Room 244T is in a GRAVE DANGER/Very High Radiation Area (VHRA) and Locked High Radiation Area (LHRA).

Comment:

On the survey maps provided the area is marked as Grave Danger/Very High Radiation Area and a Locked High Radiation Area.

Cue:

Once applicant shows that he/she can locate the correct survey, provide then with the handout of the area survey maps.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 4 (C)*

Determine radiological entry requirements for a GRAVE DANGER/Very High Radiation Area (VHRA) and Locked High Radiation Area (LHRA).

Standard:

Discusses the following radiological requirements for entering a LHRA and VHRA (in general terms).

1)* *Personnel entering a LHRA SHALL be assigned an active RWP that permits such entry. <u>(RWP)</u>*
2) *Personnel entering a LHRA SHALL be assigned an individual monitoring device. <u>(TLD)</u>*
3)* *Personnel entering a LHRA SHALL be provided with or accompanied by one or more of the following:*

- *A radiation monitoring device that continuously indicates the dose rate in the area <u>(dose rate meter</u>), **OR***
- *A radiation monitoring device that continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received <u>(alarming dosimeter or Siemens EPD)</u> , **OR***
- *An individual qualified in radiation protection procedures with a radiation dose rate monitoring device, and positive control over the activities within the area. (<u>Health Physics Technician</u>)*

Additional requirements for entry into a GRAVE DANGER, VHRA.

1) *The access keys for a VHRA shall be unique and controlled.*
2) *A pre-job ALARA evaluation approved by the ALARA Review Committee is required.*
3) *The Radiation Protection Manager and the Plant Manager must approve entry.*

Comments:

1) * - Denotes critical portion of step which is based on license compliance (Tech Spec 6.12).
2) The acceptable general term or phrase may be as short as the underlined portions above.
3) The above information is accessed in either Technical Specification 6.12 (for LHRA) or 0PGP03-ZR-0051, “Radiological Access and Work Controls” (for LHRA and VHRA).
4) The applicant may ask Health Physics personnel which procedure or reference the requirements for entry are located and where this procedure can be obtained. The student CAN NOT ask other personnel what the entry requirements are.
5) The references can be accessed on the LAN Computer, in the Control Room, or at the 41’ MAB RCA Entrance (references used by Health Physics Personnel). The applicant MAY NOT discuss the requirements contained in the references with Health Physics personnel.
6) It is not expected that the applicant must use the above references. The applicant may be able to discuss the requirements from memory, however referring to the above references is acceptable.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET

Cue:

If the applicant appears that they want to discuss the requirements from memory, tell the applicant that references are available and can be used to determine entry requirements.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A4, DETERMINE RADIOLOGICAL REQUIREMENTS TO ENTER A HIGH RAD AREA

Applicant's Name: ____

Date Performed:

Time to Complete:

JPM Results:

Sat / Unsat

Evaluator: ________________________ **Signature __________________________**

Date ____________________

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The unit is initially increasing power from an unplanned shutdown. Mixed Bed Demineralizer 1(2) "B" was recently placed in service and subsequently removed when an increase in RCS leakage was observed. 1(2) CV-0430, the demineralizer "B" inlet vent valve is suspected of causing the leakage because it was recently replaced.

INITIATING CUE:

The Unit Supervisor directs you to find the location of the valve and to determine the <u>radiological entry requirements</u> necessary to access the valve itself.

- It is <u>not</u> necessary to go to the valve's location.
- You are to discuss all requirements with the evaluator.

NUCLEAR TRAINING DEPARTMENT

JOB PERFORMANCE MEASURE

TITLE:	**REVIEW RCS INVENTORY AND DETERMINE TECH SPEC APPLICABILITY**
JPM NO.:	**A5**
REVISION:	**2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: REVIEW RCS INVENTORY AND DETERMINE TECH SPEC APPLICABILITY

JPM No.: A5

Rev. No.: 2

Task No.: 10300, Interpret Technical Specifications.

STP Objective: 10300, Given that a condition exists requiring entry into a Technical Specification action statement, interpret Technical Specifications accurately, such that plant activities occur safely and smoothly, and that contacting superiors for advice is unnecessary.

Related K/A Reference: 2.1.7 [4.4] Ability to evaluate plant performance and make operational judgements based on operating characteristics, reactor behavior, and instrument response.

References: 0PSP03-RC-0006, Rev. 9, Reactor Coolant Inventory

South Texas Project Technical Specifications

Task Normally Completed By: SRO

Method of Testing: Actual Performance

Location of Testing: N/A

Time Critical Task: NO

Alternate Path JPM: NO

Validation Time: 25 minutes

Required Materials (Tools/Equipment): Calculator
Technical Specifications
Plant Curve Book

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% steady state power with indications of increased RCS leakage. 0PSP03-RC-0006, Reactor Coolant Inventory, has just been completed using a manual calculation and indicates a Technical Specification Allowable Value has been exceeded.

INITIATING CUE:

You are the Unit Supervisor and are to complete the Plant Operations Review of the completed surveillance, <u>including</u> Technical Specification applicability.

$ Primary to Secondary leakage is 13 gpd.

$ There is no other known leakage.

THREE errors have been inserted into the surveillance, one (1) Critical and two (2) Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

1. There are **NO** intended errors in the "Instrument", "Start" or "Stop" columns of Data Sheet 1.

2. Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information).

JOB PERFORMANCE MEASURE INFORMATION SHEET CON=T

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The critical error has been identified AND it is determined that Technical Specification LCO entry is NOT required.

HANDOUTS:

- Handout Copy of completed surveillance 0PSP03-RC-0006

NOTES:

- **THIS JPM WAS WRITTEN AND VALIDATED TO REVISION 9 OF 0PSP03-RC-0006, REACTOR COOLANT INVENTORY. ON AUGUST 1, 2003, REVISIONS 10 AND 11 BECAME EFFECTIVE TO THIS PROCEDURE, BUT THIS JPM REMAINS BASED ON REV. 9.**

- A completed Answer KEY is provided for the Evaluator. The Key contains the same errors as the handout. The location of the errors will be highlighted and described on the evaluator copy. **Do Not Hand to the Applicant**

- The applicant may ask to reference the Plant Curve Book to verify volumes in the PRT and RCDT. Copies of the Plant Curve Book are provided in the examination area.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

<u>SAT/UNSAT</u> Performance Step: 1 (C)*

Review the completed surveillance.

Standard:

Identifies the following ERRORS:

1) VCT level change calculation is reversed ("STOP-START" was used instead of "START-STOP")*

2) "Data Transcription or Calculations Verified By" signature block is N/A'd instead of being signed.

3) Data entry points at the bottom of page 2 of Data Sheet 1 are blank instead of being filled in.

Comment:

1) * Denotes Critical Error. Error #1 potentially causes an LCO entry and possible plant shutdown.

2) Error #2 is a requirement of procedure step 3.2 (if a manual calculation is performed) and is not considered critical because it is an administrative requirement. Error #3 is not considered critical because it does not affect the outcome of the surveillance, only makes the surveillance easier to reconstruct once vaulted.

STEP CONTINUED ON NEXT PAGE

JOB PERFORMANCE MEASURE CHECK SHEET

Cue:

Error #1 results in incorrect calculations for GROSS Leakage rate (steps 5.8.1 and 5.8.2) and UNIDENTIFIED LEAKAGE Rate (step 5.11). If the applicant considers this 2 or more errors remind him/her of Initiating Cue assumption #2 - this is considered only 1 error.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Determine Technical Specification applicability.

Standard:

Determines that the Technical Specification Limiting Condition For Operation (LCO) is met. Technical Specification limits have NOT been exceeded and LCO entry is NOT required.

Comment:

Although GROSS Leakage Rate is >1 gpm, this is not part of the Technical Specifications. Technical Specifications addresses UNIDENTIFIED Leakage and IDENTIFIED Leakage.

Cue:

Notes:

Technical Specification limits are as follows:

$ No Pressure Boundary leakage
$ 1 gpm Unidentified Leakage
$ 150 gpd primary-to-secondary leakage through any one steam generator
$ 10 gpm Identified Leakage

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A5, REVIEW RCS INVENTORY AND DETERMINE TECH SPEC APPLICABILITY

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature** __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% steady state power with indications of increased RCS leakage. 0PSP03-RC-0006, Reactor Coolant Inventory, has just been completed using a manual calculation and indicates a Technical Specification Allowable Value has been exceeded.

INITIATING CUE:

You are the Unit Supervisor and are to complete the Plant Operations Review of the completed surveillance, including Technical Specification applicability.

$ Primary to Secondary leakage is 13 gpd.

$ There is no other known leakage.

THREE errors have been inserted into the surveillance, one (1) Critical and two (2) Non-Critical. As a MINIMUM, you are to IDENTIFY the Critical error. Editorial errors such as spelling, grammar, or punctuation are unintentional and DO NOT count.

You are to take the following into account during your review:

3) There are **NO** intended errors in the "Instrument", "Start" or "Stop" columns of Data Sheet 1.

4) Carryover errors count as only one error (i.e., a single error that carries over from calculation to calculation or multiple line items with the same incorrect information)

STI 31349984	0PSP03-RC-0006	Rev. 9	Page 1 of 13
Reactor Coolant Inventory			
Quality	Safety-Related	Usage: **REFERENCED**	Effective Date: 10/02/01

P. Torres	J. C. Heil	Crew 2D	Generation Support
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

1.0 Purpose and Scope

1.1 Provide instructions for performing a Reactor Coolant System Water Inventory Balance to determine RCS leakage and satisfy the surveillance requirements of Technical Specification Section 4.4.6.2.1.c [ITS SR 3.4.14.1].

1.2 The calculations in this procedure assume the plant is in Modes 1, 2, 3, or 4 and plant conditions are stable. Performance of an inventory balance at conditions other than previously stated may yield unreliable results.

1.3 Provide a means for updating the Plant Computer Sump Level Monitoring System identified leakage value.

2.0 Responsibilities

2.1 This procedure is performed by Plant Operations.

2.2 The following personnel shall review this test:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator

2.3 After completion of test, routing is per 0PGP03-ZE-0004 (Plant Surveillance Program), and 0PGP03-ZA-0055 (Plant Surveillance Scheduling).

3.0 Precautions and Notes

3.1 IF the computer program is used for data calculation, THEN the following applies:

3.1.1 The computer generated form may be substituted for Data Sheet 1, Leakage Rate, Page 2 of 2.

3.1.2 A second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the correct transcription of data.

3.2 IF a manual calculation is performed, THEN a second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the calculation is correct.

3.3 In Modes 1 or 2, Reactor Power SHALL be maintained in a 1% band.

Initials

3.4 In Modes 1, 2, or 3, a minimum of one RCP in operation is required.

3.5 IF performing to obtain an Identified OR Unidentified Leakage Rate, THEN VERIFY RCDT level is being maintained between 20 and 70%.

3.6 Diversion of letdown to Recycle Holdup Tanks will invalidate the test.

3.7 IF determining an Identified OR Unidentified Leak Rate, THEN the following will invalidate this test:

3.7.1 Draining of the RCDT or PRT

3.7.2 Venting, draining, or sampling any portion of the RCS, CVCS, or interconnected piping

3.7.3 RCS sampling may be allowed to recirculate to the VCT, however, RCS Coolant SHALL **NOT** be removed from the RCS during this test.

3.7.4 Opening RC-FV-3650 (PRT SPRAY ISOL) or the opening of RC-FV-3651 (RMW to PRT/RCP standpipe) with known leakage across RC-FV-3650 (Reference 7.4.2).

3.8 Failure to meet the acceptance criteria of the test may require entry into LCO Action Statement 3.4.6.2 [ITS 3.4.14 Condition A].

3.9 Any changes to this procedure requires a review of the computer program for adherence to Software Quality Assurance Standards.

3.10 Operation of the HHSI or LHSI pumps may invalidate the test due to potential relief valve leakage into the PRT (Reference 7.4.2).

4.0 Prerequisites

4.1 Pressurizer/Reactor Coolant System pressure is approximately 400 psig OR 2235 psig. *JD*

4.2 Record the following on PPDS:

- Unit Number *JD*
- Reason for Test *JD*

Initials

5.0 Procedure

5.1 VERIFY the prerequisites are complete. *JD*

5.2 RECORD START data and instrumentation on Data Sheet 1, Leakage Rate. *JD*

NOTE

This test should be performed over a two hour period unless steady conditions cannot be maintained. A test period of one hour is sufficient to satisfy the surveillance test. The test period may be specified at the discretion of the Shift Supervisor.

5.3 WHEN the determined test period has elapsed, THEN perform the following:

5.3.1 VERIFY Stop time Reactor Power is within 1% of Start time Reactor Power. *JD*

5.3.2 VERIFY Stop time PRZR pressure is within 10 psig of Start time PRZR pressure. *JD*

5.3.3 IF Reactor Power and Pressure data are within limits above, THEN record STOP data on Data Sheet 1, Leakage Rate. *JD*

5.3.4 IF Reactor Power and Pressure data were NOT within limits above, THEN do NOT record stop data. *NA*

5.3.5 WHEN Reactor Power and Pressure stabilize within limits, THEN return to Section 5.2 and obtain new data. *NA*

5.4 DETERMINE PRT level in gallons from percent using the Plant Curve Book, Figure 10.8, Pzr Relief Tank. *JD*

5.5 DETERMINE RCDT level in gallons from percent using the Plant Curve Book, Figure 10.9, RC Drain Tank. *JD*

5.6 Pressurizer level correction factor calculation:

68.3 + 0.023 (2235 - *2246* psig) = *68.047* gal/% *JD*

Stop Press

Initials

5.7 Temperature correction factor calculation:

5.7.1 IF pressure is approximately 400 psig AND Stop Temperature is between 240 and 400°F, THEN PERFORM the following:

32 + 0.147 (___*NA*___ °F - 240) = ___*NA*___ gal/°F
Stop Temp — *NA*

Error carried forward from Data Sheet 1. Value should be **– 41.7**

...re is approximately 2235 psig AND Stop Temperature is ...500 and 600°F, THEN use Addendum 1. — *JD*

5.8 GROSS Leakage Rate calculation:

Calculation error carried forward. Value should be **184.87**

5.8.1 Sum changes in VCT, PRZR, TEMP and Ma...

___*41.7*___ gal + ___*144.94*___ gal + ___*18.63*___ gal + ___*63*___ gal = ___*268.27*___ gal
VCT — PRZR — TEMP — Makeup — Total

5.8.2 Divide the sum by the elapsed time:

___*268.27*___ gal ÷ ___*137*___ min = ___*1.96*___ gpm
Total — Time — GROSS Leakage Rate

Calculation error carried forward. Value should be **1.35**

Initials

NOTE

Sections 5.9, 5.10, and 5.11 should be performed unless instrumentation problems exist or as directed by the Shift Supervisor.

5.9 Identified Leakage Rate calculation:

5.9.1 Sum data from the PRT and RCDT:

0 gal + 99.7 gal = 99.7 gal
PRT RCDT Total

5.9.2 Divide the sum by the elapsed time:

99.7 gal ÷ 137 min = 0.73 gpm
Total Time Contained Leak Rate

5.9.3 OBTAIN latest calculated Primary - to - Secondary Leakage from Chemical Analysis per 0PCP09-ZR-0005. JD

5.9.4 Divide results by 1440 to determine leak rate in gallons per minute.

13 gpd ÷ (1440 min/day) = 0.01 gpm JD
Primary - to - Secondary Leakage Rate

5.9.5 ENTER other Identified Leakage that is not directed to the PRT or RCDT or is not Primary - to - Secondary Leakage. NA

SOURCES LEAKAGE

NA NA gpm
Other Identified Leakage Other Leakage Rate

Initials

NOTE

IDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 10 gpm.

AC 5.10 DETERMINE IDENTIFIED LEAKAGE Rate by summing Contained, Primary - to - Secondary and Other Leakage Rates.

0.73 gpm + *0.01* gpm + *0* gpm = *0.74* gpm
(5.9.2) (5.9.4) (5.9.5) IDENTIFIED LEAKAGE RATE

NOTE

UNIDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 1 gpm.

AC 5.11 DETERMINE UNIDENTIFIED LEAKAGE Rate by subtracting IDENTIFIED LEAKAGE Rate from GROSS Leakage Rate.

1.96 gpm - *0.74* gpm = *1.22* gpm
(5.8.2) (5.10) UNIDENTIFIED LEAKAGE Rate

Error carried forward from Step 5.8.2. Value should be **1.35**

Calculation error carried forward. Value should be **0.61**

Initials

> NOTE
>
> Mark Section 5.12 "N/A" IF Sump Level Monitoring is NOT available on the ICS Plant Computer.

5.12 IF this test is being performed due to a high leakage indicated on the ICS Plant Computer Sump Level monitoring program AND the RCS leak rate is normal, THEN perform the following on the computer:

5.12.1 Access the "Point Information" display. NA

5.12.2 Remove the desired point from Scan and enter the value of ZERO (0.0) for the following constants:

- K7801 "Cntmnt Nrm Sump Ident Inflow" NA
- K7802 "Cntmnt SCD Sump Ident Inflow" NA

5.12.3 WHEN one hour has elapsed, THEN obtain the calculated inflow values from RC-012 RCPB LEAK DETECTION STATUS display and record the values below:

- NORMAL SUMP CALCULATED INFLOW NA gpm
- SECONDARY SUMP CALCULATED INFLOW NA gpm

5.12.4 Enter the value for NORMAL SUMP CALCULATED INFLOW from Step 5.12.3 into K7801 "Cntmnt Nrm Sump Ident Inflow" and return the point to Scan. NA

5.12.5 Enter the value from SECONDARY SUMP CALCULATED INFLOW from Step 5.12.3 into K7802 "Cntmnt SCD Sump Ident Inflow" and return the point to Scan. NA

5.12.6 Enter the new identified inflow values for K7801 and K7802 into the Plant Computer Accessible Constants Log. NA

5.13 ENSURE all performers and verifiers sign/initial on Data Sheet 1. JD

5.14 DETERMINE test results by using Acceptance Criteria, Section 6.0 AND sign Test Performed by. JD

5.15 NOTIFY Shift Supervisor of test results and completion. JD

6.0 Acceptance Criteria

NOTE

WHEN actual UNIDENTIFIED LEAKAGE is less than 0.2 gpm, THEN calculated values between -0.2 and +0.2 gpm may be expected due to instrument drift and are acceptable for surveillance credit.

6.1 Leakage rates as follows:

- GROSS Leakage Rate less than 1.0 gpm. (Step 5.8.2)

OR

- IDENTIFIED LEAKAGE does not exceed 10.0 gpm. (Step 5.10)

AND

- UNIDENTIFIED LEAKAGE does not exceed 1.0 gpm. (Step 5.11)

7.0 References

7.1 Technical Specifications

7.1.1 3.4.6.2 [ITS 3.4.14]

7.1.2 4.4.6.2.1.c [ITS SR 3.4.14.1]

7.2 Regulatory Guides and Standards

None

7.3 UFSAR

None

7.4 Commitments

7.4.1 ST-AE-HL-91335, Inspection Report 87-37, Item 3f

7.4.2 CR# 95-239 (IEN 94-46)

7.5 Technical Standards and Manuals

None

7.6 Drawings

None

7.7 STPEGS Procedures and Policies

7.7.1 0PCP09-ZR-0005, Determination of Primary to Secondary Leak Rate

7.7.2 Plant Curve Book

8.0 Support Documents

8.1 Addendum 1, Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F

8.2 Data Sheet 1, Leakage Rate

Addendum 1	Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F	Page 1 of 1

TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR
500	46.3	526	52.4	552	60.8	578	72.5
501	46.5	527	52.7	553	60.9	579	73.0
502	46.7	528	52.9	554	61.6	580	73.7
503	46.8	529	53.4	555	61.8	581	74.3
504	47.0	530	53.4	556	62.3	582	74.8
505	47.4	531	53.9	557	62.6	583	75.4
506	47.6	532	54.1	558	63.1	584	76.1
507	47.7	533	54.4	559	63.4	585	76.4
508	47.9	534	54.8	560	63.9	586	77.3
509	48.3	535	54.9	561	64.2	587	78.0
510	48.4	536	55.5	562	64.7	588	78.6
511	48.6	537	55.6	563	65.3	589	79.2
512	48.9	538	55.9	564	65.6	590	79.8
513	49.1	539	56.3	565	66.1	591	80.6
514	49.5	540	56.4	566	66.6	592	81.3
515	49.6	541	57.0	567	66.8	593	81.9
516	49.8	542	57.3	568	67.5	594	82.9
517	50.2	543	57.4	569	67.8	595	83.5
518	50.3	544	58.0	570	68.3	596	84.2
519	50.5	545	58.1	571	69.0	597	85.0
520	50.8	546	58.6	572	69.3	598	85.8
521	51.2	547	59.0	573	69.8	599	86.8
522	51.3	548	59.3	574	70.4	600	87.5
523	51.7	549	59.4	575	70.9		
524	51.9	550	60.2	576	71.4		
525	52.2	551	60.3	577	72.1		

Procedure Performance Data Sheet

Unit Number: ONE	Test Interval: 72 hour	Technical Specifications Reference: 4.4.6.2.1.c [ITS SR 3.4.14.1]	Plant MODE: 1,2,3, or 4

Reason for Test:

☒ Periodic Surveillance Test ☒ For Surveillance Credit

Test Results:

Technical Specifications Allowable Value Exceeded: ☐ NO ☒ YES (explain in Remarks)

☐ Acceptable (All **AS LEFT** data within tolerance)

☒ Unacceptable (Any **AS LEFT** data **NOT** within tolerance) (explain in Remarks)

Test Performed by: *John Doe* *today* *0730*

Reactor Operator Date Time

Data Transcription or Calculations Verified By: *NA*

Reactor Operator Date Time

Plant Ops Review:

Potential Reportable Occurrence: ☐ Yes ☐ No

LCO Action Statement Entered? ☐ Yes ☐ No

Reviewed By: ______________________

Shift Supervisor

NON-Critical Error: The calculations should have been verified and a signature, time and date entered per Step 3.2

Operations Surveillance Coordinator Review:

Reviewed By: ______________________

Operations Surveillance Coordinator Date Time

KEY

Performers and Verifiers:

Name (Print)	Signature	Initials
John Doe	*John Doe*	*JD*

Remarks: *Gross leakage is greater than 1.0 gpm. Unidentified leakage has exceeded the Tech Spec limit of 1.0 gpm.*

Non-Critical Error: This is an error carried forward based on erroneous results obtained in step 5.11. The actual Unidentified Leakage should be 0.61 gpm from step 5.11. Tech Spec applicability is determined in step 5.11.

This DATA SHEET, when completed, shall be retained for 5 years.

Computer generated data shou... ...nstrument must be used for STOP data th...

CRITICAL ERROR: (STOP – START)CF was used to calculate VCT level change in gallons instead of (START – STOP).

Correct calculation is (48.55 – 49.78)33.9 = – 41.7 gal

	Instrument	Step 5.2 Start	Step 5.3 Stop	Correction Factor (CF)	Calculation	Result
Time	N/A	0500	0717	N/A	STOP - START	137 min.
Reactor Power	NE0041	100.91 %	100.06 %	N/A	|STOP - START|	0.85 ≤ 1.0% SAT/UNSAT
PRZR/RCS Pressure	QDPS PT0456	2248 psig	2246 psig	N/A	|STOP - START|	2 ≤ 10 psig SAT/UNSAT
VCT Level	L0112 or ______	48.55 %	49.78 %	33.9	(START - STOP)CF	41.7 gal
PRZR Level	LE0465	56.63 %	54.5 %	68.047 (1)	(START - STOP)CF	144.94 gal
RCS Tavg/Tcold	TA0412A	591.57 °F	591.8 °F	81 (2 or 3)	(STOP - START)CF	18.63 gal
Makeup Totalizer	FQI-0111B	43602 gal	43665 gal	N/A	STOP - START	63 gal
PRT Level	L0485 or ______	71.1 % 11544.4 gal	71.1 % 11544.4 gal	N/A	STOP - START	0 gal
RCDT Level	LI-4901	40 % 148.7 gal	66 % 248.4 gal	N/A	STOP - START	99.7 gal

GROSS 1.35 gpm - IDENTIFIED 0.74 gpm = UNIDENTIFIED 0.61 gpm
(4) (5)

IDENTIFIED includes (Primary - to - Secondary) 0.01 gpm and (Other) 0 gpm
(6) (7)

(1) Step 5.6	(2) Step 5.7.1	(3) Step 5.7.2	(4) Step 5.8.2
(5) Step 5.10	(6) Step 5.9.4	(7) Step 5.9.5	

Non-critical error: Data in these blanks is expected to be filled in. Values shown are what they should be (i.e. no errors)

This DATA SHEET, when completed, shall be retained for 5 years.

STI 31349984	**0PSP03-RC-0006**	**Rev. 9**	Page 1 of 13
Reactor Coolant Inventory			
Quality	Safety-Related	Usage: **REFERENCED**	Effective Date: 10/02/01

P. Torres	J. C. Heil	Crew 2D	Generation Support
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

1.0 Purpose and Scope

1.1 Provide instructions for performing a Reactor Coolant System Water Inventory Balance to determine RCS leakage and satisfy the surveillance requirements of Technical Specification Section 4.4.6.2.1.c [ITS SR 3.4.14.1].

1.2 The calculations in this procedure assume the plant is in Modes 1, 2, 3, or 4 and plant conditions are stable. Performance of an inventory balance at conditions other than previously stated may yield unreliable results.

1.3 Provide a means for updating the Plant Computer Sump Level Monitoring System identified leakage value.

2.0 Responsibilities

2.1 This procedure is performed by Plant Operations.

2.2 The following personnel shall review this test:

- Test Coordinator
- Shift Supervisor
- Division Surveillance Coordinator

2.3 After completion of test, routing is per 0PGP03-ZE-0004 (Plant Surveillance Program), and 0PGP03-ZA-0055 (Plant Surveillance Scheduling).

3.0 Precautions and Notes

3.1 IF the computer program is used for data calculation, THEN the following applies:

3.1.1 The computer generated form may be substituted for Data Sheet 1, Leakage Rate, Page 2 of 2.

3.1.2 A second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the correct transcription of data.

3.2 IF a manual calculation is performed, THEN a second qualified individual SHALL sign on the PPDS cover sheet where indicated, to verify the calculation is correct.

3.3 In Modes 1 or 2, Reactor Power SHALL be maintained in a 1% band.

Initials

3.4 In Modes 1, 2, or 3, a minimum of one RCP in operation is required.

3.5 IF performing to obtain an Identified OR Unidentified Leakage Rate, THEN VERIFY RCDT level is being maintained between 20 and 70%.

3.6 Diversion of letdown to Recycle Holdup Tanks will invalidate the test.

3.7 IF determining an Identified OR Unidentified Leak Rate, THEN the following will invalidate this test:

3.7.1 Draining of the RCDT or PRT

3.7.2 Venting, draining, or sampling any portion of the RCS, CVCS, or interconnected piping

3.7.3 RCS sampling may be allowed to recirculate to the VCT, however, RCS Coolant SHALL **NOT** be removed from the RCS during this test.

3.7.4 Opening RC-FV-3650 (PRT SPRAY ISOL) or the opening of RC-FV-3651 (RMW to PRT/RCP standpipe) with known leakage across RC-FV-3650 (Reference 7.4.2).

3.8 Failure to meet the acceptance criteria of the test may require entry into LCO Action Statement 3.4.6.2 [ITS 3.4.14 Condition A].

3.9 Any changes to this procedure requires a review of the computer program for adherence to Software Quality Assurance Standards.

3.10 Operation of the HHSI or LHSI pumps may invalidate the test due to potential relief valve leakage into the PRT (Reference 7.4.2).

4.0 Prerequisites

4.1 Pressurizer/Reactor Coolant System pressure is approximately 400 psig OR 2235 psig. *JD*

4.2 Record the following on PPDS:

- Unit Number *JD*
- Reason for Test *JD*

Initials

5.0 Procedure

5.1 VERIFY the prerequisites are complete. JD

5.2 RECORD START data and instrumentation on Data Sheet 1, Leakage Rate. JD

> NOTE
>
> This test should be performed over a two hour period unless steady conditions cannot be maintained. A test period of one hour is sufficient to satisfy the surveillance test. The test period may be specified at the discretion of the Shift Supervisor.

5.3 WHEN the determined test period has elapsed, THEN perform the following:

5.3.1 VERIFY Stop time Reactor Power is within 1% of Start time Reactor Power. JD

5.3.2 VERIFY Stop time PRZR pressure is within 10 psig of Start time PRZR pressure. JD

5.3.3 IF Reactor Power and Pressure data are within limits above, THEN record STOP data on Data Sheet 1, Leakage Rate. JD

5.3.4 IF Reactor Power and Pressure data were NOT within limits above, THEN do NOT record stop data. NA

5.3.5 WHEN Reactor Power and Pressure stabilize within limits, THEN return to Section 5.2 and obtain new data. NA

5.4 DETERMINE PRT level in gallons from percent using the Plant Curve Book, Figure 10.8, Pzr Relief Tank. JD

5.5 DETERMINE RCDT level in gallons from percent using the Plant Curve Book, Figure 10.9, RC Drain Tank. JD

5.6 Pressurizer level correction factor calculation:

68.3 + 0.023 (2235 - 2246 psig) = 68.047 gal/% JD
Stop Press

Initials

5.7 Temperature correction factor calculation:

5.7.1 IF pressure is approximately 400 psig AND Stop Temperature is between 240 and 400°F, THEN PERFORM the following:

32 + 0.147 (___NA___ °F - 240) = ___NA___ gal/°F
Stop Temp

_NA_

5.7.2 IF pressure is approximately 2235 psig AND Stop Temperature is between 500 and 600°F, THEN use Addendum 1. _JD_

5.8 GROSS Leakage Rate calculation:

5.8.1 Sum changes in VCT, PRZR, TEMP and Makeup.

41.7	gal +	144.94	gal +	18.63	gal +	63	gal =	268.27	gal
VCT		PRZR		TEMP		Makeup		Total	

5.8.2 Divide the sum by the elapsed time:

268.27	gal ÷	137	min =	1.96	gpm
Total		Time		GROSS Leakage Rate	

Initials

> NOTE
>
> Sections 5.9, 5.10, and 5.11 should be performed unless instrumentation problems exist or as directed by the Shift Supervisor.

5.9 Identified Leakage Rate calculation:

5.9.1 Sum data from the PRT and RCDT:

0 (PRT) gal + 99.7 (RCDT) gal = 99.7 (Total) gal

5.9.2 Divide the sum by the elapsed time:

99.7 (Total) gal ÷ 137 (Time) min = 0.73 (Contained Leak Rate) gpm

5.9.3 OBTAIN latest calculated Primary - to - Secondary Leakage from Chemical Analysis per 0PCP09-ZR-0005. JD

5.9.4 Divide results by 1440 to determine leak rate in gallons per minute.

13 gpd ÷ (1440 min/day) = 0.01 gpm JD
Primary - to - Secondary Leakage Rate

5.9.5 ENTER other Identified Leakage that is not directed to the PRT or RCDT or is not Primary - to - Secondary Leakage. NA

SOURCES	LEAKAGE
NA	NA gpm
Other Identified Leakage	Other Leakage Rate

Initials

> NOTE
>
> IDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 10 gpm.

AC 5.10 DETERMINE IDENTIFIED LEAKAGE Rate by summing Contained, Primary - to - Secondary and Other Leakage Rates.

_0.73_ gpm + _0.01_ gpm + _0_ gpm = _0.74_ gpm
(5.9.2) (5.9.4) (5.9.5) IDENTIFIED LEAKAGE RATE

> NOTE
>
> UNIDENTIFIED LEAKAGE Rate Acceptance Criteria is less than or equal to 1 gpm.

AC 5.11 DETERMINE UNIDENTIFIED LEAKAGE Rate by subtracting IDENTIFIED LEAKAGE Rate from GROSS Leakage Rate.

_1.96_ gpm - _0.74_ gpm = _1.22_ gpm
(5.8.2) (5.10) UNIDENTIFIED LEAKAGE Rate

Initials

NOTE

Mark Section 5.12 "N/A" IF Sump Level Monitoring is NOT available on the ICS Plant Computer.

5.12 IF this test is being performed due to a high leakage indicated on the ICS Plant Computer Sump Level monitoring program AND the RCS leak rate is normal, THEN perform the following on the computer:

5.12.1 Access the "Point Information" display. NA

5.12.2 Remove the desired point from Scan and enter the value of ZERO (0.0) for the following constants:

- K7801 "Cntmnt Nrm Sump Ident Inflow" NA
- K7802 "Cntmnt SCD Sump Ident Inflow" NA

5.12.3 WHEN one hour has elapsed, THEN obtain the calculated inflow values from RC-012 RCPB LEAK DETECTION STATUS display and record the values below:

- NORMAL SUMP CALCULATED INFLOW NA gpm
- SECONDARY SUMP CALCULATED INFLOW NA gpm

5.12.4 Enter the value for NORMAL SUMP CALCULATED INFLOW from Step 5.12.3 into K7801 "Cntmnt Nrm Sump Ident Inflow" and return the point to Scan. NA

5.12.5 Enter the value from SECONDARY SUMP CALCULATED INFLOW from Step 5.12.3 into K7802 "Cntmnt SCD Sump Ident Inflow" and return the point to Scan. NA

5.12.6 Enter the new identified inflow values for K7801 and K7802 into the Plant Computer Accessible Constants Log. NA

5.13 ENSURE all performers and verifiers sign/initial on Data Sheet 1. JD

5.14 DETERMINE test results by using Acceptance Criteria, Section 6.0 AND sign Test Performed by. JD

5.15 NOTIFY Shift Supervisor of test results and completion. JD

6.0 Acceptance Criteria

> NOTE
>
> WHEN actual UNIDENTIFIED LEAKAGE is less than 0.2 gpm, THEN calculated values between -0.2 and +0.2 gpm may be expected due to instrument drift and are acceptable for surveillance credit.

6.1 Leakage rates as follows:

- GROSS Leakage Rate less than 1.0 gpm. (Step 5.8.2)

OR

- IDENTIFIED LEAKAGE does not exceed 10.0 gpm. (Step 5.10)

AND

- UNIDENTIFIED LEAKAGE does not exceed 1.0 gpm. (Step 5.11)

7.0 References

7.1 Technical Specifications

7.1.1 3.4.6.2 [ITS 3.4.14]

7.1.2 4.4.6.2.1.c [ITS SR 3.4.14.1]

7.2 Regulatory Guides and Standards

None

7.3 UFSAR

None

7.4 Commitments

7.4.1 ST-AE-HL-91335, Inspection Report 87-37, Item 3f

7.4.2 CR# 95-239 (IEN 94-46)

7.5 Technical Standards and Manuals

None

7.6 Drawings

None

7.7 STPEGS Procedures and Policies

7.7.1 0PCP09-ZR-0005, Determination of Primary to Secondary Leak Rate

7.7.2 Plant Curve Book

8.0 Support Documents

8.1 Addendum 1, Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F

8.2 Data Sheet 1, Leakage Rate

Addendum 1	Temperature Change Conversion Factors For T_{avg}/T_{cold} 500 - 600°F	Page 1 of 1

TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR	TEMP	CONVERSION FACTOR
500	46.3	526	52.4	552	60.8	578	72.5
501	46.5	527	52.7	553	60.9	579	73.0
502	46.7	528	52.9	554	61.6	580	73.7
503	46.8	529	53.4	555	61.8	581	74.3
504	47.0	530	53.4	556	62.3	582	74.8
505	47.4	531	53.9	557	62.6	583	75.4
506	47.6	532	54.1	558	63.1	584	76.1
507	47.7	533	54.4	559	63.4	585	76.4
508	47.9	534	54.8	560	63.9	586	77.3
509	48.3	535	54.9	561	64.2	587	78.0
510	48.4	536	55.5	562	64.7	588	78.6
511	48.6	537	55.6	563	65.3	589	79.2
512	48.9	538	55.9	564	65.6	590	79.8
513	49.1	539	56.3	565	66.1	591	80.6
514	49.5	540	56.4	566	66.6	592	81.3
515	49.6	541	57.0	567	66.8	593	81.9
516	49.8	542	57.3	568	67.5	594	82.9
517	50.2	543	57.4	569	67.8	595	83.5
518	50.3	544	58.0	570	68.3	596	84.2
519	50.5	545	58.1	571	69.0	597	85.0
520	50.8	546	58.6	572	69.3	598	85.8
521	51.2	547	59.0	573	69.8	599	86.8
522	51.3	548	59.3	574	70.4	600	87.5
523	51.7	549	59.4	575	70.9		
524	51.9	550	60.2	576	71.4		
525	52.2	551	60.3	577	72.1		

Procedure Performance Data Sheet

Unit Number:	Test Interval:	Technical Specifications Reference:	Plant MODE:
ONE	72 hour	4.4.6.2.1.c [ITS SR 3.4.14.1]	1,2,3, or 4

Reason for Test:

☐ Periodic Surveillance Test   ☒ For Surveillance Credit

Test Results:

Technical Specifications Allowable Value Exceeded: ☐ NO ☒ YES (explain in Remarks)

☐ Acceptable (All **AS LEFT** data within tolerance)

☒ Unacceptable (Any **AS LEFT** data **NOT** within tolerance) (explain in Remarks)

Test Performed by: *John Doe* *today* *0730*

Reactor Operator   Date   Time

Data Transcription or Calculations Verified By: *NA*

Reactor Operator   Date   Time

Plant Ops Review:

Potential Reportable Occurrence: ☐ Yes ☐ No

LCO Action Statement Entered? ☐ Yes ☐ No

Reviewed By: ______________________ ____________ ____________

Shift Supervisor   Date   Time

Operations Surveillance Coordinator Review:

Reviewed By: ______________________ ____________ ____________

Operations Surveillance Coordinator   Date   Time

Performe rs and Verifiers:

Name (Print)	Signature	Initials
John Doe	*John Doe*	*JD*

Remarks: *Gross leakage is greater than 1.0 gpm. Unidentified leakage has exceeded the Tech Spec limit of 1.0 gpm.*

NOTE

Computer generated data should be used whenever possible. However, in all cases the same instrument must be used for STOP data that was used for START data.

	Instrument	Step 5.2 Start	Step 5.3 Stop	Correction Factor (CF)	Calculation	Result
Time	N/A	0500	0717	N/A	STOP - START	137 min.
Reactor Power	NE0041	100.91 %	100.06 %	N/A	|STOP - START|	0.85 ≤ 1.0% SAT/UNSAT
PRZR/RCS Pressure	QDPS PT0456	2248 psig	2246 psig	N/A	|STOP - START|	2 ≤ 10 psig SAT/UNSAT
VCT Level	L0112 or ______	48.55 %	49.78 %	33.9	(START - STOP)CF	41.7 gal
PRZR Level	LE0465	56.63 %	54.5 %	68.047	(START - STOP)CF	144.94 gal
RCS Tavg/Tcold	TA0412A	591.57 °F	591.8 °F	(1) 81 (2 or 3)	(STOP - START)CF	18.63 gal
Makeup Totalizer	FQI-0111B	43602 gal	43665 gal	N/A	STOP - START	63 gal
PRT Level	L0485 or ______	71.1 % 11544.4 gal	71.1 % 11544.4 gal	N/A	STOP - START	0 gal
RCDT Level	LI-4901	40 % 148.7 gal	66 % 248.4 gal	N/A	STOP - START	99.7 gal

GROSS ___________ gpm - IDENTIFIED ___________ gpm = UNIDENTIFIED ___________ gpm
(4) (5)

IDENTIFIED includes (Primary - to - Secondary) ___________ gpm and (Other) ___________ gpm
(6) (7)

(1) Step 5.6 (2) Step 5.7.1 (3) Step 5.7.2 (4) Step 5.8.2

(5) Step 5.10 (6) Step 5.9.4 (7) Step 5.9.5

This DATA SHEET, when completed, shall be retained for 5 years.

Figure 10.8
Pzr Relief Tank
(PCB110.08, Rev.4)
Unit 1

Ref: Calc. 86-RC-020

Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)	Indicated Level (%)	Volume (Gallons)
0 (Inst. Tap)	374	25	3555	50	7865	75	12176
1	458	26	3714	51	8044	76 (Hi Alarm)	12334
2	546	27	3876	52	8223	77	12490
3	640	28	4038	53	8402	78	12644
4	738	29	4203	54	8581	79	12797
5	840	30	4368	55	8759	80	12947
6	947	31	4535	56	8937	81	13096
7	1058	32	4704	57	9115	82	13242
8	1172	33	4873	58	9292	83	13386
9	1290	34	5043	59	9469	84	13527
10	1411	35	5215	60	9645	85	13666
11	1536	36	5387	61	9821	86	13802
12	1664	37	5561	62	9996	87	13936
13	1794	38	5735	63	10170	88	14067
14	1928	39	5910	64 (Lo Alarm)	10343	89	14194
15	2064	40	6085	65	10515	90	14319
16	2203	41	6261	66	10687	91	14440
17	2345	42	6438	67	10857	92	14558
18	2488	43	6616	68	11027	93	14673
19	2635	44	6793	69	11195	94	14783
20	2783	45	6971	70	11362	95	14890
21	2933	46	7150	71	11528	96	14993
22	3086	47	7328	72	11692	97	15091
23	3240	48	7507	73	11855	98	15184
24	3397	49	7686	74	12016	99	15273
						100 (Inst. Tap)	15356

Preparer/Date James Heil / 6/7/2000
James Heil

Reviewer/Date Kevin Regis / 6/8/2000

Approval/Date JB Cook / 6/14/2000
Eng. Supervisor

Figure 10.9
RC Drain Tank

Unit 1 **Ref: Calc. 86-WL-019**

LI4901 (%)	Level (Gal)	Alarm/Remark	LI4901 (%)	Level (Gal)	Alarm/Remark
0	19.8	Inst. Tap	50	187.3	
1	24.2		52	195.1	
4	29.1		54	203.0	
6	34.2		56	210.4	
7.15	37.2	LO-LO/Pump Trip	58	218.1	
8	39.6		60	225.9	
10	45.3		62	233.6	
12	50.9		64	240.8	
14	57.0		66	248.4	
16	63.4		68	255.9	
17.86	69.5	LCV Close	70	263.3	
18	69.9		72	270.6	
20	76.2		74	277.5	
22	83.0		76	284.6	
24	90.0		78	291.6	
26	97.1		80	298.4	
28	104.4		82	304.7	
30	111.3		82.14	305.5	LCV Open
32	118.7		84	311.2	
34	126.2		86	317.6	
36	133.8		88	323.7	
38	141.0		90	329.7	
40	148.7		92	335.0	
42	156.5		92.86	337.4	HI-HI Alm
44	164.3		94	340.4	
46	172.1		96	345.5	
48	179.5		98	350.4	
			100	354.8	

Preparer/Date James Heil / 8/17/1995 Reviewer/Date Kevin Regis / 8/17/1995

James Heil

Approval/Date JB Cook / 8/21/1995

Eng. Supervisor

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE: **DETERMINE SHIFT STAFFING REQUIREMENTS**

JPM NO.: **A6**

REVISION: **2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	DETERMINE SHIFT STAFFING REQUIREMENTS
JPM No.:	A6
Rev. No.:	2
STP Task:	T31100, Ensure that shift is properly manned.
STP Objective:	US31100, Ensure that operating shift is properly manned, fulfilling the requirements of Technical Specification 6.2.2.
Related K/A Reference:	G2.1.5 [2.3/3.4] Ability to locate and use procedures and directives related to shift staffing and activities.
References:	Technical Specifications Table 6.2-1, Minimum Shift Crew Composition 0POP03-ZG-0001, Rev. 38, Plant Heatup 0POP03-ZG-0007, Rev. 38, Plant Cooldown
Task Normally Completed By:	SRO
Method of Testing:	Actual Performance
Location of Testing:	N/A
Time Critical Task:	NO
Validation Time:	10 minutes

Required Materials (Tools/Equipment):

Technical Specifications
0POP03-ZG-0007, Plant Cooldown
0POP03-ZG-0001, Plant Heatup

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

You are the oncoming Unit 2 Shift Supervisor and the following plant conditions exist:

- Unit 1 is at 367 ºF/2235 psig and cooling down at exactly the administrative cooldown rate limit for an upcoming outage.
- Unit 2 is at 138 ºF/400 psig and heating up at exactly half of the administrative heatup rate limit for an upcoming plant startup.
- Both units have adequate manning and are prepared for impending MODE changes as required.

INITIATING CUE:

Assuming that the respective heatup and cooldown rates continue without change, determine the Technical Specifications Minimum Shift Crew Composition for Unit 2 in exactly 2 hours. DO NOT include HP and Fire Brigade requirements.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines the correct shift manning requirements required by Technical Specifications.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

1) No handouts are provided for the performer.

2) A Key is provided for the evaluator with the applicable pages of Technical Specifications Table 6.2-1, 0POP03-ZG-0001, Plant Heatup, and 0POP03-ZG-0007, Plant Cooldown. DO NOT give these out to the applicant.

NOTES:

- None

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of Technical Specifications.

Standard:

Obtains a copy of Technical Specifications.

Comment:

A procedural handout will not be provided. The Operator is expected to access a controlled or working copy of the required procedure.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Determine Heatup and Cooldown Rates.

Standard:

Determines administrative cooldown limit is 80 ºF per hour and administrative heatup limit is 50º per hour.

Comment:

The site administrative cooldown limit is stated in Section 4.6 of 0POP03-ZG-0007, Plant Cooldown

The site administrative heatup limit is stated Section 4.6 of 0POP03-ZG-0001, Plant Heatup.

Cue:

Notes:

SAT/UNSAT Performance Step: 3

Determine Unit conditions in 2 hours.

Standard:

Determines Unit 1 will be in Mode 4 and Unit 2 will be in Mode 5 in two hours.

Comment:

MODE 4 is 200 – 350ºF. In two hours Unit 1 will have decreased temperature by 160ºF to be at 207ºF. (367 – [2 x 80] = 207)

MODE 5 is < 200ºF. In two hours Unit 2 will have increased temperature by 50 ºF to be at 188ºF. (138 + 2[.5 x 50] = 188)

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 2

Determine Technical Specification Minimum Shift Composition required for Unit 2 in two hours.

Standard:

Determines the correct Minimum Shift Composition requirement in accordance with Technical Specifications is:

1 - Shift Supervisor (SS)*
0 - Senior Reactor Operators (SRO)
1 - Reactor Operator (RO)
1 - Plant Operator (PO)
*0 - Shift Technical Advisors** (STA)*

Comment:

1) Technical Specifications Table 6.2-1 is applicable. The correct table quadrant to be used is "Mode 5 or 6 with Opposite Unit in Mode 1, 2, 3, or 4".

2) * - The SS may fill the same position in Unit 1.

3) ** - The STA position SHALL be manned for Unit 1 (MODES 1-4) unless the SS or an SRO meets the qualifications for the STA as required by the NRC.

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: DETERMINE SHIFT STAFFING REQUIREMENTS

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature** __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

You are the oncoming Unit 2 Shift Supervisor and the following plant conditions exist:

- Unit 1 is at 367 ºF/2235 psig and cooling down at exactly the administrative cooldown rate limit for an upcoming outage.
- Unit 2 is at 138 ºF/400 psig and heating up at exactly half of the administrative heatup rate limit for an upcoming plant startup.
- Both units have adequate manning and are prepared for impending MODE changes as required.

INITIATING CUE:

Assuming that the respective heatup and cooldown rates continue without change, determine the Technical Specifications Minimum Shift Crew Composition for Unit 2 in exactly 2 hours. DO NOT include HP and Fire Brigade requirements.

JPM A6 Printing Instructions

<u>0POP03-ZG-0001, Plant Heatup Procedure</u>

The only portion of the procedure that needs to be printed is page 7 of 109 (Notes and Precautions).

<u>0POP03-ZG-0007, Plant Cooldown Procedure</u>

The only portion of the procedure that needs to be printed are pages 9 of 153 (Notes and Precautions).

<u>Technical Specifications Section 6 Administrative Controls</u>

The only portion of this section of Technical Specifications that needs to be printed are pages 6-4 and 6-5 (Table 6.2-1)

The printer setup will require that you go into PROPERTIES and select the EFFECTS tab. In the lower right hand corner of this window is a dropdown menu under WATERMARK. From this dropdown menu, select KEY and then OK. This will setup the printer to print subsequent pages with a Watermark of KEY. When printing is completed, then go back and select a Watermark of NONE.

STI 31610727	**0POP03-ZG-0001**	**Rev. 38**	Page 1 of **Error! Bookmark not defined.**
Plant Heatup			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 05/22/2003

R Hamilton	J. Heil	Crew 1C	Operations
PREPARER	TECHNICAL	USER	COGNIZANT ORGANIZATION

Usage Table of Contents Page

Usage
1 - IN HAND
2 - IN HAND CONTROLLING STATION
3 - REFERENCED

1.0 Purpose and Scope

1.1 This procedure provides instructions for controlling activities from Refueling to precritical operations including primary plant heatup and secondary plant heatup.

1.2 This procedure SHALL be used to satisfy Technical Specification Surveillance Requirement 4.4.9.1.1, 4.4.9.2 (partially), 4.5.1.1.a.2 for Heat-Up and 4.5.1.1c.

2.0 References

2.1 Technical Specifications:

2.1.1 3.3.2, Engineered Safety Features Actuation System Instrumentation

2.1.2 Fig 3.4-2, RCS Heatup Limitations

2.1.3 3.4.9.1, RCS Press/Temp Limitations (LCO)

2.1.4 3.4.9.3, RCS Overpressure Protection Systems

2.1.5 3.5.1, ECCS Accumulators

2.1.6 4.4.9.1.1, RCS Press/Temp Limits (Surveillance Requirement)

2.1.7 4.5.1.1.a.2, ECCS Accumulators (Surveillance Requirement)

2.1.8 4.5.1.1c, ECCS Accumulators (Surveillance Requirement)

2.1.9 4.7.1.2.1, Auxiliary Feedwater System (Surveillance Requirement)

2.1.10 4.7.1.2.2, Auxiliary Feedwater System (Surveillance Requirement)

2.1.11 4.7.1.6, Atmos Steam Relief Valves (Surveillance Requirement)

2.2 Technical Requirements Manual:

2.2.1 3.4.9.2.a, RCS Pressurizer (Heatup LCO)

2.2.2 3.4.9.2.c, RCS Pressurizer (Spray Water ΔT)

2.2.3 4.4.9.2, RCS Pressurizer (Surveillance Requirement)

2.3 UFSAR:

2.3.1 Section 10.3.4, Inspection and Testing Requirements

2.3.2 Section 5.2.2.11.3, Administrative Procedures to minimize potential for any transient that may affect Overpressure Relief System

2.3.3 Section 6.3.2.5, ECCS Potential Boron Precipitation

2.3.4 Section 7.6.3, Accumulator MOVs

2.3.5 Section 3.9.1.1.6.9, Boron Concentration Equalization

2.4 Procedures:

2.4.1 0PCP03-ZC-0005, Chemical Addition to the Reactor Coolant System

2.4.2 0PEP02-ZX-0002, Initial Criticality and Low Power Physics Testing

2.4.3 0PGP03-ZO-0012, Plant Systems Chemistry Control

2.4.4 0POP02-AF-0001, Auxiliary Feedwater

2.4.5 0POP02-CV-0001, Makeup to the Reactor Coolant System

2.4.6 0POP02-CV-0004, Chemical and Volume Control System Subsystem

2.4.7 0POP02-SB-0001, Steam Generator Blowdown System

2.4.8 0POP03-ZG-0004, Reactor Startup

2.4.9 0POP03-ZG-0003, Secondary Plant Startup

2.4.10 0POP03-ZG-0011, Secondary Plant Cold Startup

2.4.11 0POP02-HC-0001, Containment HVAC

2.4.12 0POP02-RC-0003, Filling and Venting the Reactor Coolant System

2.4.13 0POP02-RC-0004, Operation of Reactor Coolant Pump

2.4.14 0POP02-RH-0001, Residual Heat Removal System Operation

2.4.15 0POP02-SB-0002, Steam Generator Wet Layup Recirc

2.4.16 0POP02-SP-0001, Solid State Protection System

2.4.17 0POP04-RP-0005, COMS Actuation or Failure

2.4.18 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test

2.4.19 0PSP03-XC-0002, Initial Containment Inspection to Establish Integrity

2.4.20 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test

2.4.21 0PSP03-AF-0008, Auxiliary Feedwater Pump 14(24) Reference Values Measurement

2.4.22 0PSP03-AF-0011, Auxiliary Feed Flow Verification

2.4.23 0PSP03-RH-0010, RHR System Valve Leak Test

2.4.24 0PSP03-SI-0014, ECCS Valve Checklist

2.4.25 0PSP03-SI-0016, Containment Integrity Checklist

2.4.26 0PSP03-SI-0023, RCS Pressure Isolation Check Valve Leak Test

2.4.27 0PSP03-SI-0028, Safety Injection System Accumulator Valves Operability Test (Cold Shutdown)

2.4.28 0PSP03-SP-0019D, Turbine Driven Auxiliary Feedwater Actuation and Response Time Test

2.4.29 0PSP15-RC-0001, Reactor Coolant System Leakage Pressure Test

2.4.30 0PSP03-CV-0014, CVCS Equipment Verification

2.4.31 0POP02-II-0001, Movable Incore Detector System Operation, Electrical Lineup

2.5 Licensing Commitments and Other Documents:

2.5.1 GNL 90-006, Resolution of Generic Issues 70 & 94; PORV & Block Valve Reliability/Lo Temp Overpressure Protection for Light Water Reactors

2.5.2 IEB 80-012, Decay Heat Removal System Operability

2.5.3 IEB 89-11, Pressurizer differential temperature

2.5.4 IEC 77-010, Vacuum Conditions resulting in Damage to Liquid Process Tanks

2.5.5 IEN 79-026, Breach of Containment Integrity

2.5.6 LER 87-012, HHSI Inop due to personnel error

This procedure, when completed, SHALL be retained for the life of the plant.

2.5.7 O&MR 82-087, Steam Line Flow Indication

2.5.8 SOER 81-015, Partial Loss of DC Power

2.5.9 SOER 82-007, Reactor Vessel Pressurized Thermal Shock

2.5.10 SPR 870435, 2 HHSI Pumps operable with Tavg less than or equal to 350°F

2.5.11 SPR 900465, Uniform Heatup and Cooldown Rates

2.5.12 SPR 920077, Add ERFDADS alarm pages check to Mode Change Check List

2.5.13 ST-HL-AE-1765, Boron Dilution Analysis

2.5.14 WCAP 12067, Pressurizer Surge Line and Residual Heat Removal Line Stratification, Section 1.4.7, Dec 1988

2.5.15 12415 (Speakout), RCB Ambient Temperature to Normal

2.5.16 INPO SER 94-5, Loss of Off-Site Power Complicated by Excessive Cooldown and Main Steam Isolation Valve Failure

2.5.17 ST-HL-AE-2498, Limits on Hydraulic Transients

2.5.18 ST-NOC-AE-0045 Attachment 3, Requirement for Addendum 6

2.5.19 ST-W2-NOC-000718, South Texas Delta 94 RSG Feedring Design

2.5.20 SR AM-164634, QDPS DPU-A/DPU-C Post-Trip Containment Dose values match

2.5.21 ST-HS-HS-26623, Operability and Reportability Review Of Station Problem Report # 93-02774 for Both Units One and Two

2.5.22 SPR 940691, High RCS Dissolved Oxygen Level

2.5.23 CR-95-604, Degraded Standby Decay Heat Removal Capability Via Natural Circulation

2.5.24 ST-UB-NOC-1847, Unit 2, Cycle 7 Modes 3, 4, and 5 RSAC Confirmation

2.5.25 General Design Criteria(GDC) 57

2.5.26 SPR 930434, Aux. Feedwater Pump Trip Requiring Extended Plant Shutdown

2.5.27 ST-AE-HL-93607, NRC Inspection Report 93-38

This procedure, when completed, SHALL be retained for the life of the plant.

2.5.28 CREE 99-7791, Torqued Valve Lineup

2.5.29 CREE 99-13839-2, Hot Torque Valves

2.5.30 CR 99-11421, Feedback for 0POP02-RC-0004, Differential Pressure Prior to Starting RCP Should be Verified Greater Than or Equal to 250 psig.

2.5.31 CR 00-4057, At Low RCS Pressure and No RCP Running RCS Flow Indicators May Indicate 20-25% Flow.

2.5.32 CREE 00-10056-3, Unit 1 Wide Range Steam Generator Level Indications Currently Failing Channel Check.

2.5.33 CREE 01-5993, Temperature Band for PZR Spray Bypass Valve adjustment.

2.5.34 Conduct of Operations

2.5.35 TSC-127, Fuel Upgrade Analysis (Cb requirements)

2.5.36 TSA-61/50, Technical Specification Amendment

2.5.37 TSC-218, (Technical Specification 3.4.9.3 and TRM 3.1.2.8) Reactor Coolant System Overpressure Protection Systems

2.5.38 TSC-205, (TS 3.3.5.1 and 3.7.1.6) Atmospheric Steam Relief Valves

2.5.39 5Z010ZS1101, Westinghouse General Precautions, Limitations and Setpoints

2.5.40 CR 03-3694, Safety Injection due to moisture in main Steam Lines

2.5.41 CR 03-4704, PZR PORV actuation during Solid Plant Conditions

2.5.42 CR 02-18023, Pzr Boron dropped when bubble drawn

3.0 Prerequisites

None

4.0 Notes and Precautions

4.1 The principles of 0PGP03-ZO-0042, Reactivity Management Program, are in effect at all times during Operations in this procedure.

4.2 Operating PROCEDURES are written based on a defined set of plant conditions and equipment availability. PROCEDURE changes are not required to document alternate performance based on conditions different from those assumed if the PROCEDURE can be performed safely. The decision to proceed lies with the Shift/Unit Supervisor and is based on knowledge of system design and operation and the impact of omitting or re-sequencing steps.

4.2.1 The Shift/Unit Supervisor may authorize alternate performance for operating PROCEDURE sequence, including omitting steps, based on plant operating conditions. The Shift/Unit Supervisor ensures such an alternate performance does not adversely impact the safety of personnel or equipment, and documents the alternate method in the appropriate PROCEDURE or logbook. See 0PGP03-ZA-0010, Performing and Verifying Station Activities, for specific details.

4.2.2 The Shift/Unit Supervisor may authorize early start of procedure steps to enhance plant performance, WHEN the early start is of no safety impact for current plant conditions. Documentation is **NOT** required for an early start as long as the step is completed before moving past this step in the overall sequence.

4.2.3 Steps within this procedure SHALL be performed in the order listed or in the order provided in an authorized early start (Step 4.2.2) or alternate performance (Step 4.2.1). Steps that are authorized to be omitted SHALL be designated by placing "N/A" in the signoff or initial blanks. See 0PGP03-ZA-0010, Performing and Verifying Station Activities, for specific details.

4.3 The Unit/Shift Supervisor SHALL signoff or initial all steps unless otherwise designated within this procedure.

4.4 Department signatures SHALL be signed by the respective Department Manager or designee. IF the respective manager is not on site, THEN the Shift Supervisor can sign based upon a telecom.

4.5 Plant Heatup should be a smooth evolution spread over the entire sixty minute period. A short time accelerated heatup SHALL not be done. (Reference 2.5.11)

4.6 The administrative limit for heatup of the RCS, excluding the pressurizer, is 50°F in any one hour period.

4.7 The administrative limit for heatup of the pressurizer is 100°F in any one hour period.

4.8 Pressurizer boron concentration SHALL be maintained within 50 ppm of RCS concentration. Additional pressurizer heaters SHALL be energized to equalize the boron concentration.

4.9 Cold Shutdown (68°F, Xenon-free) condition or refueling boron concentration (2800-3000 ppm) in the RCS SHALL be maintained. (Reference 2.2)

4.10 IF less than 1 hour since Reactor Shutdown, THEN RCS Boron Concentration SHALL be limited to less than 2800 ppm. IF greater than 1 hour since Reactor Shutdown, THEN RCS Boron Concentration SHALL be limited to less than 3500 ppm. (Reference 2.3.3)

4.11 RCS and pressurizer temperature changes SHALL be monitored per **Error! Reference source not found.** during all heatup cycles.

4.12 RCS pressure-temperature relationships SHALL be maintained within those specified in **Error! Reference source not found.**, RCS Heatup Limitations. (Technical Specification Figure 3.4-2)

4.13 RCS pressure fluctuations SHALL be anticipated following a RCP start during RCS water solid conditions.

4.14 WHEN the RCS is in a water solid condition, THEN letdown flow SHALL be maintained via the RHR System to the normal letdown flow path (low pressure letdown).

4.15 WHEN the RHR system is in operation, THEN the RCS average temperature SHALL NOT exceed 350°F and RCS pressure SHALL NOT exceed 425 psig to avoid lifting the RHR relief valves.

4.16 Following maintenance on AFW Pump 14(24) which required a manual start per Section 14.0 of 0POP02-AF-0001, (Auxiliary Feedwater) ensure the following: (SPR 930431): Refer to Precautions and Notes Section of 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test.

- 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test, AFW Pump 14(24) Operability Check Section **Error! Reference source not found.** OR Section 5.4 AFW Pump 14(24) Inservice Test shall be performed prior to declaring AFW Pump 14(24) operable. IF required, 0PSP03-AF-0008, Auxiliary Feedwater Pump 14(24) Reference Values Measurement, may be substituted for the applicable section of 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test

- 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test, Section **Error! Reference source not found.**, AFW Pump 14(24) Operability Check shall be performed a minimum of 48 hours and maximum of 168 hours after AFW Pump 14(24) was declared Operable. A tracking Operability Assessment System (OAS) should be generated to ensure performance of Section **Error! Reference source not found.**, if required. (ST-AE-HL-93607)

CAUTION

4.17 Contact System Engineer to determine appropriate Operability Assessment System (OAS) entry for meeting the 72 hours after MODE 3 entry requirements of Technical Specification 3.7.1.2 (4.7.1.2.1). The OAS entry will specify as appropriate:

- 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test, AFW Pump 14(24) Operability Check Section **Error! Reference source not found.**, OR
- Section **Error! Reference source not found.** AFW Pump 14(24) Inservice Test AND,
- IF required, 0PSP03-SP-0019D, Turbine Driven Auxiliary Feedwater Actuation and Response Time Test. ADDITIONALLY,
- IF required, 0PSP03-AF-0008, Auxiliary Feedwater Pump 14(24) Reference Values Measurement, may be substituted for the applicable section of 0PSP03-AF-0007, Auxiliary Feedwater Pump 14(24) Inservice Test.

4.18 RCS temperatures SHALL be monitored using the highest operable cold leg indication, unless otherwise specified. The highest RCS temperature will be the cold leg(s) with returning RHR flow during the heatup while on RHR.

4.19 WHEN RCS average temperature is above 120°F, THEN component cooling water flow SHALL be maintained to the RHR seal coolers of any operating RHR pumps.

4.20 WHEN RCS average temperature is above 160°F THEN at least one RCP SHOULD be in operation.

4.21 WHEN RCS average temperature is below 350°F, THEN the Cold Overpressure Mitigation System SHALL be operable OR the RCS depressurized with a minimum two square inch vent open. (Reference 0POP04-RP-0005, COMS Actuation or Failure, for COMS Pressure setpoints.)

4.22 IF the RCS is water solid AND the PZR PORV(s) are unavailable for COMS control, THEN the administrative controls of **Error! Reference source not found.** SHALL be implemented to ensure the intent of Technical Specification 3.4.9.3 are met.

4.23 WHEN RCS pressure is being maintained by low pressure letdown, THEN caution SHALL be used when altering RHR flow or changing trains. Changes in discharge pressure of the RHR pump aligned to low pressure letdown will result in fluctuations in RCS pressure.

4.24 Static pressure zero and span shifts on the RCS flow transmitters will effect flow indication when the RCS is not at normal operating pressure. When the RCS is at low pressure with no RCP running, there may be RCS flow indication up to 25% flow even when there is no actual flow through the loop. This is an expected indication that occurs due to static pressure effect on the flow transmitters measuring differential pressure across elbow taps on the RCS piping. (Reference 2.5.31)

4.25 An RCP SHALL not be started with any SG water temperature greater than 10°F above any RCS cold leg temperature.

4.26 RCP seal injection flows during RCS pressure changes SHALL be monitored to maintain 6 to 13 gpm.

4.27 <u>IF</u> all RCPs are <u>NOT</u> to be run, <u>THEN</u> RCP 1D(2D) and/or 1A(2A) SHALL remain in operation if possible due to surge and spray lines considerations. (Reference 2.5.8)

4.28 To ensure thorough mixing, at least two RCPs should be running when chemicals are being added to the RCS or boron concentration is being changed. RCP 1A(2A) and 1D(2D) are the preferred pumps. If two RCPs are not running there may not be enough driving head to adequately mix the entire volume of the RCS.

4.29 4 RCP operation **NOT** permitted <u>WHEN</u> RCS average temperature is less than 140°F. Do **NOT** run the all 4 RCPs <u>UNTIL</u> RCS average temperature reaches greater than 140°F. (3 pumps or less restriction RCS < 140°F, This limitation is required to demonstrate acceptable fuel assembly top nozzle hold down spring forces in the Cold Zero Power lift force calculation.)

4.30 Criticality SHALL be anticipated any time positive reactivity is added by temperature changes or boron dilution.

4.31 CRDM cooling fans are required to be in operation prior to achieving 350°F RCS average temperature.

4.32 0POP03-ZG-0003, Secondary Plant Startup, may be performed in parallel with this procedure.

4.33 <u>WHEN</u> aligned to one filter, demineralizer or VCT nozzle, <u>THEN</u> letdown flow SHALL be maintained less than or equal to 250 gpm. <u>IF</u> it becomes necessary to increase letdown flow above 250 gpm, <u>THEN</u> the second filter, demineralizer and VCT nozzle SHALL be placed in service. The demineralizers and/or filter may be bypassed, if necessary.

4.34 <u>IF</u> letdown flow is isolated with RCS average temperature greater than 350°F, <u>THEN</u> charging SHALL be isolated. Charging flow must be preheated by letdown in the regenerative heat exchanger to avoid thermal shock of the RCS piping.

4.35 Sufficient charging flow SHALL be maintained to prevent letdown outlet temperatures from the regenerative heat exchanger from exceeding 380°F.

4.36 Pressure downstream of the letdown orifices SHALL be maintained high enough to prevent flashing of letdown fluid upstream of the letdown heat exchanger (e.g., greater than or equal to 180 psig at PI-0135 for less than or equal to 380°F).

4.37 Letdown temperature to the demineralizers SHALL be maintained less than 145°F to prevent resin transfer site damage.

4.38 Transfers between normal and alternate charging SHALL be minimized to prevent subjecting the charging line to unnecessary thermal transients. The selected normal or alternate charging line to be used is determined by the core cycle.

4.39 Initial valve lineups for plant systems referenced in this procedure may be omitted with Operations Manager's permission. Omission of initial lineups may be considered if any of the following conditions are satisfied:

- System has remained in service.
- No work has been performed on the system and system has not been modified.
- IF work has been performed on the system, THEN all system modifications and maintenance activities have been controlled and returned to in-service status by the ECO process.

4.40 Prior to mode changes, the Shift Supervisor is required to ensure a documented lineup exists for each system identified by the Operations Manager for the forthcoming Mode.

4.41 SG Wide Range and Narrow Range water level indication SHALL be monitored. Water levels SHALL be maintained between 55 and 75% Narrow Range indication during Heatup starting at Step **Error! Reference source not found.**. **Error! Reference source not found.**, SG Narrow Range/Wide Range Correlation Table, may be referenced for comparable levels.

4.42 SG Wide Range level SHALL be maintained in the indicating range during all Plant Heat-Ups.

4.43 SGs SHALL not be fed with the Main Feedwater System until RCS temperature is greater than 340°F. (Reference 2.5.17)

4.44 SGs SHALL not be fed through the main feed nozzle when reactor power is less than 4%. This is to prevent thermal stratification when feedwater flows are less than 125,000 lbm/hr. (Reference 2.5.19)

4.45 Caution SHALL be used during changes in plant status to minimize the potential for hydraulic transients.

4.46 Auxiliary spray flow from a charging pump SHALL not be initiated unless the regenerative heat exchanger is in service. (Reference 2.5.3)

4.47 Auxiliary spray SHALL not be initiated with a temperature differential greater than 621°F. (Technical Specification 3.4.9.2.c)

4.48 The temperature differential between the pressurizer liquid and the reactor coolant SHALL not exceed 320°F to minimize the effects of surge line thermal stratification. (Reference 2.5.3 & 2.5.14)

4.49 <u>IF</u> the SR SHUTDOWN FLUX HIGH alarm on CP005 alarms due to Plant Heatup, <u>THEN</u> 0PSP02-NI-0031, SOURCE RANGE NEUTRON FLUX CHANNEL I ACOT (N-0031) and 0PSP02-NI-0032, SOURCE RANGE NEUTRON FLUX CHANNEL II ACOT (N-0032) may be performed to reset the alarm setpoint.

4.50 Auxiliary Feedwater nozzle information:

4.50.1 A thermal cycle on a Steam Generator Auxiliary Feedwater nozzle is defined as; the starting and stopping of Auxiliary Feedwater flow in Modes 1 through 4.

4.50.2 The Steam Generator Auxiliary Feedwater nozzles are limited for a specific number of thermal cycles.

4.50.3 The Auxiliary Feedwater nozzle number of thermal cycles is being monitored by Systems Engineering.

4.50.4 Due to approaching the limited number of thermal cycles, the Auxiliary feedwater system should be operated only when required, and in a manner to reduce the actual starting and stopping of flow.

4.51 <u>IF</u> the RCS is vented to atmosphere, <u>THEN</u> the Steam Generators SHALL NOT be considered a heat sink. (Technical Specification 3.4.1.4.1) (Reference 2.5.23)

4.52 Technical Specification 3.4.1.4.1, Mode 5 with reactor coolant loops filled, is satisfied by one RCP running for a period of time such that any non-condensible gas is removed from the SG tubes <u>AND</u> when RCS pressure is maintained above the VCT pressure. (Reference 2.5.24)

4.53 Technical Specification 3.4.1.4.2, Mode 5 with reactor coolant loops not filled, should be entered when **ALL** RCPs are stopped <u>AND</u> RCS pressure is less than VCT pressure. (Reference 2.5.24)

4.54 RCS pressure should NOT be increased to greater than 120 to 125 psig without opening RCP # 1 Seal Leakoff Isolation Valves. Pressures greater than 125 psig may cause misalignment in #1 RCP Seal.

4.55 When 13.8KV, 4.16KV, or 480V Load Center breakers are returned to service, then the associated components should be started to demonstrate electrical continuity, when practical. (Reference 2.5.34)

4.56 IF RCS cooling is being maintained by steaming from the SG PORVs while the steam generators are being fed with Main Feedwater, THEN secondary inventory must be closely monitored to ensure adequate makeup water available to support plant heat up.

4.57 The Main Steam lines upstream of the MSIVs may require periodic blowdown for moisture control. This can be accomplished by performing **Error! Reference source not found.**.

4.58 Refer to Addendum 9, RCS/PZR Pressure Operations Guideline for general techniques for control of RCS/PZR Pressure during heatup/cooldown.

4.59 Shift Supervisor or designee performs a thorough review of the outage schedule to ensure safety of the plant during Solid Plant Operations. This review is performed by comparing the outage schedule to the guidelines on Addendum 10. Shift Supervisor or designee ensures compensatory measures or other remedial actions address Solid Plant risk concerns.

4.59.1 All applicable issues will be analyzed to determine if they meet the Solid Plant Operations guidelines identified in this procedure.

4.59.2 IF the guidelines are NOT met, THEN:

4.59.2.1 Operations SHALL document those issues in the report to the Outage Manager. Operations identifies any HIGHER RISK EVOLUTIONS which require additional reviews.

4.59.2.2 Corrective actions and/or contingencies SHALL be developed and implemented to minimize risk (i.e., schedule changes, deletion from outage, compensatory measures, training, etc.).

4.59.3 All corrective actions should be evaluated for the following:

4.59.3.1 Effectiveness to ensure actions taken, especially schedule revisions, have NOT affected shutdown issues elsewhere.

4.59.3.2 To ensure safety of the plant and plant personnel have been maintained.

This procedure, when completed, SHALL be retained for the life of the plant.

STI 31614732	**0POP03-ZG-0007**	**Rev. 38**	Page 1 of **Error! Bookmark not defined.**
Plant Cooldown			
Quality	Safety-Related	Usage: **IN HAND Controlling Station**	Effective Date: 06/04/2003

R Hamilton	NA	Crew 1C	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Usage Table of Contents Page

Usage
1 - IN HAND
2 - IN HAND CONTROLLING STATION
3 - REFERENCED
4 – AVAILABLE

1.0 Purpose and Scope

1.1 This procedure provides the instructions for a plant cooldown from Hot Standby to Cold Shutdown. Included are instructions for maintaining Shutdown Margin and proper temperature/pressure relationships.

1.2 This procedure SHALL be used to satisfy Technical Specification Surveillance Requirement 4.4.9.1.1[ITS SR 3.4.3.1], [ITS SR 3.5.3.2, SR 3.4.12.1, SR 3.4.12.2, SR 3.4.12.3] TRM 4.4.9.2 (partially).

2.0 References

2.1 Technical Specifications (TS) 3.4.1.3 [ITS 3.4.6], 3.4.1.4.2 [ITS 3.4.8], 3.4.9.3 [ITS 3.4.12, 3.4.13], 3.5.3.1 [ITS 3.5.3], 4.4.9.1.1[ITS SR 3.4.3.1], 4.4.9.3.4 [ITS 3.4.12, 3.4.13], 3.4.1.4.1 [ITS 3.4.7], 3.4.9.1 [ITS PTLR 3.4.9.1].

2.2 Technical Requirements Manual (TRM) 3.1.2.1, 3.4.9.2, 4.4.9.2

2.3 UFSAR Section 9.3.4.1.2.6, 15.4.6.2, 5.2.2.11.3

2.4 MATS Items 8600865-866, 8600863-866 and 8401177-866 (IEC 78-05)

2.5 0PCP03-ZC-0005, Chemical Addition to the Reactor Coolant System

2.6 0POP02-WG-0001, Gaseous Waste Processing System Operations

2.7 0PGP03-ZE-0033, RCS Pressure Boundary Inspection For Boric Acid Leaks

2.8 0PGP03-ZO-0012, Plant Systems Chemistry Control

2.9 0POP02-AF-0001, Auxiliary Feedwater

2.10 0POP02-CR-0001, Main Condenser Air Removal

2.11 0POP02-CV-0001, Makeup to the Reactor Coolant System

2.12 0POP02-CV-0004, Chemical and Volume Control System Subsystem

2.13 0POP02-RC-0004, Operation of Reactor Coolant Pump

2.14 0POP02-RH-0001, Residual Heat Removal System Operation

2.15 0POP02-SB-0002, Steam Generator Wet Layup Recirc

2.16 0POP03-ZG-0009, Mid-Loop Operation

2.17 0POP03-ZG-0010, Refueling Operations

2.18 0PSP02-RC-0403, RCS COMS T Hot Set 2 ACOT (P-0403, T-0413, T-0423, T-0433, T-0443)

2.19 0PSP02-RC-0404, RCS COMS T Cold Set 3 ACOT (P-0404, T-0414, T-0424,T-0434, T-0444)

2.20 0PSP03-MS-0002, Main Steam System Cold Shutdown Valve Operability Test

2.21 0POP02-CD-0001, Condensate System

2.22 0POP02-FW-0001, Main Feedwater

2.23 0POP02-RS-0001, Rod Control

2.24 0POP02-GS-0001, Turbine Gland Seal Steam System

2.25 0POP02-RC-0003, Filling and Venting the Reactor Coolant System

2.26 0POP03-ZG-0003, Secondary Plant Startup

2.27 0POP03-ZG-0011, Secondary Plant Cold Startup

2.28 0PSP03-CV-0011, Chemical and Volume Control System Valve Operability Test (Cold Shutdown)

2.29 0PSP03-CV-0014, CVCS Equipment Verification

2.30 0PSP03-FW-0002, Feedwater System Valve Operability Test (Cold Shutdown)

2.31 0PSP03-HC-0004, Reactor Containment Building Normal Purge System Valve Operability Test (Cold Shutdown)

2.32 0PSP03-IA-0001, Instrument Air System Valve Operability Test

2.33 0PSP03-RH-0007, Residual Heat Removal System Valve Operability Test (Cold Shutdown)

2.34 0PGP03-ZO-0042, Reactivity Management Program

2.35 MATS Item 8500092-866 (SER 84-079)

2.36 MATS Items 8500141-866, 8500088-866 (SER 82-07)

2.37 MATS Item 8500184-866 (UFSAR Section 3.9.1.1.6.9)

2.38 MATS Item 8600015-866 (OMR 85-283)

2.39 MATS Item 8501477-866 (SER 81-091)

2.40 MATS Item 8501603-860 (IEB 80-12)

2.41 MATS Item 8600210-866 (UFSAR Section 5.4.7.2.3)

2.42 MATS Items 8601358-866, 8500310-866, 8601060-866, 8601230-866

2.43 MATS Item 8700678-860 (SER 87-013), Rx Vessel Stud Corrosion from Primary Coolant Leak

2.44 MATS Item 8802104-936 (ST-HL-AE-3398)

2.45 MATS Item 9000929-936, (GNL 90-006)

2.46 MATS Item 9001090-872, Incorporate FCs

2.47 MATS Item 9001263-936, (SPR 900465) Uniform Heatup and Cooldown Rates

2.48 MATS Item 9200042-936, (IEN 91-73)

2.49 MATS Item 9200129-936, (OTH 92-001)

2.50 Preliminary Response to Generic Letter 870912, ST-HL-AE-2356

2.51 SPR 920540, Letdown Isolation While Bypassing MSIVs

2.52 SPR 920607, Possible Reactor Vessel Head Vacuum Affecting Level Indication

2.53 SPR 930426, Administrative Cooldown Limit Exceeded

2.54 Boron Dilution Analysis, ST-HL-AE-1765, 1988

2.55 Pressurizer Differential Temperature, IEB 88-11

2.56 Thermal Stratification of the Pressurizer Surge Line, ST-HL-AE-2992

2.57 Westinghouse Precautions, Limitations and Setpoints, 5Z010ZS1101

2.58 Westinghouse Steam Generator Precautions, Limitations and Setpoints ST-WN-YB-2958

2.59 WCAP 12067, Pressurizer Surge Line and Residual Heat Removal Line Stratification Section 1.4.7, Dec. 1988.

2.60 Westinghouse Technical Bulletin No. 77-14, CREE 97-14236-1, CREE 00-3288-1, CREE 01-15527-1

2.61 Westinghouse Technical Bulletin No. 92-05

2.62 Design Basis Documents:

- 2.62.1 5R124MB1027, Reactor Coolant System
- 2.62.2 5Z529ZB1003, NSSS Controls
- 2.62.3 9G019MB0117, Turbine Generator System
- 2.62.4 5S139MB0120, Feedwater System
- 2.62.5 5S109MB1026, Main Steam System

2.63 0PSP03-RC-0010, Pressurizer Power Operated Relief Valve Operability Test

2.64 ST-HL-AE-4549, Technical Specification 4.4.4.1 Action b. Operating PORV Through One Cycle of Full Travel

2.65 ST-HS-HS-26623, Operability and Reportability Review of Station Problem Report 932774 for Unit 1 and 2

2.66 CR-95-604, Degraded Standby Decay Heat Removal Capability Via Natural Circulation

2.67 USQE 95-0011, Justification for RCS Cooldown Limits

2.68 USQE 96-0014, Justification for Plant Cooldown with Rods Partially Withdrawn

2.69 HL&P LOG# A41010-00438-AVB, SDM Reference

2.70 CR 96-5716, Pressurizer Temperature Cooldown Limit Exceeded

2.71 CR 97-14212-2, CREE "Control Rod H2 Would Not Withdraw"

2.72 Reg Guide 1.22 and Reg Guide 1.118

2.73 UFSAR 7.1.2.5

2.74 CREE 97-14388-1

2.75 ST-UB-NOC-1847, Unit 2, Cycle 7 Modes 3, 4, and 5 RSAC Confirmation

2.76 CR 96-15748-5, Incorporate Recommendations of SER 98-01

2.77 TSC-218, RCS Overpressure Protection Systems

2.78 USQE 01-9518-6, UFSAR change to add analysis of CVCS malfunctions in Mode 3 that increases Reactor Coolant Inventory (Section 15.5.2).

2.79 CREE 02-5478, MC CALC 6500, remove the limitation that closes the MSIV's when RCS temperature is less than 245F.

2.80 Westinghouse Nuclear Safety Advisory Letter NSAL-02-14, Steam Line Break During Mode 3

2.81 CR 02-3367, erratic indication on TI-0607 Pressurizer Vapor Temperature indication.

2.82 ST-HL-AE-2498, Limits on Hydraulic Transients

2.83 CR 03-3694, Safety Injection due to moisture in main Steam Lines

2.84 CR 03-4704, PZR PORV actuation during Solid Plant Conditions

INITIALS

3.0 Prerequisites

> NOTE
>
> This section may be performed concurrently with Steps 4.0 through Step **Error! Reference source not found.**. Step 3.1 may be marked N/A if the following conditions exists:
>
> - The cooldown is being performed to meet a Technical Specification LCO ACTION or using an POP09's, POP04's, POP05's (EOPs), and time does not permit step completion.
>
> OR
>
> - The cooldown is for a Non-Rapid Refueling Outage or non-refueling outage where heatup to Mode 3 is to be performed prior to attempting to withdraw any Control or Shutdown Rod, and Plant Manager permission obtained.

3.1 *** To prevent Control and Shutdown Rods thermal binding the Movable Rod Gripper Paws must be disengaged from the Drive Shafts, this is accomplished by performing one of the following steps prior to commencing a plant cooldown: (Reference 2.61 and 2.71) _____

3.1.1 OPEN Reactor Trip Breakers (RTBs) and VERIFY all Control and Shutdown Rods tripped greater than 2 steps (No Rods manually inserted).

3.1.2 Completion of **Error! Reference source not found.** for any Bank with Control or Shutdown Rods which were manually inserted.

3.1.3 Completion of 0PSP10-DM-0003, Automatic Multiple Rod Drop Time Measurement.

3.2 *** To prevent Control and Shutdown Rods thermal binding the Stationary Rod Gripper Paws must be disengaged from the Drive Shafts, this is accomplished prior to commencing a plant cooldown by securing the Rod Drive MG Sets per 0POP02-RS-0001, Rod Control, and tagging with an Equipment Clearance. _____

4.0 Notes and Precautions

4.1 Steps in this procedure that begin with *** are considered non-time critical and the cooldown SHOULD continue **without** delays, WHEN it is being performed to meet a Technical Specification LCO ACTION or using POP09s, POP04s, POP05s (EOPs) and time does not permit step completion. Actions to complete *** Steps SHOULD be addressed as soon as time/manpower permits.

4.2 The principles of 0PGP03-ZO-0042, Reactivity Management Program, are in effect at all times during Operations in this procedure.

4.3 Operating PROCEDURES are written based on a defined set of plant conditions and equipment availability. PROCEDURE changes are not required to document alternate performance based on conditions different from those assumed if the PROCEDURE can be performed safely. The decision to proceed lies with the Shift/Unit Supervisor and is based on knowledge of system design and operation and the impact of omitting or re-sequencing steps.

4.3.1 The Shift/Unit Supervisor may authorize alternate performance for operating PROCEDURE sequence, including omitting steps, based on plant operating conditions. The Shift/Unit Supervisor ensures such an alternate performance does not adversely impact the safety of personnel or equipment, and documents the alternate method in the appropriate PROCEDURE or logbook. See 0PGP03-ZA-0010, Performing and Verifying Station Activities for specific details.

4.3.2 The Shift/Unit Supervisor may authorize early start of procedure steps to enhance plant performance, WHEN the early start is of no safety impact for current plant conditions. Documentation is **NOT** required for an early start as long as the step is completed before moving past this step in the overall sequence.

4.3.3 Steps within this procedure SHALL be performed in order listed or in order provided in an authorized early start (Step 4.3.2) or alternate performance (Step 4.3.1). Steps that are authorized to be omitted SHALL be designated by placing "N/A" in the signoff or initial blanks. See 0PGP03-ZA-0010, Performing and Verifying Station Activities for specific details.

4.4 The Unit Supervisor SHALL signoff or initial all steps unless otherwise designated within this procedure.

4.5 Plant Cooldown should be a smooth evolution spread over the entire 60 minute period. A short time accelerated cooldown SHALL NOT be performed. (Reference 2.47)

4.6 The administrative limit for cooldown of the RCS, excluding the Pressurizer, is 80°F in any one hour period. This limit may be exceeded at the Shift Supervisor's discretion. (Reference 2.53 and Reference 2.67)

4.7 The administrative limit for cooldown of the Pressurizer is 160°F in any one hour period.

4.8 Upper head subcooled margin SHALL be checked every 30 minutes using Reactor Vessel head thermocouple to ensure the upper head remains subcooled during depressurization to prevent void formation.

4.9 RCS and Pressurizer temperature changes SHALL be monitored per **Error! Reference source not found.** during all cooldown cycles.

4.10 *** Prior to commencing Plant Cooldown, any valves that were backseated with ECO tags SHALL be removed from their backseat. This is preferred but not required if the cooldown is required by Technical Specifications.

4.11 *** Prior to initiating cooldown, careful consideration should be given to the consequences and effects on other plant parameters. (Reference 2.51)

4.12 Shutdown margin SHALL be verified adequate based on the lesser of either the RCS or Pressurizer boron concentrations.

4.13 *** Pressurizer boron concentration SHALL be maintained within 50 ppm of RCS concentration prior to securing all RCPs. Additional Pressurizer heaters SHALL be energized to equalize the boron concentration.

4.14 <u>WHEN</u> altering RCS pressure, <u>THEN</u> RCP seal injection flows SHALL be maintained between 6 and 13 gpm to each RCP.

4.15 <u>IF</u> the cooldown is due to an unisolable RCS leak, <u>THEN</u> a prompt depressurization and cooldown of the RCS is required.

- The 80°F/hr administrative cooldown limit does NOT apply. (Reference 2.67)
- The temperature differential between the Pressurizer water space and the RCS SHALL be maintained less than or equal to 250°F. (Reference 2.59)

4.16 To minimize the effects of surge line thermal stratification, the temperature differential between the Pressurizer liquid and the Reactor Coolant SHALL NOT exceed 320°F. (Reference 2.56 and 2.59)

4.17 Auxiliary spray SHALL NOT be initiated with a temperature differential greater than 621°F. (TRM 3.4.9.2.c)

4.18 <u>WHEN</u> Steam Generator (SG) temperature is lowered, <u>THEN</u> SG narrow range level indication will indicate higher than actual level.

4.19 **Error! Reference source not found.** contains a list of conditions that should be met prior to taking credit for using the Steam Generators as a decay heat removal means while in Mode 5.

4.20 Caution SHALL be used during changes in plant status to minimize the potential for hydraulic transients.

4.21 IF less than 1 hour since Reactor Shutdown, THEN RCS Boron Concentration SHALL be limited to less than 2800 ppm. IF greater than 1 hour since Reactor Shutdown, THEN RCS Boron Concentration SHALL be limited to less than 3500 ppm.

4.22 WHEN Mode 5 is entered, THEN it is permissible to open both doors of the personnel airlock simultaneously.

4.22.1 IF both doors are to be left opened, THEN the key switch SHALL be placed in the OFF position to deenergize the hydraulic system solenoids.

4.23 Evolutions such as equalizing around and opening a Main Steam Isolation Valve may cause a primary plant cooldown and SHALL be performed in a controlled manner. (Reference 2.51)

4.24 Following a RCFC Inlet Temperature HI Alarm, Control Room indication associated with Pressure loops 403 and 404 should be not used for the purposes of complying with the Technical Specification Pressure-Temperature Heatup/Cooldown curves until the transmitters have been recalibrated. Pressure loops 403 and 404 would remain operable for purposes of COMS input. Pressure Loops 405, 406, and 407 are **not** affected.

4.25 The following are examples of precautionary measures that may be used to minimize cooldown induced events: (Reference 2.51)

- Isolating known steam demands prior to equalizing around the Main Steam Isolation Valves. (e.g. turbine drains)
- Raising Pressurizer level in anticipation of the level shrink due to a cooldown.
- Promptly isolating Main Steam in the event of an unanticipated excessive steam demand.
- Taking manual control of the charging flow control valve as needed to raise pressurizer level.

4.26 In Mode 5, the RCS level sightglass SHALL be manned at all times when remote level indication is not available. (Remote level indication MAY be Video Monitors in the Control Room)

4.27 In Mode 5 and 6 (Head on Rx Vessel) with RCS Depressurized and maintaining RCS Inventory at a fixed value, periodic venting of the Reactor Vessel Head may be required due to gas buildup. Monitor RVWL Sensors 1, HJTC Train “A” or Train “C” Computer Points IITE2004 and IITE3004 respectively, if available.

4.28 In Mode 5 and 6 (Head on Rx Vessel) with RCS Depressurized and maintaining RCS Inventory at a fixed value, IF unexpected VCT dirversions are required to maintain PZR and VCT levels, THEN Monitor Reactor Vessel Head for voiding as gasses come out of solution in the Reactor or the Steam Generators displacing the water.

4.29 In Mode 5 and 6 (Head on Rx Vessel), WHEN Reactor Vessel Head voiding is indicated by Pressurizer level rising with constant or increasing VCT level and RVWL Sensors 1, HJTC Train “A” or Train “C” Computer Points IITE2004 and IITE3004 respectively temperature increasing, THEN vent the Head to the PRT as follows:

4.29.1 OPEN Head Vent Isolation Valves:

- ISOL HV-3657A and ISOL HV-3658A

OR

- ISOL HV 3657B and ISOL HV-3658B

4.29.2 OPEN Head Vent Throttle Valve(s):

- HCV-0601
- HCV-0602

4.29.3 WHEN the Reactor Vessel Head void is vented (as indicated by RVWL Sensor 1 temperature decreasing and pressurizer level decreasing with an associated PRT pressure rise), THEN PERFORM the following:

4.29.3.1 ENSURE CLOSED the Head Vent Throttle Valve:

- HCV-0601
- HCV-0602

4.29.3.2 ENSURE CLOSED the Head Vent Isolation Valves:

- HV-3657A
- HV-3657B
- HV-3658A
- HV-3658B

4.30 WHEN RCS level sightglass is in service, THEN ENSURE the following valves positions at least once per shift: (documented on a temporary log)

4.30.1 "1(2)-RC-0166 PZR PORV LINE VENT VALVE" OPEN. {RCB top of PZR}

4.30.2 "1(2)-RC-0200 LOOP 1 RCS LVL SIGHTGLASS CONN" OPEN. {RCB RCS LOOP 1}

4.30.3 "1(2)-RC-0057A LOOP 1 DRAIN TO RCDT" OPEN. {RCB RCS Loop 1}

4.30.4 "1(2)-RC-0058A LOOP 1 DRAIN TO RCDT" CLOSED. {RCB RCS Loop 1}

4.31 IF differences in indications exist between the RCS level sightglass, RVWL and pressurizer cold calibrated channel, THEN the following SHALL be performed:

4.31.1 A walkdown of the RCS level sightglass SHALL be performed per Step 4.30.

4.31.2 Any discrepancies noted in the sightglass walkdown SHALL be corrected.

4.31.3 Caution SHALL be exercised when determining which level indication to use. Inadequate head venting due to a rapid draining rate can cause RVWL to remain higher than actual loop level.

4.31.4 RVWL or the Pressurizer cold calibrated level channel instrumentation SHALL be used as the correct level indication.

4.31.5 The RCS drain down SHALL proceed with the Shift Supervisor's permission.

4.32 One of the following Pressurizer vent paths should be established prior to drain down: (Reference 2.49)

- The Pressurizer spray line vent valves RC-0502 and RC-0503 open to atmosphere. (Preferred Path)
- A minimum of one Pressurizer Code Safety Valve removed.

4.33 During coupling and uncoupling of the RCP shaft, RCS leakage along the pump shaft and through the seal housing may occur.

4.34 WHEN RCS temperature is less than 150°F, THEN the reactor vessel head vent rig may be connected per 0POP02-RC-0003, Filling and Venting the Reactor Coolant System, **Error! Reference source not found.**.

4.35 IF control rods have been withdrawn per **Error! Reference source not found.** AND the reactor trip breakers open unexpectedly, THEN **Error! Reference source not found.** may be reperformed, if desired, to withdraw control rods prior to recommencing a plant cooldown.

4.36 PZR indicated temperature should be less than 200°F above RCS Loop temperature prior to filling the Pressurizer to avoid exceeding a cooldown limit, or Normal Spray/Aux Spray flow should be established.

4.37 The PZR Surge Line Temperature should be monitored during plant cooldown. (Reference 2.70)

4.38 Technical Specification 3.4.1.4.1, Mode 5 with reactor coolant loops filled, is satisfied by one RCP running for a period of time such that any non-condensable gas is removed from the SG tubes AND when RCS pressure is maintained above the VCT pressure. (Ref 2.75)

4.39 Technical Specification 3.4.1.4.2, Mode 5 with reactor coolant loops not filled, should be entered when **ALL** RCPs are stopped AND RCS pressure is less than VCT pressure. (Ref 2.75)

4.40 When draining the RCS, then **Error! Reference source not found.** MAY be referred to VERIFY actual volume drained correlates with expected volume drained. (Reference 2.76)

4.41 Degassing of the RCS is typically performed by one or a combination of both of the methods below:

- Mechanical degassing – where the RCS is degassed by spraying and venting of the Pressurizer and VCT.
- Chemical degassing – where the RCS is degassed by the addition of chemicals that react with the dissolved gases in the RCS.

4.42 During plant cooldown, all SGs will normally be connected to the steam header to assure a uniform cooldown of the RCS. (UFSAR 5.2.2.11.3)

4.43 WHEN Pressurizer vapor space temperature TI-0607 is **NOT** functional, THEN use the associated functional Pressurizer water space temperature TI-0608 for all Pressurizer temperature indications called out in this procedure. Use of the liquid temperature element alone is more conservative [will provide higher indicated change for a given actual system change] and better represents actual metal temperature. Use of the liquid temperature indication alone will provide assurance that cooldown limits will not be exceeded. (CREE 02-3367)

Example:

- Pressurizer vapor space temperature TI-0607 is non-functional, THEN substitute Pressurizer water space temperature TI-0608, for Pressurizer vapor space temperature TI-0607 in this procedure.

4.44 4 RCP operation **NOT** permitted WHEN RCS average temperature is less than 140°F. Do **NOT** run the all 4 RCPs UNTIL RCS average temperature reaches greater than 140°F. (3 pumps or less restriction RCS < 140°F, This limitation is required to demonstrate acceptable fuel assembly top nozzle hold down spring forces in the Cold Zero Power lift force calculation.)

4.45 The Main Steam lines upstream of the MSIVs may require periodic blowdown for moisture control. This can be accomplished by performing **Error! Reference source not found.**. MONITOR the following "MAIN STEAM OUTLET DRIP LEG LEVEL SWITCH" Plant Computer points for indications of moisture buildup in the Main Steam Lines:

- LD7900, S/G 1A(2A) MS LN DRN FROM MS-2001
- LD7901, S/G 1B(2B) MS LN DRN FROM MS-2002
- LD7902, S/G 1C(2C) MS LN DRN FROM MS-2003
- LD7903, S/G 1D(2D) MS LN DRN FROM MS-2004

4.46 Refer to **Error! Reference source not found.**, RCS/PZR Pressure Operations Guideline for general techniques for control of RCS/PZR Pressure during heatup/cooldown.

4.47 Shift Supervisor or designee performs a thorough review of the outage schedule to ensure safety of the plant during Solid Plant Operations. This review is performed by comparing the outage schedule to the guidelines on Addendum 10. Shift Supervisor or designee ensures compensatory measures or other remedial actions address Solid Plant risk concerns.

4.47.1 All applicable issues will be analyzed to determine if they meet the Solid Plant Operations guidelines identified in this procedure.

4.47.2 IF the guidelines are NOT met, THEN:

4.47.2.1 Operations SHALL document those issues in the report to the Outage Manager. Operations identifies any HIGHER RISK EVOLUTIONS which require additional reviews.

4.47.2.2 Corrective actions and/or contingencies SHALL be developed and implemented to minimize risk (i.e., schedule changes, deletion from outage, compensatory measures, training, etc.).

4.47.3 All corrective actions should be evaluated for the following:

4.47.3.1 Effectiveness to ensure actions taken, especially schedule revisions, have NOT affected shutdown issues elsewhere.

4.47.3.2 To ensure safety of the plant and plant personnel have been maintained.

4.48 During Shutdown conditions, WHEN an ECO is on SI-MOV-0016A, B, C AND its associated LHSI train is required to be functional for LOCA injection/recirculation, THEN ESTABLISH a "dedicated" Operator watch position in accordance with **Error! Reference source not found.**, MOV-0016A, B & C Emergency Operations Guideline.

SECTION 6.0

ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

6.1.1 The Plant Manager shall be responsible for overall unit operation and shall delegate in writing the succession to this responsibility during his absence.

6.1.2 The Shift Supervisor (or during his absence from the control room, a designated individual) shall be responsible for the control room command function. A management directive to this effect, signed by the President and Chief Executive Officer shall be reissued to all station personnel on an annual basis.

6.2 ORGANIZATION

OFFSITE AND ONSITE ORGANIZATIONS

6.2.1 Onsite and offsite organizations shall be established for unit operation and corporate management, respectively. The onsite and offsite organizations shall include the positions for activities affecting the safety of the nuclear power plant.

a. Lines of authority, responsibility, and communication shall be established and defined for the highest management levels through intermediate levels to and including all operating organization positions. These relationships shall be documented and updated, as appropriate, in the form of organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, or equivalent forms of documentation. These requirements shall be documented in the FSAR.

b. The Plant Manager shall be responsible for overall unit safe operation and shall have control over those onsite activities necessary for safe operation and maintenance of the plant.

c. The Vice President, Nuclear Generation, shall have corporate responsibility for overall plant nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the plant to ensure nuclear safety.

d. The individuals who train the operating staff and those who carry out health physics and quality assurance functions may report to the appropriate onsite manager; however, they shall have sufficient organizational freedom to ensure their independence from operating pressures.

UNIT STAFF

6.2.2 The unit staff shall be as follows:

a. Each on-duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1;

UNIT STAFF (Continued)

b. At least one licensed Operator shall be in the control room when fuel is in the reactor. In addition, while the unit is in MODE 1, 2, 3, or 4, at least one licensed Senior Operator shall be in the control room;

c. A Health Physics Technician* shall be on site when fuel is in the reactor;

d. All CORE ALTERATIONS shall be observed and directly supervised by either a licensed Senior Operator or licensed Senior Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation;

e. A site Fire Brigade of at least five members* shall be maintained on site at all times. The Fire Brigade shall not include the Shift Supervisor and the two other members of the minimum shift crew necessary for safe shutdown of the unit and any personnel required for other essential functions during a fire emergency; and

f. Administrative procedures shall be developed and implemented to limit the working hours of unit staff who perform safety-related functions (e.g., licensed Senior Operators, licensed Operators, health physicists, auxiliary operators, and key maintenance personnel).

   Adequate shift coverage shall be maintained without routine heavy use of overtime. The objective shall be to have operating personnel work a nominal 40-hour week while the unit is operating. However, in the event that unforeseen problems require substantial amounts of overtime to be used, or during extended periods of shutdown for refueling, major maintenance, or major plant modification, on a temporary basis the following guidelines shall be followed (except for shift technical advisor personnel):

   1. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time.

   2. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any 7-day period, all excluding shift turnover time.

   3. A break of at least 8 hours should be allowed between work periods, including shift turnover time.

---

*The Health Physics Technician and Fire Brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hours, in order to accommodate unexpected absence, provided immediate action is taken to fill the required positions.

UNIT STAFF (Continued)

4. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized by the Plant Manager or his deputy, or higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation. Controls shall be included in the procedures such that individual overtime shall be reviewed monthly by the Plant Manager or his designee to assure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized.

g. Senior reactor operator licenses shall be held by:

Unit Operations Manager
Shift Supervisors
Unit Supervisors

Reactor operator licenses shall be held by:

Reactor Operators

TABLE 6.2-1
MINIMUM SHIFT CREW COMPOSITION

TWO UNITS WITH TWO SEPARATE CONTROL ROOMS

WITH THE OPPOSITE UNIT IN MODE 5 OR 6 OR DEFUELED		
POSITION	NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION	
	MODE 1, 2, 3, or 4	MODE 5 or 6
SS	1*	1*
SRO	1	None
RO	2	1
RPO	2	2**
STA	1***	None

WITH THE OPPOSITE UNIT IN MODE 1, 2, 3, OR 4		
POSITION	NUMBER OF INDIVIDUALS REQUIRED TO FILL POSITION	
	MODE 1, 2, 3, or 4	MODE 5 or 6
SS	1*	1*
SRO	1	None
RO	2	1
RPO	2	1
STA	1* ***	None

SS - Shift Supervisor with a Senior Operator license
SRO - Individual with a Senior Operator license
RO - Individual with an Operator license
RPO - Reactor Plant Operator
STA - Shift Technical Advisor

The shift crew composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Table 6.2-1. This provision does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Shift Supervisor from the control room while the unit is in MODE 1, 2, 3, or 4, an individual (other than the Shift Technical Advisor) with a valid Senior Operator license shall be designated to assume the control room command function. During any absence of the Shift Supervisor from the control room while the unit is in MODE 5 or 6, an individual with a valid Senior Operator license or Operator license shall be designated to assume the control room command function.

TABLE 6.2-1 (Continued)

TABLE NOTATIONS

*Individual may fill the same position on the opposite Unit.

**One of the two required individuals may fill the same position on the opposite Unit.

***The STA position shall be manned in MODES 1, 2, 3, and 4 unless the Shift Supervisor or the individual with a Senior Operator license meets the qualifications for the STA as required by the NRC.

NUCLEAR TRAINING DEPARTMENT

ADMINISTRATIVE JOB PERFORMANCE MEASURE

TITLE:	**REVIEW ESF POWER AVAILABILITY SURVEILLANCE RESULTS**
JPM NO.:	**A7**
REVISION:	**2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: REVIEW ESF POWER AVAILABILITY SURVEILLANCE RESULTS

JPM No.: A7

Rev. No.: 2

STP Task: 12000, Authorize Start Of And Review Surveillance Tests.

STP Objective: 12000, Authorize the start of surveillance tests, and review completion IAW 0PGP03-ZE-0004, Plant Surveillance Program.

Related K/A Reference: 2.1.33 [4.0], Ability to recognize indications for system operating parameters which are entry level conditions for Technical Specifications.

References: 0PSP03-EA-0002, ESF Power Availability

Task Normally Completed By: SRO

Method of Testing: Actual Performance

Location of Testing: N/A

Time Critical Task: NO

Validation Time: 20 minutes

Required Materials (Tools/Equipment):

Technical Specifications

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power when an electrical transient occurred that resulted in the loss of the #1 Standby Transformer. Subsequently, the breaker from 4160 Volt AC bus E1B to 480 Volt Load Center E1B1 tripped open (supply breaker upstream of 480 Volt Load Center E1B1 transformer). The #12 ESF Diesel Generator later tripped due to a lube oil leak. The crew is currently in 0POP04-AE-0004, Loss Of Power To One Or More 4.16 KV ESF Buses, and have re-energized 4160 V ESF Buses '1B' and '1C' from Unit 2 Standby Transformer. 0PSP03-EA-0002, ESF Power Availability, has been performed to satisfy Technical Specification 3.8.1.1.b.

INITIATING CUE:

You are to perform the "Test Results Second Review" for the completed ESF Power Availability Surveillance, and document your review by completing Step 4 of the Data Package Cover Sheet. DO NOT PERFORM THE REPORTABILITY REVIEW PORTION OF STEP 4.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Determines that Surveillance Test results should be "unacceptable based on failing to meet surveillance acceptance criteria 6.3, and that the Technical Specification LCOs 3.8.3.1.a, 3.8.1.1.b, and 3.8.1.1.d should be entered.*

** Denotes Critical LCO*

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Copy of completed Surveillance 0PSP03-EA-0002.

NOTES:

- **THIS JPM WAS WRITTEN AND VALIDATED TO REVISION 12 OF 0PSP03-EA-0002, ESF POWER AVAILABILITY. SUBSEQUENTLY REVISION 13 BECAME EFFECTIVE TO THIS PROCEDURE, BUT THIS JPM REMAINS BASED ON REV. 12. REV. 13 MADE MINOR TITLE CHANGES THAT DON'T IMPACT THE PROCESS THIS JPM IS BASED ON.**

- The evaluator is provided with an ANSWER KEY which is appropriately marked "KEY". The evaluator shall not hand out any page(s) marked as "KEY" to the applicant.

JOB PERFORMANCE MEASURE INFORMATION SHEET (cont'd)

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain completed ESF Power Availability Surveillance.

Standard:

The applicant obtains a copy of the ESF Power Availability.

Comment:

When the applicant has been read the Initiating Cues and has no questions, give the applicant a copy of the surveillance.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Review ESF Power Availability Surveillance.

Standard:

The applicant reviews the ESF Power Availability Surveillance for accuracy.

Comment:

While there is no time limit associated with this JPM, the applicant is expected to make reasonable progress during the review process.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3 (C) *

Complete "Test Results Second Review" section

Standard:

The applicant records the following on the "Test Results Second Review" section:

1) ***Test Results –*** *Unacceptable**
2) ***Refer to T.S. –*** *3.8.3.1.a**
3) ***Is this condition a potentially reportable occurrence? –*** *NA per Initiating Cue*
4) ***Should an LCO action statement be entered? –*** *YES*
5) ***Explain –*** *Words to the effect of:*

Surveillance Acceptance Criteria 6.3 is not satisfied. (480 V Load Center E1B1 is not energized via its respective load center transformer.) Technical Specification LCO action statement 3.8.3.1.a should be entered based on the loss of the normal power supply to the 480 V Load Center E1B1 (T.S. 3.8.3.1.a)

Comment:

1) (*) Denotes the Critical portions. The applicant is expected to determine that the surveillance is unsatisfactory based on failing to meet acceptance criteria 6.3. The applicant should also know that the LCO to be entered is T.S. 3.8.3.1.a.

2) The loss of the Standby Transformer does not constitute a loss of an offsite source according to Technical Specification 3.8.1.1.a, therefore surveillance acceptance criteria 6.1 is satisfied.

Cue:

If the student begins to pursue a reportability determination, inform him/her that is not within the identified scope of the JPM.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A7, REVIEW ESF POWER AVAILABILITY SURVEILLANCE RESULT

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________

Signature __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU'VE COMPLETED THE TASK

INITIAL CONDITIONS:

Unit 1 is at 100% power when an electrical transient occurred that resulted in the loss of the #1 Standby Transformer. Subsequently, the breaker from 4160 Volt AC bus E1B to 480 Volt Load Center E1B1 tripped open (supply breaker upstream of 480 Volt Load Center E1B1 transformer). The #12 ESF Diesel Generator later tripped due to a lube oil leak. The crew is currently in 0POP04-AE-0004, Loss Of Power To One Or More 4.16 KV ESF Buses, and have re-energized 4160 V ESF Buses '1B' and '1C' from Unit 2 Standby Transformer. 0PSP03-EA-0002, ESF Power Availability, has been performed to satisfy Technical Specification 3.8.1.1.b.

INITIATING CUE:

You are to perform the "Test Results Second Review" for the completed ESF Power Availability Surveillance, and document your review by completing Step 4 of the Data Package Cover Sheet. DO NOT PERFORM THE REPORTABILITY REVIEW PORTION OF STEP 4.

STI 31546303	**0PSP03-EA-0002**	**Rev. 12**	Page 1 of 28
ESF Power Availability			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 01/27/03

M. Foster	N/A	Crew 2E	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

1.0 Purpose and Scope

1.1 This procedure satisfies the surveillance requirements (Mode 1,2,3 & 4) 4.8.1.1.1.a [ITS SR 3.8.1.1], 4.8.2.1.a.2 [ITS SR 3.8.5.1], 4.8.3.1 [ITS SR 3.8.8.1], 4.8.3.1 [ITS SR 3.8.10.1] of the following Technical Specifications:

1.1.1 Determination of two physically independent circuits between the offsite transmission network and the onsite class 1E Distribution per Technical Specification 3.8.1.1.a [ITS 3.8.1.a], by verifying breaker alignments and indicated power availability in Modes 1 through 4.

1.1.2 Determine proper energization of ESF buses per Technical Specification 3.8.3.1 [ITS 3.8.10], by verifying correct breaker alignment and bus voltages in Modes 1 through 4.

1.1.3 Determine operability of ESF battery bank associated chargers per Technical Specification 3.8.2.1 [ITS 3.8.5], by verifying correct breaker alignment and voltages in Modes 1 through 4.

1.2 This procedure determines the availability of the 138 KV Emergency Transformer for possible use during a Loss of Offsite Power by verifying the Voltage and Breaker Lineup per Data Sheet 1 and 8. This meets commitments made for the SDG, ECW and Essential Chilled Water Technical Specification Change. (Reference 8.7)

1.3 This procedure determines Technical Specification 3.8.1 LCO entry requirements during planned (preventative or corrective maintenance) 345 KV Switchyard North or South Bus outages.

2.0 Prerequisites

None

3.0 Notes and Precautions

3.1 Breaker positions SHALL NOT be changed without authorization from the Unit Supervisor or Shift Supervisor.

3.2 Failure to meet the Acceptance Criteria of this test may require entry into one or more of the following LCO Action Statement's:

- Technical Specification 3.8.1.1 [ITS 3.8.1]
- Technical Specification 3.8.2.1 [ITS 3.8.5]
- Technical Specification 3.8.3.1 [ITS 3.8.10]

3.3 Loss of one 345 KV Switchyard North or South Bus, including a planned (preventative or corrective maintenance) outage, constitutes loss of one required offsite source. (Ref. 8.10)

3.4 Loss of one 13.8 KV Standby Bus to 4.16 KV ESF bus line constitutes loss of one required offsite source. (Reference 8.2)

3.5 Loss of two 13.8 KV Standby busses to 4.16 KV ESF bus lines constitutes loss of two required offsite sources. (Reference 8.2)

3.6 Addendum 2, Two Physically Independent Circuits, provides a drawing of rightaways and offsite circuits to aide in the definition of "two physically independent circuits".

3.7 Refer to 0PSP03-EA-0003, ESF Power Availability Shutdown, for Modes 5 and 6.

4.0 Pretest Verification

None

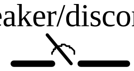
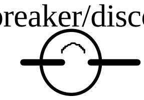
5.0 Procedure

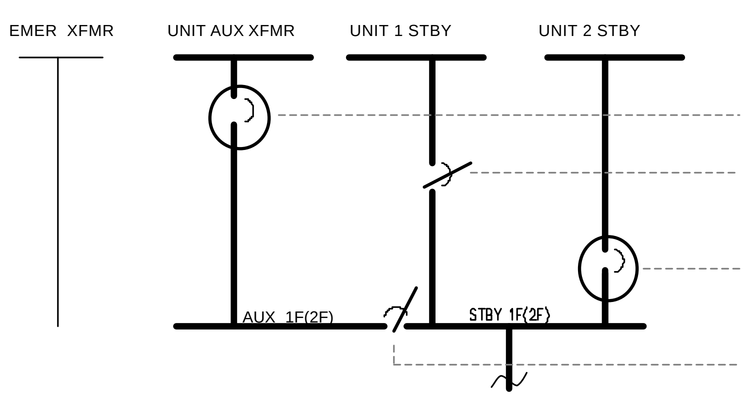
NOTE

- IF this surveillance is being performed to satisfy Technical Specification Surveillance Requirement 4.8.1.1.1.a [ITS SR 3.8.1.1], THEN Data Sheet 1 through 8 SHALL be performed.
- IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY Data Sheet 1, 2, 3, and 8 are required to be performed.
- There are 5 possible lineups on Data Sheet 1, 2, and 3 for 13.8 KV XFMRS in the **DESIGNATED** Class 1E 4160 VAC Bus Power Source Table that meet Technical Specification requirements for being a power source for the 4.16 KV Buses:
  - (1) UAT supplying the AUX BUS and STBY BUS
  - (2) UAT supplying the AUX BUS and UNIT 1 STBY XFMR suppyling the STBY BUS
  - (3) UNIT 1 STBY XFMR suppyling the STBY BUS and the AUX BUS
  - (4) UAT supplying the AUX BUS and UNIT 2 STBY XFMR suppyling the STBY BUS
  - (5) UNIT 2 STBY XFMR suppyling the STBY BUS and the AUX BUS

5.1 COMPLETE Required ESF Power Train Data Sheet 1 through 3 by performing the following steps.

5.1.1 RECORD actual breaker/disconnect positions for the 13.8 KV XFMRs, AUX BUS, STBY BUSES and from the 13.8 KV STBY BUS to the 480 VAC BUSES.

- RECORD "CLOSED" breaker/disconnect positions by drawing a line at an angle through the breaker. 
- RECORD "OPEN" breaker/disconnect positions by drawing a CIRCLE around the breaker. 



This example illustrates:
(3) UNIT 1 STBY XFMR suppyling the STBY BUS and the AUX BUS

NOTE

Unit 1 and Unit 2 control board mimics are different. Mimic locations for UNIT 1 STBY XFMR and UNIT 2 STBY XFMR are opposite.

- In Unit 1, UNIT 1 STBY XFMR is on the left.
- In Unit 2, UNIT 2 STBY XFMR is on the left.

5.1.2 CIRCLE actual breaker positions for the selected XFMR lineup in the **DESIGNATED** Class 1E 4160 VAC Bus Power Source Table.

5.1.3 RECORD a "✓" above the 13.8 KV XFMR lineup designated as the class 1E 4160 VAC bus power source.

DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3) ✓	(4)	(5)
	(1) UNIT AUX XFMR	(2) UNIT 1 STBY XFMR	(3) UNIT 1 STBY XFMR	(4) UNIT 2 STBY XFMR	(5) UNIT 2 STBY XFMR
UAT TO AUX BUS 1F(2F) SUPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1F(2F) SUPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1F(2F) SUPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED

This example illustrates:
(3) UNIT 1 STBY XFMR suppyling the STBY BUS and the AUX BUS

5.1.4 ENSURE the 13.8 KV XFMR lineup designated as the class 1E 4160 VAC bus power source meets the acceptance criteria in steps 6.1 for Modes 1, 2, 3 and 4.

5.1.5 CIRCLE actual breaker positions in the **REQ'D** BREAKER/DISC POSITION column for the Technical Specification electrical lineup from the 13.8 KV STBY BUS to the 480 VAC BUSES.

5.1.6 ENSURE the acceptance criteria in steps 6.3 for Modes 1, 2, 3 and 4 is met by VERIFYING that ALL breakers in the **REQ'D** BREAKER/DISC POSITION column are circled.

5.2 COMPLETE ESF Power Availability Data Sheet 4 through 7 by circling OR recording actual breaker/disconnect positions (e.g. OPEN, CLOSED, ON, OFF, etc.).

5.3 RECORD indicated voltages on Data Sheet 8, Bus and Charger Voltage Data.

6.0 Acceptance Criteria

NOTE

- Addendum 2, Two Physically Independent Circuits, provides a drawing of rightaways and offsite circuits to aide in the definition of “two physically independent circuits”.
- Loss of one 13.8 KV Standby Bus to 4.16 KV ESF bus line constitutes loss of one required offsite source. (Reference 8.2)
- Loss of two 13.8 KV Standby busses to 4.16 KV ESF bus lines constitutes loss of two required offsite sources. (Reference 8.2)
- The preceding notes also apply when the 4.16 KV ESF bus is not energized by the 13.8 KV XFMR.

6.1 Two physically independent circuits exist between the offsite transmission network and onsite Class 1E Distribution System as determined from Data Sheet 1, 2, 3, and 8. (Technical Specification 3.8.1.1.a [ITS 3.8.1.a], 4.8.1.1.1.a [ITS SR 3.8.1.1]).

- Two 13.8 KV XFMRs
  - Unit Aux XFMR
  - Unit 1 Stby XFMR
  - Unit 2 Stby XFMR
- Three 13.8 KV Standby Buses energizing the 4.16 KV ESF bus lines.

6.2 345 KV Switchyard North or South Bus planned (preventative or corrective maintenance) outages are **NOT** in progress. (Technical Specification 3.8.1.1.a [ITS 3.8.1.a], 4.8.1.1.1.a [ITS SR 3.8.1.1], Ref. 8.10). (Addendum 1)

6.3 Each ESF 4.16 KV bus E1A, E1B and E1C (E2A, E2B and E2C) is energized and supplying it’s respective 480V Load Centers E1A1, E1A2, E1B1, E1B2, E1C1 and E1C2 (E2A1, E2A2, E2B1, E2B2, E2C1 and E2C2) via it’s respective load center transformers as determined from Data Sheet 1, 2, 3, and 8.
(Technical Specification 3.8.3.1a, b, and c [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.10.1]).

6.4 Each 120 Volt AC Distribution panel DP1201, DP001, DP1202, DP1203, DP1204 and DP002 is energized from its associated inverter AND each inverter is connected to its respective D.C. Bus E1A11, E1D11, E1B11 and E1C11 (E2A11, E2D11, E2B11 and E2C11) as determined from Data Sheet 4, 5, 6, 7, and 8.
(Technical Specification 3.8.3.1d, e, f and g [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.8.1, SR 3.8.10.1]).

6.5 Each 125 Volt DC bus E1A11, E1B11, E1C11 and E1D11 (E2A11, E2B11, E2C11 and E2D11) is energized from its associated battery bank E1A11, E1B11, E1C11 and E1D11 (E2A11, E2B11, E2C11 and E2D11) as determined from Data Sheets 4, 5, 6, 7, and 8.
(Technical Specification 3.8.3.1h, i, j and k [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.10.1]).

6.6 Channels I, II, III and IV 125V Battery Banks are each being supplied from ONE of their two associated chargers.
(Technical Specification 3.8.2.1 [ITS 3.8.5], 4.8.2.1.a.2 [ITS SR 3.8.5.1]).

7.0 Documentation

7.1 Data Package Cover Sheet

7.2 Data Sheet 1, Required ESF Power Train A

7.3 Data Sheet 2, Required ESF Power Train B

7.4 Data Sheet 3, Required ESF Power Train C

7.5 Data Sheet 4, Channel I, 120 VAC and 125 VDC Vital Bus Availability

7.6 Data Sheet 5, Channel II, 120 VAC and 125 VDC Vital Bus Availability

7.7 Data Sheet 6, Channel III, 120 VAC and 125 VDC Vital Bus Availability

7.8 Data Sheet 7, Channel IV, 120 VAC and 125 VDC Vital Bus Availability

7.9 Data Sheet 8, Bus and Charger Voltage Data

8.0 References

8.1 Single Line Diagrams:

8.1.1	9-E-AAAA-01 #1(#2),	Main Generator Unit & Standby Xfmr Protection & Metering
8.1.2	9-E-AAAB-01 #1(#2),	Class 1E 125V DC & 120V Vital AC, Non-Class 1E 48V, 125V, 250V DC & 120V Vital AC, Non-Class 1E Inverter Power for Computer 208/120V AC Regulated Power
8.1.3	9-E-DJAA-01 #1(#2),	125V DC Class 1E Distribution Swbd E1A11(E2A11) (Channel I)
8.1.4	9-E-DJAB-01 #1(#2),	125V DC Class 1E Distribution Swbd E1D11(E2D11) (Channel II)
8.1.5	9-E-DJAC-01 #1(#2),	125V DC Class 1E Distribution Swbd E1B11(E2B11) (Channel III)
8.1.6	9-E-DJAD-01 #1(#2),	125V DC Class 1E Distribution Swbd E1C11(E2C11) (Channel IV)

8.1.7 9-E-VAAA-01 #1(#2), Vital 120V AC Distribution Panels DP001, DP1201 (Channel I)

8.1.8 9-E-VAAB-01 #1(#2), Vital 120V AC Distribution Panels DP1202, DP1203 (Channel II & III)

8.1.9 9-E-VAAC-01 #1(#2), Vital 120V AC Distribution Panels DP002, DP1204 (Channel IV)

8.2 Technical Specifications 3.8.1.1 [ITS 3.8.1], 3.8.2.1 [ITS 3.8.5], and 3.8.3.1 [ITS 3.8.10].

8.3 UFSAR Section 8.3, Onsite Power Systems

8.4 SPR 921204, Class 1E Electrical System Min/Max Voltages

8.5 SR 189442, Class 1E Electrical System Min/Max Voltages

8.6 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test

8.7 ST-AE-HL-94678, South Texas Project, Units 1 and 2 - Amendment NOS. 85 and 72 to Facility Operating License NOS. NPF-76 and NPF-80 (Extended AOT 's for ECW, ECHW and SDG's).

8.8 CREE 96-9996 Capability of the Emergency Transformer.

8.9 CREE 97-4343-8 STP's interpretation of 10CFR50 Appendix A, GDC-17, as related to Offsite Power Sources.

8.10 CREE 99-1981-1, HL&P Final Report on STP 345 KV Switchyard Transient Stability Impact on Existing CREE 97-4343-8.

8.11 CREE 99-3416, Evaluate DC voltage used in 0PSP03-EA-0002.

8.12 LER 99-003, Entry into Technical Specification 3.0.3 following a partial LOOP.

9.0 Support Documents

9.1 Addendum 1, 345 KV Switchyard Normal Operation

9.2 Addendum 2, Two Physically Independent Circuits

9.3 Data Package Cover Sheet

9.4 Data Sheet 1, Required ESF Power Train A

9.5 Data Sheet 2, Required ESF Power Train B

9.6 Data Sheet 3, Required ESF Power Train C

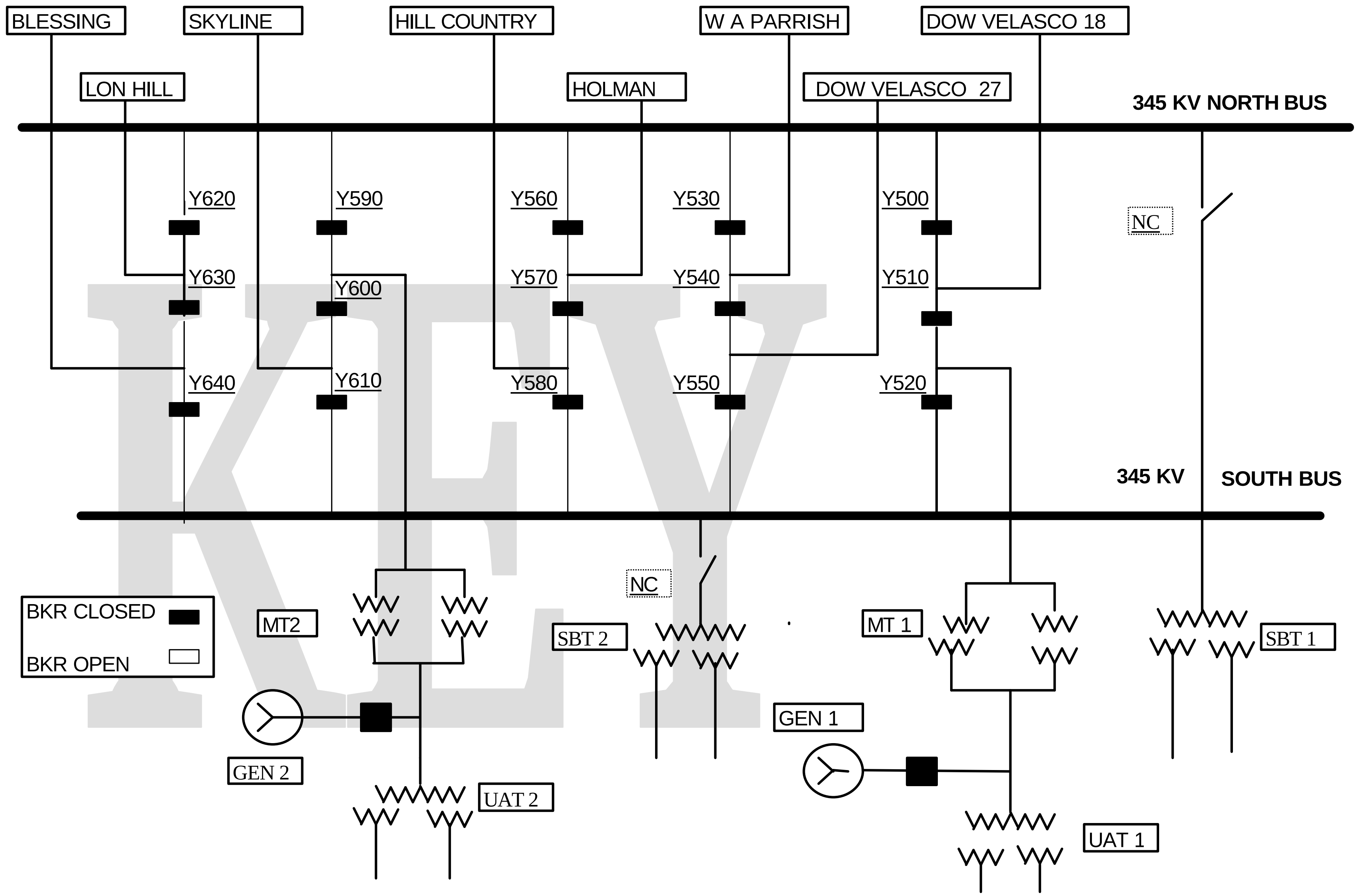
9.7 Data Sheet 4, Channel I, 120 VAC and 125 VDC Vital Bus Availability

9.8 Data Sheet 5, Channel II, 120 VAC and 125 VDC Vital Bus Availability

9.9 Data Sheet 6, Channel III, 120 VAC and 125 VDC Vital Bus Availability

9.10 Data Sheet 7, Channel IV, 120 VAC and 125 VDC Vital Bus Availability

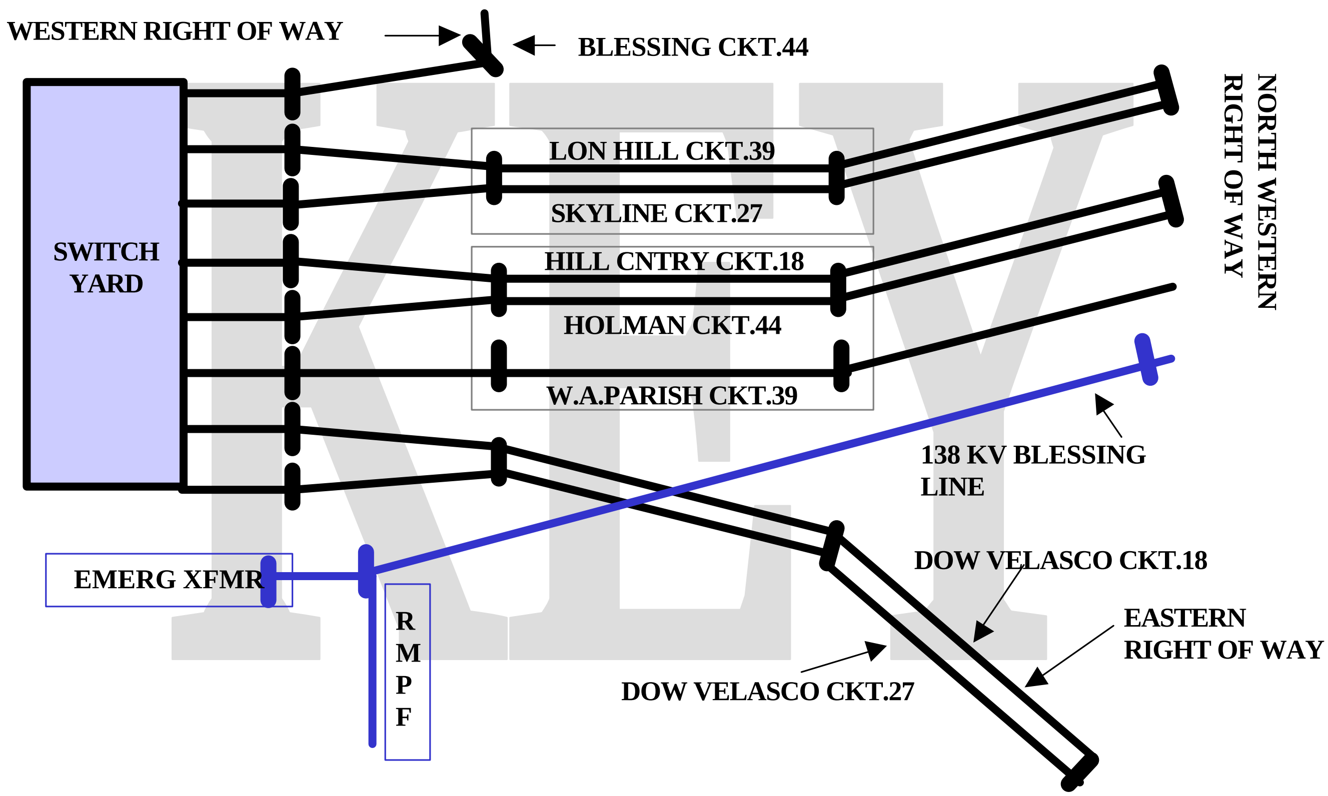
9.11 Data Sheet 8, Bus and Charger Voltage Data


BLESSING
SKYLINE
HILL COUNTRY
W A PARRISH
DOW VELASCO 18
LON HILL
HOLMAN
DOW VELASCO 27
345 KV NORTH BUS
Y620
Y590
Y560
Y530
Y500
NC
Y630
Y600
Y570
Y540
Y510
Y640
Y610
Y580
Y550
Y520
345 KV
SOUTH BUS
NC
BKR CLOSED
BKR OPEN
MT2
SBT 2
MT 1
SBT 1
GEN 1
GEN 2
UAT 2
UAT 1

1) At all times, at least two physically independent circuits must be in service. (Technical Specification 3.8.1.1, [ITS 3.8.1])

   a) This is an NRC requirement.

   b) Note that the 400 ft. wide "common corridor" right-of-way out of STP property are considered as two independent right-of-ways: one with circuits to Lon Hill and Sky Line and the other with circuits to W.A. Parish, Hill Country, and Hollman. (Reference UFSAR 8.2.1)



   c) Examples of "at least two physically independent circuits":

      - Lon Hill Ckt.39 and Hollman Ckt.44 (circuits are in different right-of-ways and the circuits do not share the same towers) (400 ft. wide "common corridor" right-of-way out of STP property can be considered as two independent right-of-ways)

      - Lon Hill Ckt.39 and Dow Velasco Ckt.18 (circuits are in different right-of-ways and the circuits do not share the same towers.)

UNIT 1 **(Circle Unit Performing Lineup)** **UNIT 2**

NOTE

- IF this surveillance is being performed to satisfy Technical Specification Surveillance Requirement 4.8.1.1.1.a [ITS SR 3.8.1.1], THEN Data Sheet 1 through 8 SHALL be performed.
- IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY Data Sheet 1, 2, 3, and 8 are required to be performed.
- Permission to start test is required only for manipulation of a system.

1. Data Takers and Procedure Performers:

   Robert Miller ____________________

   ____________________ ____________________

2. Reason for Test:

   (Mode 1,2,3 & 4) 4.8.1.1.1.a [ITS SR 3.8.1.1], 4.8.2.1.a.2 [ITS SR 3.8.5.1], 4.8.3.1 [ITS SR 3.8.8.1], 4.8.3.1 [ITS SR 3.8.10.1]

   ________ Periodic Test

   ✓ Other (explain) *To verify compliance with Electrical Technical Specification 3/4.8.1.1.b*

3. Test Results:

_________ Acceptable ____✓_____ Unacceptable

IF unacceptable, THEN immediately INFORM the Shift Supervisor.

Robert Miller	*6/1/2003*	*0600*
Test Performer	Date	Time

4. Test Results Second Review:

_________ Acceptable ____✓____ Unacceptable (complete section below)

Refer to Technical Specification ___3.8.3.1___ LCO Action Requirements

Is this condition a potentially reportable occurrence? ______ Yes

______ No

Should an LCO Action Statement be entered? ___✓___ Yes

______ No

Explain (Words to the effect of) Surveillance acceptance criteria 6.3 is NOT satisfied. 480 Volt Load Center E1B1 is NOT energized via its respective Load Center Transformer. Technical Specification LCO action statement 3.8.3.1.a should be entered based on the loss of the normal power supply to the 480 Volt Load.

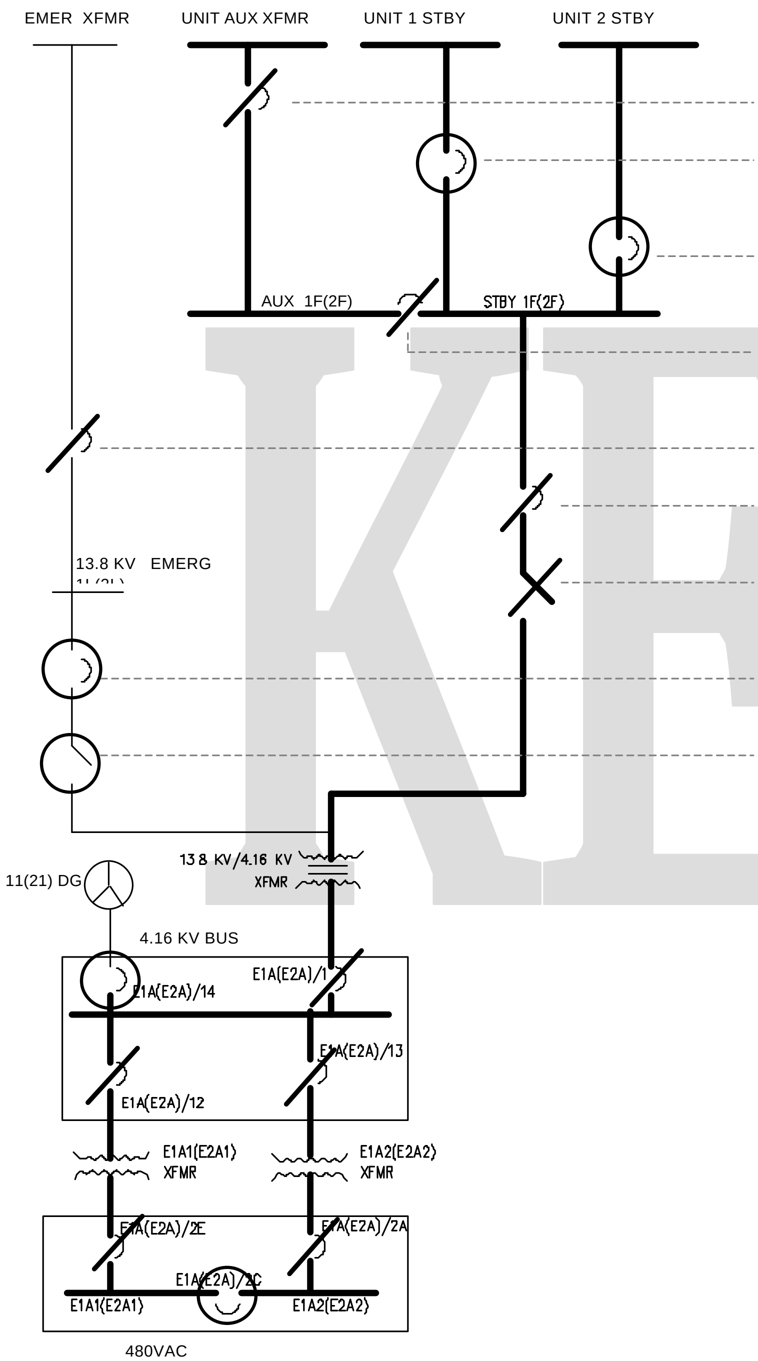
______________________	________	________
Shift Supervisor	Date	Time

5. Data Review:

______________________	________	________
Surveillance Coordinator	Date	Time

Data Sheet 1	Required ESF Power Train A	Page 1 of 1

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



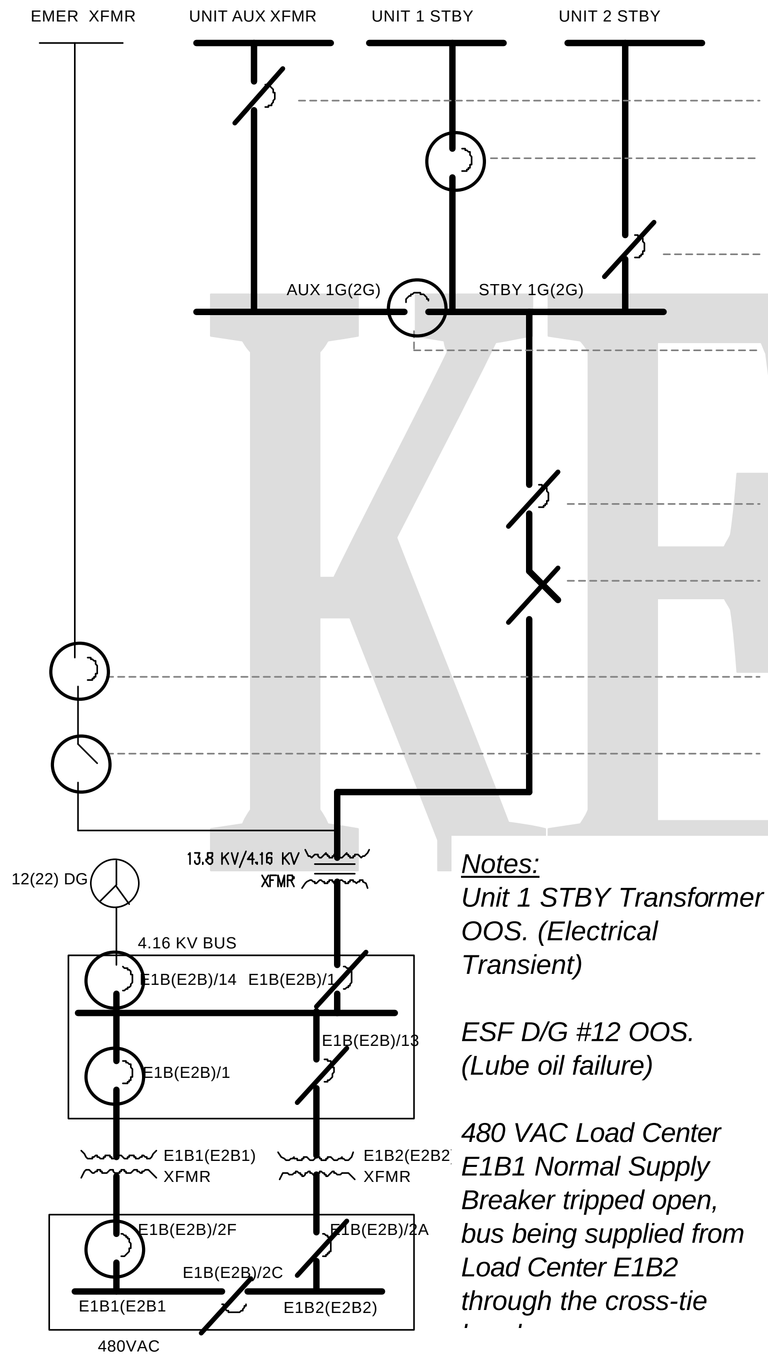
DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1) ✓	(2)	(3)	(4)	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1F(2F) SUPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1F(2F) SUPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1F(2F) SUPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1F(2F) TIE	CLOSED	OPEN	N/A	OPEN	N/A

BREAKER/DISC POSITION	REQ'D	UNSAT
EMER XFMR TO BUS 1K/1L (2K/2L) SPLY	N/A	N/A
STBY BUS 1F(2F) TO XFMR E1A(E2A) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1F(2F) TO XFMR E1A(E2A) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L/2L TO XFMR E1A(E2A) BKR SW-EMER	N/A	N/A
EMER BUS 1L/2L TO XFMR E1A(E2A) DISC SW-EMER	N/A	N/A
SPLY BKR E1A(E2A)/1	CLOSED	OPEN
DG OUTP BKR E1A(E2A)/14	N/A	N/A
SPLY BKR E1A(E2A)/12	CLOSED	OPEN
SPLY BKR E1A(E2A)/13	CLOSED	OPEN
OUTP BKR E1A(E2A)/2E	CLOSED	OPEN
OUTP BKR E1A(E2A)/2A	CLOSED	OPEN
CROSS TIE E1A(E2A)/2C	OPEN	CLOSED

Note 1, ▬▬▬ Indicates Technical Specification related electrical lineup.
Note 2, Required per Technical Specifications, EITHER UNIT AUX XFMR OR UNIT 2 STBY XFMR OR UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1A(E2A).

Robert Miller	*6/1/2003*	*0530*
PERFORMED BY	DATE	TIME

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



Notes:
Unit 1 STBY Transformer OOS. (Electrical Transient)

ESF D/G #12 OOS. (Lube oil failure)

480 VAC Load Center E1B1 Normal Supply Breaker tripped open, bus being supplied from Load Center E1B2 through the cross-tie

DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3)	(4)	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1G(2G) SPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1G(2G) SPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1G(2G) SPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1G(2G) TIE	CLOSED	OPEN	N/A	OPEN	N/A

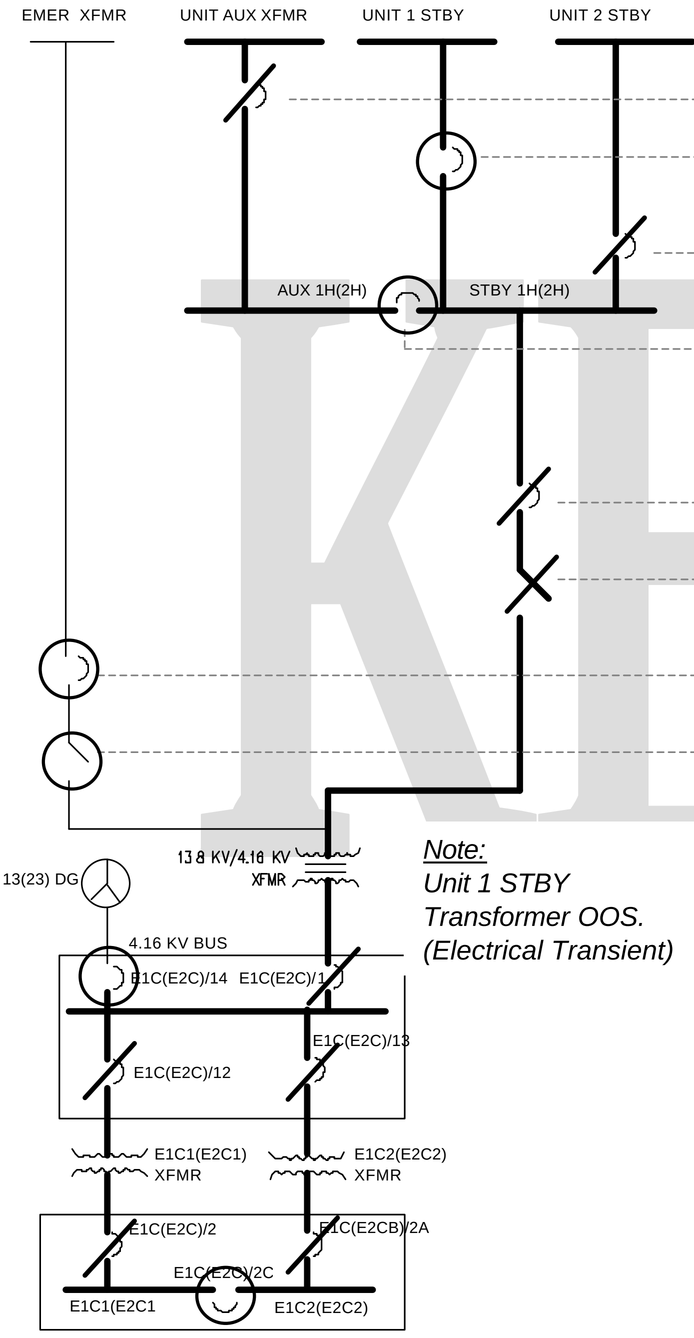
BREAKER/DISC POSITION	REQ'D	UNSAT
STBY BUS 1G(2G) TO XFMR E1B(E2B) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1G(2G) TO XFMR E1B(E2B) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L(2L) TO XFMR E1B(E2B) BKR SW-EMER	N/A	N/A
EMER BUS 1L(2L) TO XFMR E1B(E2B) BKR DISC SW-EMER	N/A	N/A
SPLY BKR E1B(E2B)/1	CLOSED	OPEN
DG OUTP BKR E1B(E2B)/14	N/A	N/A
SPLY BKR E1B(E2B)/12	CLOSED	OPEN
SPLY BKR E1B(E2B)/13	CLOSED	OPEN
OUTP BKR E1B(E2B)/2F	CLOSED	OPEN
OUTP BKR E1B(E2B)/2A	CLOSED	OPEN
CROSS TIE E1B(E2B)/2C	OPEN	CLOSED

Note 1, ▬▬▬ Indicates Technical Specification related electrical lineup.
Note 2, Required per Technical Specifications, EITHER UNIT AUX XFMR OR UNIT 1 STBY XFMR OR UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1B(E2B).

Robert Miller	*6/1/2003*	*0540*
PERFORMED BY	DATE	TIME

This procedure, when complete, SHALL be retained for five years.

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3)	(4) ✓	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1H(2H) SPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1H(2H) SPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1H(2H) SPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1H(2H) TIE	CLOSED	OPEN	N/A	OPEN	N/A

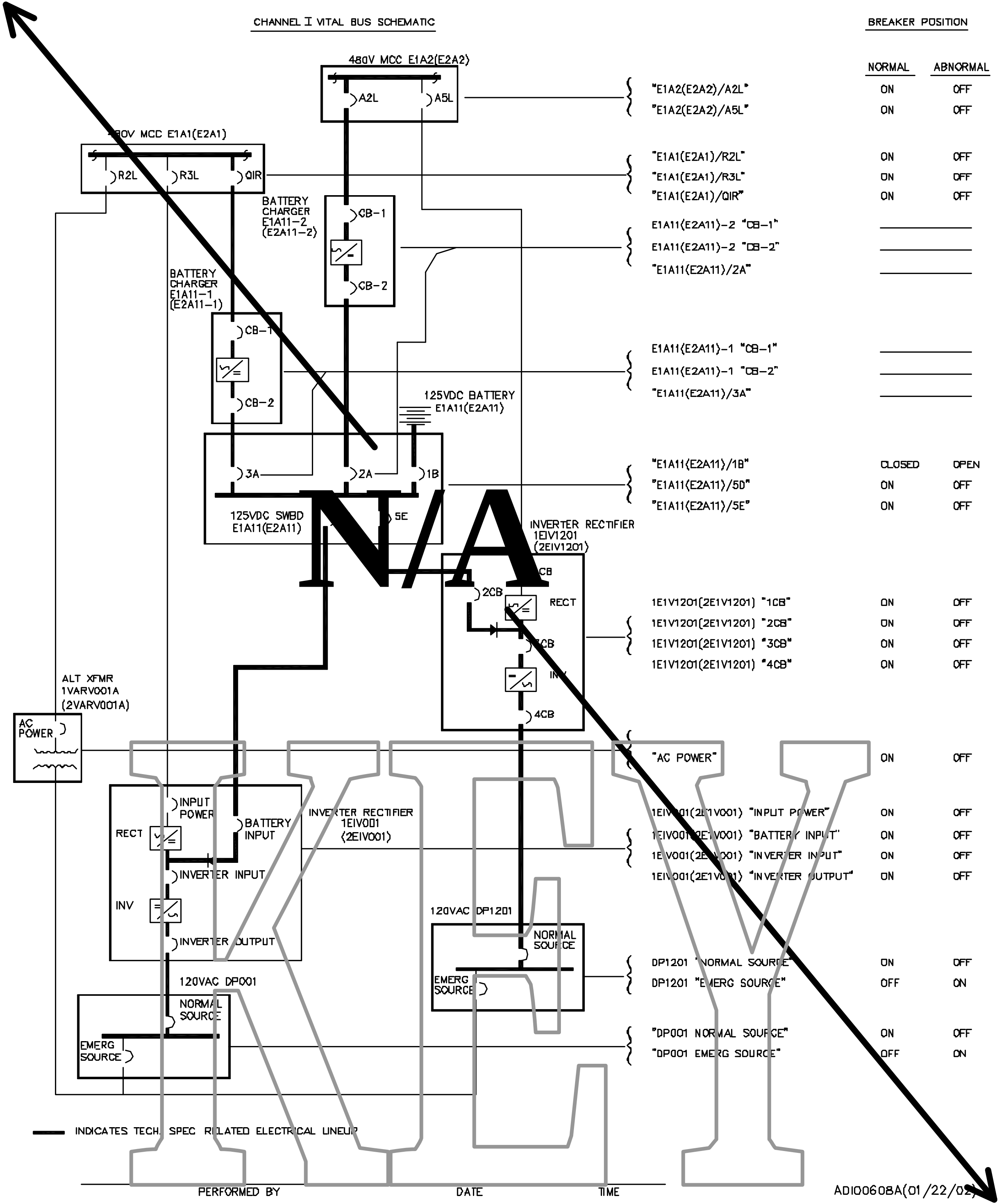
BREAKER/DISC POSITION

	REQ'D	UNSAT
STBY BUS 1H(2H) TO XFMR E1C(E2C) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1H(2H) TO XFMR E1C(E2C) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L(2L) TO XFMR E1C(E2C) BKR SW-EMER	N/A	N/A
EMER BUS 1L(2L) TO XFMR E1C(E2C) BKR DISC SW-EMER	N/A	N/A
SPLY BKR E1C(E2C)/1	CLOSED	OPEN
DG OUTP BKR E1C(E2C)/14	N/A	N/A
SPLY BKR E1C(E2C)/12	CLOSED	OPEN
SPLY BKR E1C(E2C)/13	CLOSED	OPEN
OUTP BKR E1C(E2C)/2E	CLOSED	OPEN
OUTP BKR E1C(E2C)/2A	CLOSED	OPEN
CROSS TIE E1C(E2C)/2C	OPEN	CLOSED

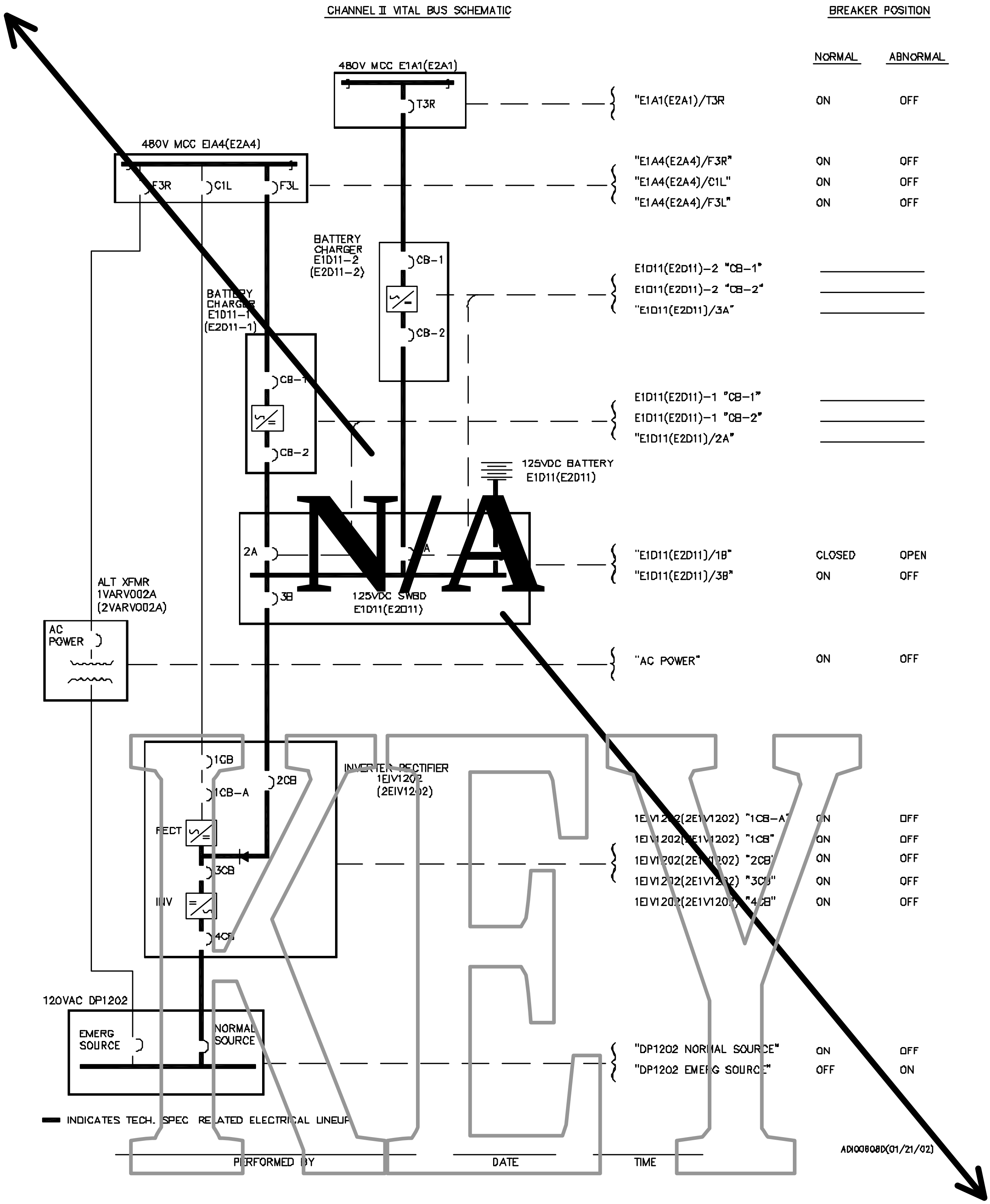
Note 1, ▬▬ Indicates Technical Specification related electrical lineup.
Note 2, Required per Technical Specifications, EITHER UNIT AUX XFMR OR UNIT 1 STBY XFMR OR UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1C(E2C).

Robert Miller	*6/1/2003*	*0545*
PERFORMED BY	DATE	TIME

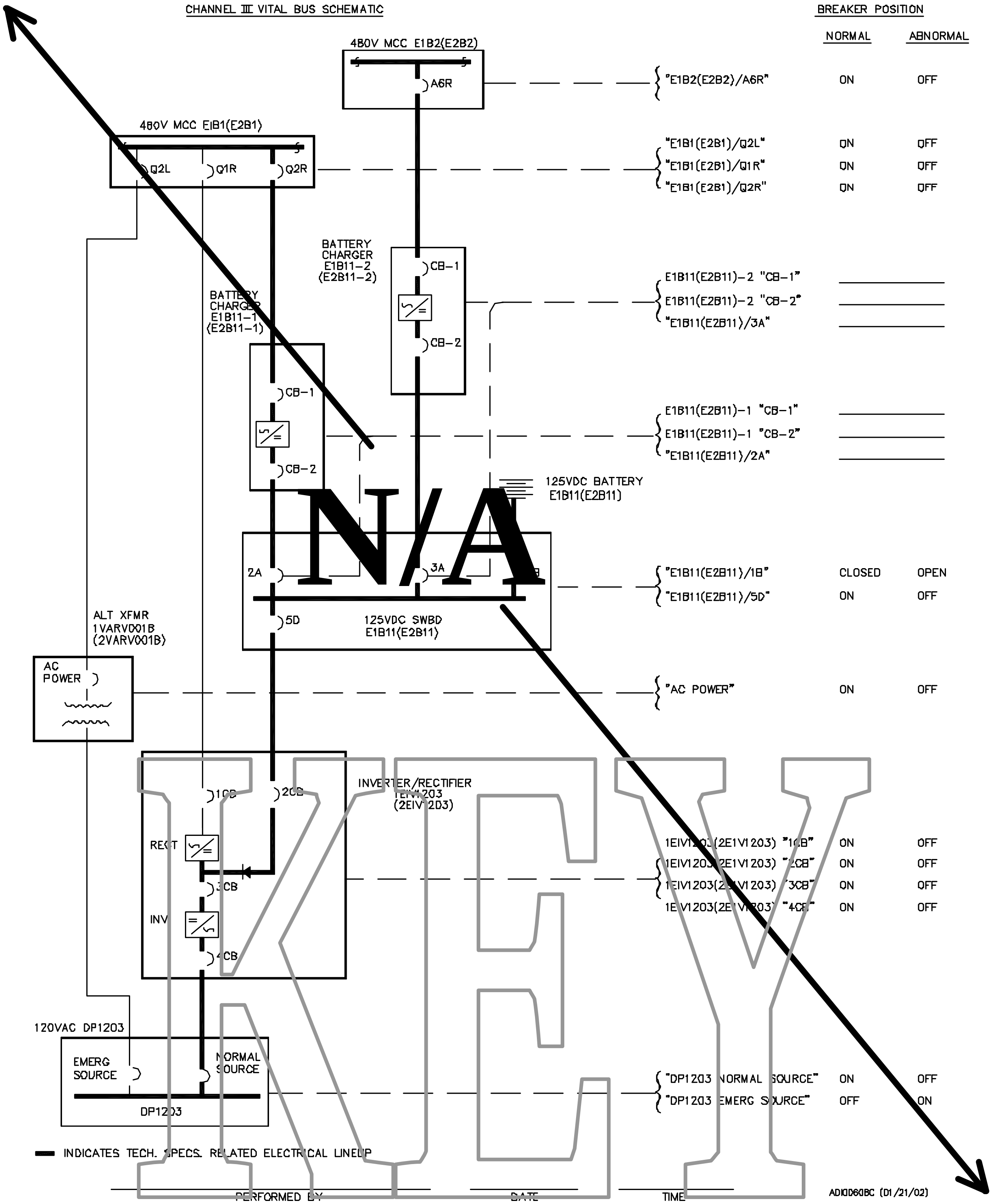
UNIT 1 (Circle Unit Performing Data Sheet) **UNIT 2**



UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



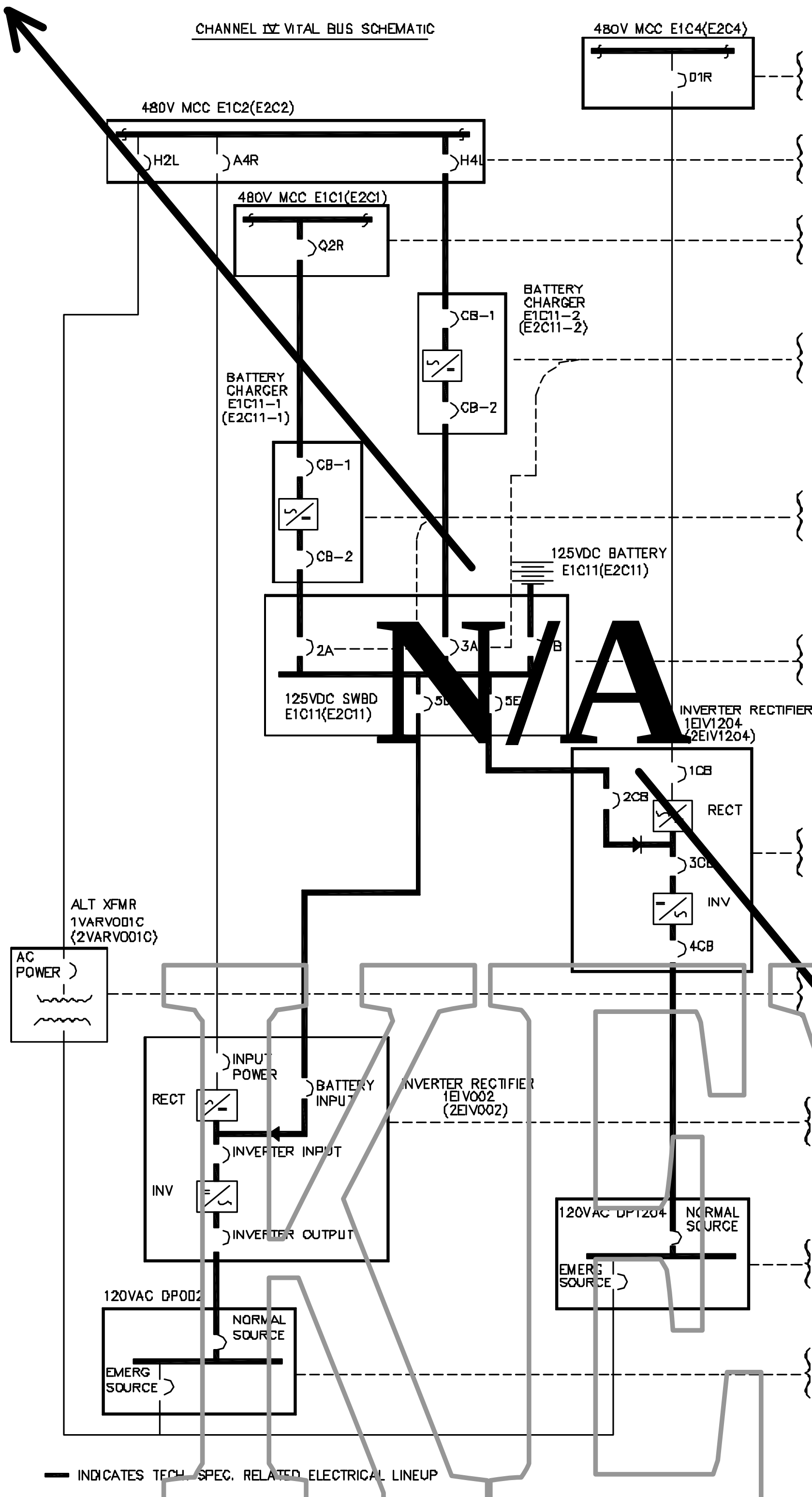
UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



This procedure, when complete, SHALL be retained for five years.

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**

CHANNEL IV VITAL BUS SCHEMATIC



	BREAKER POSITION	
	NORMAL	ABNORMAL
"E1C4(E2C4)/D1R"	ON	OFF
"E1C2(E2C2)/H2L"	ON	OFF
"E1C2(E2C2)/A4R"	ON	OFF
"E1C2(E2C2)/H4L"	ON	OFF
"E1C1(E2C1)/Q2R"	ON	OFF
E1C11(E2C11)-2 "CB-1"		
E1C11(E2C11)-2 "CB-2"		
"E1C11(E2C11)/3A"		
E1C11(E2C11)-1 "CB-1"		
E1C11(E2C11)-1 "CB-2"		
"E1C11(E2C11)/2A"		
"E1C11(E2C11)/1B"	CLOSED	OPEN
"E1C11(E2C11)/5D"	ON	OFF
"E1C11(E2C11)/5E"	ON	OFF
1EIV1204(2E1V1204) "1CB"	ON	OFF
1EIV1204(2E1V1204) "2CB"	ON	OFF
1EIV1204(2E1V1204) "3CB"	ON	OFF
1EIV1204(2E1V1204) "4CB"	ON	OFF
"AC POWER"	ON	OFF
1EIV002(2E1V002) "INPUT POWER"	ON	OFF
1EIV002(2E1V002) "BATTERY INPUT"	ON	OFF
1EIV002(2E1V002) "INVERTER INPUT"	ON	OFF
1EIV002(2E1V002) "INVERTER OUTPUT"	ON	OFF
DP1204 "NORMAL SOURCE"	ON	OFF
DP1204 "EMERG SOURCE"	OFF	ON
"DP002 NORMAL SOURCE"	ON	OFF
"DP002 EMERG SOURCE"	OFF	ON

— INDICATES TECH. SPEC. RELATED ELECTRICAL LINEUP

ADI0608B(01/21/02)

PERFORMED BY ____ DATE ____ TIME ____

This procedure, when complete, SHALL be retained for five years.

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**

REMARKS

DEVICE NUMBER	DESCRIPTION	REMARKS

1. Operators Participating in Performance of Data Sheet 8.

Operator	Time	Date
Robert Miller	*0550*	*6/1/2003*

2. Data Sheet 8, Bus and Charger Voltage Data Completed By:

Robert Miller *0550* *6/1/2003*
Operator Time Date

3. Data Sheet 8, Bus and Charger Voltage Data Reviewed By:

______________________ ________ ________
Unit Supervisor Time Date

1. IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY those readings indicated with an asterisk (*) are required to be completed (Reference 8.2).

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

3. Determines the availability of the 138 KV Emergency Transformer for possible use during a Loss of Offsite Power. (3) This meets commitments made for the SDG, ECW and Essential Chilled Water Technical Specification Change. (Reference 8.7).

Table 1. 13.8 KV Bus Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
* Aux Bus 1F(2F) (CP010)	*14.0* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1F(2F) (CP010)	*14.2* KV	12.8 - 14.5 KV	*RM*
* Aux Bus 1G(2G) (CP010)	*14.1* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1G(2G) (CP010)	*14.1* KV	12.8 - 14.5 KV	*RM*
* Aux Bus 1H(2H) (CP010)	*14.0* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1H(2H) (CP010)	*14.3* KV	12.8 - 14.5 KV	*RM*
(3) Emer Bus 1L(2L) (CP010)	*14.4* KV	12.8 - 14.5 KV	*RM*
* 4.16 KV Bus E1A(E2A) (CP003)	*4.2* KV	3.9 - 4.4 KV	*RM*
* 4.16 KV Bus E1B(E2B) (CP003)	*4.2* KV	3.9 - 4.4 KV	*RM*
* 4.16 KV Bus E1C(E2C) (CP003)	*4.3* KV	3.9 - 4.4 KV	*RM*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1]) (**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 2. Channel I Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1A1(E2A1) (EAB 10' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1A2(E2A2) (EAB 10' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1A11-1(E2A11-1) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1A11-2(E2A11-2) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1A11(E2A11) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP001 (EAB 10', Rm 007)	*N/A* VAC	117 - 122 VAC	*N/A*
Vital AC Panel DP1201 (EAB 10', Rm 007)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 3. Channel II Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
**Charger E1D11-1(E2D11-1) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
**Charger E1D11-2(E2D11-2) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1D11(E2D11) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP1202 (EAB 10', Rm 009)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 4. Channel III Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1B1(E2B1) (EAB 35', Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1B2(E2B2) (EAB 35', Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1B11-1(E2B11-1) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1B11-2(E2B11-2) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1B11(E2B11) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP1203 (EAB 35', Rm 213)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 5. Channel IV Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1C1(E2C1) (EAB 60' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1C2(E2C2) (EAB 60' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1C11-1(E2C11-1) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1C11-2(E2C11-2) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1C11(E2C11) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP002 (EAB 60', Rm 319)	*N/A* VAC	117 - 122 VAC	*N/A*
Vital AC Panel DP1204 (EAB 60', Rm 319)	*N/A* VAC	115 - 125 VAC	*N/A*

KEY

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ESF Power Availability			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 01/27/03

M. Foster	N/A	Crew 2E	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

1.0 Purpose and Scope

1.1 This procedure satisfies the surveillance requirements (Mode 1,2,3 & 4) 4.8.1.1.1.a [ITS SR 3.8.1.1], 4.8.2.1.a.2 [ITS SR 3.8.5.1], 4.8.3.1 [ITS SR 3.8.8.1], 4.8.3.1 [ITS SR 3.8.10.1] of the following Technical Specifications:

1.1.1 Determination of two physically independent circuits between the offsite transmission network and the onsite class 1E Distribution per Technical Specification 3.8.1.1.a [ITS 3.8.1.a], by verifying breaker alignments and indicated power availability in Modes 1 through 4.

1.1.2 Determine proper energization of ESF buses per Technical Specification 3.8.3.1 [ITS 3.8.10], by verifying correct breaker alignment and bus voltages in Modes 1 through 4.

1.1.3 Determine operability of ESF battery bank associated chargers per Technical Specification 3.8.2.1 [ITS 3.8.5], by verifying correct breaker alignment and voltages in Modes 1 through 4.

1.2 This procedure determines the availability of the 138 KV Emergency Transformer for possible use during a Loss of Offsite Power by verifying the Voltage and Breaker Lineup per Data Sheet 1 and 8. This meets commitments made for the SDG, ECW and Essential Chilled Water Technical Specification Change. (Reference 8.7)

1.3 This procedure determines Technical Specification 3.8.1 LCO entry requirements during planned (preventative or corrective maintenance) 345 KV Switchyard North or South Bus outages.

2.0 Prerequisites

None

3.0 Notes and Precautions

3.1 Breaker positions SHALL NOT be changed without authorization from the Unit Supervisor or Shift Supervisor.

3.2 Failure to meet the Acceptance Criteria of this test may require entry into one or more of the following LCO Action Statement's:

- Technical Specification 3.8.1.1 [ITS 3.8.1]
- Technical Specification 3.8.2.1 [ITS 3.8.5]
- Technical Specification 3.8.3.1 [ITS 3.8.10]

3.3 Loss of one 345 KV Switchyard North or South Bus, including a planned (preventative or corrective maintenance) outage, constitutes loss of one required offsite source. (Ref. 8.10)

3.4 Loss of one 13.8 KV Standby Bus to 4.16 KV ESF bus line constitutes loss of one required offsite source. (Reference 8.2)

3.5 Loss of two 13.8 KV Standby busses to 4.16 KV ESF bus lines constitutes loss of two required offsite sources. (Reference 8.2)

3.6 Addendum 2, Two Physically Independent Circuits, provides a drawing of rightaways and offsite circuits to aide in the definition of "two physically independent circuits".

3.7 Refer to 0PSP03-EA-0003, ESF Power Availability Shutdown, for Modes 5 and 6.

4.0 Pretest Verification

None

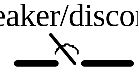
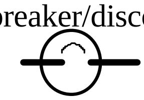
5.0 Procedure

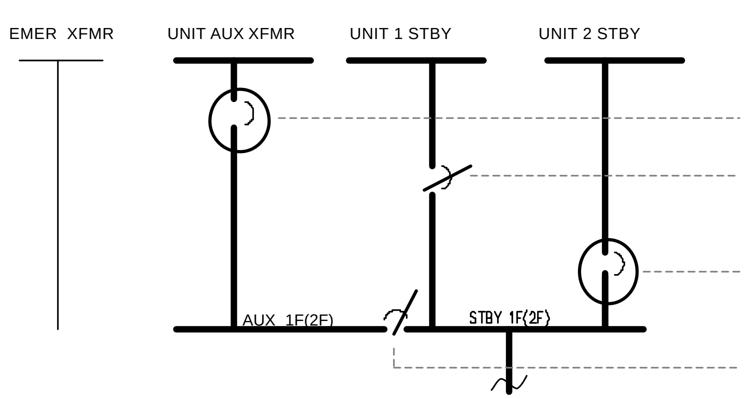
NOTE

- IF this surveillance is being performed to satisfy Technical Specification Surveillance Requirement 4.8.1.1.1.a [ITS SR 3.8.1.1], THEN Data Sheet 1 through 8 SHALL be performed.
- IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY Data Sheet 1, 2, 3, and 8 are required to be performed.
- There are 5 possible lineups on Data Sheet 1, 2, and 3 for 13.8 KV XFMRS in the **DESIGNATED** Class 1E 4160 VAC Bus Power Source Table that meet Technical Specification requirements for being a power source for the 4.16 KV Buses:
  - (1) UAT supplying the AUX BUS and STBY BUS
  - (2) UAT supplying the AUX BUS and UNIT 1 STBY XFMR suppyling the STBY BUS
  - (3) UNIT 1 STBY XFMR suppyling the STBY BUS and the AUX BUS
  - (4) UAT supplying the AUX BUS and UNIT 2 STBY XFMR suppyling the STBY BUS
  - (5) UNIT 2 STBY XFMR suppyling the STBY BUS and the AUX BUS

5.1 COMPLETE Required ESF Power Train Data Sheet 1 through 3 by performing the following steps.

5.1.1 RECORD actual breaker/disconnect positions for the 13.8 KV XFMRs, AUX BUS, STBY BUSES and from the 13.8 KV STBY BUS to the 480 VAC BUSES.

- RECORD “CLOSED” breaker/disconnect positions by drawing a line at an angle through the breaker. 
- RECORD “OPEN” breaker/disconnect positions by drawing a CIRCLE around the breaker. 



This example illustrates:
(3) UNIT 1 STBY XFMR suppyling the STBY BUS and the AUX BUS

NOTE

Unit 1 and Unit 2 control board mimics are different. Mimic locations for UNIT 1 STBY XFMR and UNIT 2 STBY XFMR are opposite.

- In Unit 1, UNIT 1 STBY XFMR is on the left.
- In Unit 2, UNIT 2 STBY XFMR is on the left.

5.1.2 CIRCLE actual breaker positions for the selected XFMR lineup in the **DESIGNATED** Class 1E 4160 VAC Bus Power Source Table.

5.1.3 RECORD a "✓" above the 13.8 KV XFMR lineup designated as the class 1E 4160 VAC bus power source.

DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3) ✓	(4)	(5)
	(1) UNIT AUX XFMR	(2) UNIT 1 STBY XFMR	(3) UNIT 1 STBY XFMR	(4) UNIT 2 STBY XFMR	(5) UNIT 2 STBY XFMR
UAT TO AUX BUS 1F(2F) SUPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1F(2F) SUPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1F(2F) SUPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED

This example illustrates:
(3) UNIT 1 STBY XFMR suppying the STBY BUS and the AUX BUS

5.1.4 ENSURE the 13.8 KV XFMR lineup designated as the class 1E 4160 VAC bus power source meets the acceptance criteria in steps 6.1 for Modes 1, 2, 3 and 4.

5.1.5 CIRCLE actual breaker positions in the **REQ'D** BREAKER/DISC POSITION column for the Technical Specification electrical lineup from the 13.8 KV STBY BUS to the 480 VAC BUSES.

5.1.6 ENSURE the acceptance criteria in steps 6.3 for Modes 1, 2, 3 and 4 is met by VERIFYING that ALL breakers in the **REQ'D** BREAKER/DISC POSITION column are circled.

5.2 COMPLETE ESF Power Availability Data Sheet 4 through 7 by circling OR recording actual breaker/disconnect positions (e.g. OPEN, CLOSED, ON, OFF, etc.).

5.3 RECORD indicated voltages on Data Sheet 8, Bus and Charger Voltage Data.

6.0 Acceptance Criteria

NOTE

- Addendum 2, Two Physically Independent Circuits, provides a drawing of rightaways and offsite circuits to aide in the definition of "two physically independent circuits".
- Loss of one 13.8 KV Standby Bus to 4.16 KV ESF bus line constitutes loss of one required offsite source. (Reference 8.2)
- Loss of two 13.8 KV Standby busses to 4.16 KV ESF bus lines constitutes loss of two required offsite sources. (Reference 8.2)
- The preceding notes also apply when the 4.16 KV ESF bus is not energized by the 13.8 KV XFMR.

6.1 Two physically independent circuits exist between the offsite transmission network and onsite Class 1E Distribution System as determined from Data Sheet 1, 2, 3, and 8. (Technical Specification 3.8.1.1.a [ITS 3.8.1.a], 4.8.1.1.1.a [ITS SR 3.8.1.1]).

- Two 13.8 KV XFMRs
  - Unit Aux XFMR
  - Unit 1 Stby XFMR
  - Unit 2 Stby XFMR
- Three 13.8 KV Standby Buses energizing the 4.16 KV ESF bus lines.

6.2 345 KV Switchyard North or South Bus planned (preventative or corrective maintenance) outages are **NOT** in progress. (Technical Specification 3.8.1.1.a [ITS 3.8.1.a], 4.8.1.1.1.a [ITS SR 3.8.1.1], Ref. 8.10). (Addendum 1)

6.3 Each ESF 4.16 KV bus E1A, E1B and E1C (E2A, E2B and E2C) is energized and supplying it's respective 480V Load Centers E1A1, E1A2, E1B1, E1B2, E1C1 and E1C2 (E2A1, E2A2, E2B1, E2B2, E2C1 and E2C2) via it's respective load center transformers as determined from Data Sheet 1, 2, 3, and 8.
(Technical Specification 3.8.3.1a, b, and c [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.10.1]).

6.4 Each 120 Volt AC Distribution panel DP1201, DP001, DP1202, DP1203, DP1204 and DP002 is energized from its associated inverter AND each inverter is connected to its respective D.C. Bus E1A11, E1D11, E1B11 and E1C11 (E2A11, E2D11, E2B11 and E2C11) as determined from Data Sheet 4, 5, 6, 7, and 8.
(Technical Specification 3.8.3.1d, e, f and g [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.8.1, SR 3.8.10.1]).

6.5 Each 125 Volt DC bus E1A11, E1B11, E1C11 and E1D11 (E2A11, E2B11, E2C11 and E2D11) is energized from its associated battery bank E1A11, E1B11, E1C11 and E1D11 (E2A11, E2B11, E2C11 and E2D11) as determined from Data Sheets 4, 5, 6, 7, and 8.
(Technical Specification 3.8.3.1h, i, j and k [ITS 3.8.10], 4.8.3.1 [ITS SR 3.8.10.1]).

6.6 Channels I, II, III and IV 125V Battery Banks are each being supplied from ONE of their two associated chargers.
(Technical Specification 3.8.2.1 [ITS 3.8.5], 4.8.2.1.a.2 [ITS SR 3.8.5.1]).

7.0 Documentation

7.1 Data Package Cover Sheet

7.2 Data Sheet 1, Required ESF Power Train A

7.3 Data Sheet 2, Required ESF Power Train B

7.4 Data Sheet 3, Required ESF Power Train C

7.5 Data Sheet 4, Channel I, 120 VAC and 125 VDC Vital Bus Availability

7.6 Data Sheet 5, Channel II, 120 VAC and 125 VDC Vital Bus Availability

7.7 Data Sheet 6, Channel III, 120 VAC and 125 VDC Vital Bus Availability

7.8 Data Sheet 7, Channel IV, 120 VAC and 125 VDC Vital Bus Availability

7.9 Data Sheet 8, Bus and Charger Voltage Data

8.0 References

8.1 Single Line Diagrams:

8.1.1 9-E-AAAA-01 #1(#2), Main Generator Unit & Standby Xfmr Protection & Metering

8.1.2 9-E-AAAB-01 #1(#2), Class 1E 125V DC & 120V Vital AC, Non-Class 1E 48V, 125V, 250V DC & 120V Vital AC, Non-Class 1E Inverter Power for Computer 208/120V AC Regulated Power

8.1.3 9-E-DJAA-01 #1(#2), 125V DC Class 1E Distribution Swbd E1A11(E2A11) (Channel I)

8.1.4 9-E-DJAB-01 #1(#2), 125V DC Class 1E Distribution Swbd E1D11(E2D11) (Channel II)

8.1.5 9-E-DJAC-01 #1(#2), 125V DC Class 1E Distribution Swbd E1B11(E2B11) (Channel III)

8.1.6 9-E-DJAD-01 #1(#2), 125V DC Class 1E Distribution Swbd E1C11(E2C11) (Channel IV)

8.1.7 9-E-VAAA-01 #1(#2), Vital 120V AC Distribution Panels DP001, DP1201 (Channel I)

8.1.8 9-E-VAAB-01 #1(#2), Vital 120V AC Distribution Panels DP1202, DP1203 (Channel II & III)

8.1.9 9-E-VAAC-01 #1(#2), Vital 120V AC Distribution Panels DP002, DP1204 (Channel IV)

8.2 Technical Specifications 3.8.1.1 [ITS 3.8.1], 3.8.2.1 [ITS 3.8.5], and 3.8.3.1 [ITS 3.8.10].

8.3 UFSAR Section 8.3, Onsite Power Systems

8.4 SPR 921204, Class 1E Electrical System Min/Max Voltages

8.5 SR 189442, Class 1E Electrical System Min/Max Voltages

8.6 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test

8.7 ST-AE-HL-94678, South Texas Project, Units 1 and 2 - Amendment NOS. 85 and 72 to Facility Operating License NOS. NPF-76 and NPF-80 (Extended AOT ‘s for ECW, ECHW and SDG’s).

8.8 CREE 96-9996 Capability of the Emergency Transformer.

8.9 CREE 97-4343-8 STP’s interpretation of 10CFR50 Appendix A, GDC-17, as related to Offsite Power Sources.

8.10 CREE 99-1981-1, HL&P Final Report on STP 345 KV Switchyard Transient Stability Impact on Existing CREE 97-4343-8.

8.11 CREE 99-3416, Evaluate DC voltage used in 0PSP03-EA-0002.

8.12 LER 99-003, Entry into Technical Specification 3.0.3 following a partial LOOP.

9.0 Support Documents

9.1 Addendum 1, 345 KV Switchyard Normal Operation

9.2 Addendum 2, Two Physically Independent Circuits

9.3 Data Package Cover Sheet

9.4 Data Sheet 1, Required ESF Power Train A

9.5 Data Sheet 2, Required ESF Power Train B

9.6 Data Sheet 3, Required ESF Power Train C

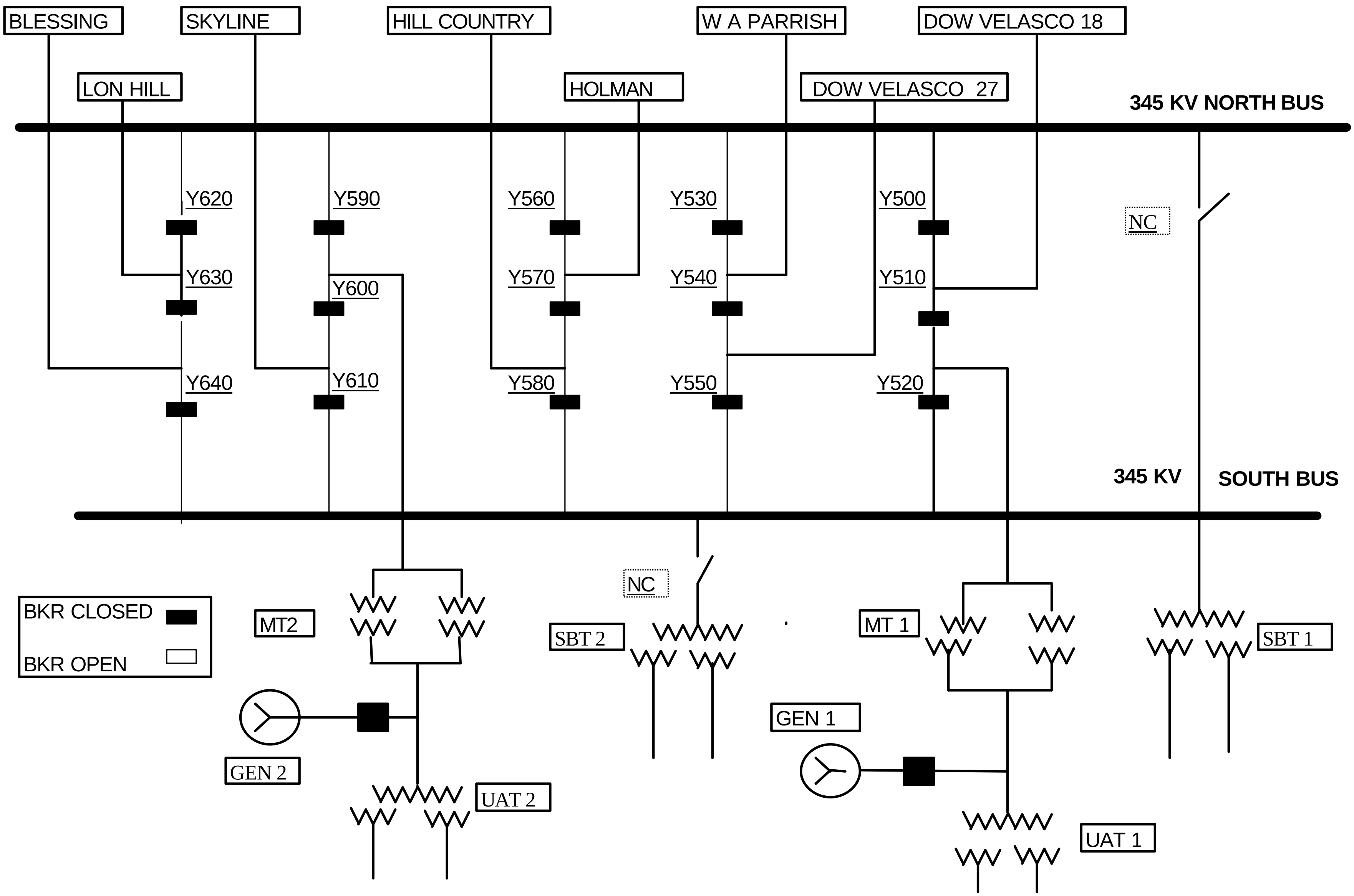
9.7 Data Sheet 4, Channel I, 120 VAC and 125 VDC Vital Bus Availability

9.8 Data Sheet 5, Channel II, 120 VAC and 125 VDC Vital Bus Availability

9.9 Data Sheet 6, Channel III, 120 VAC and 125 VDC Vital Bus Availability

9.10 Data Sheet 7, Channel IV, 120 VAC and 125 VDC Vital Bus Availability

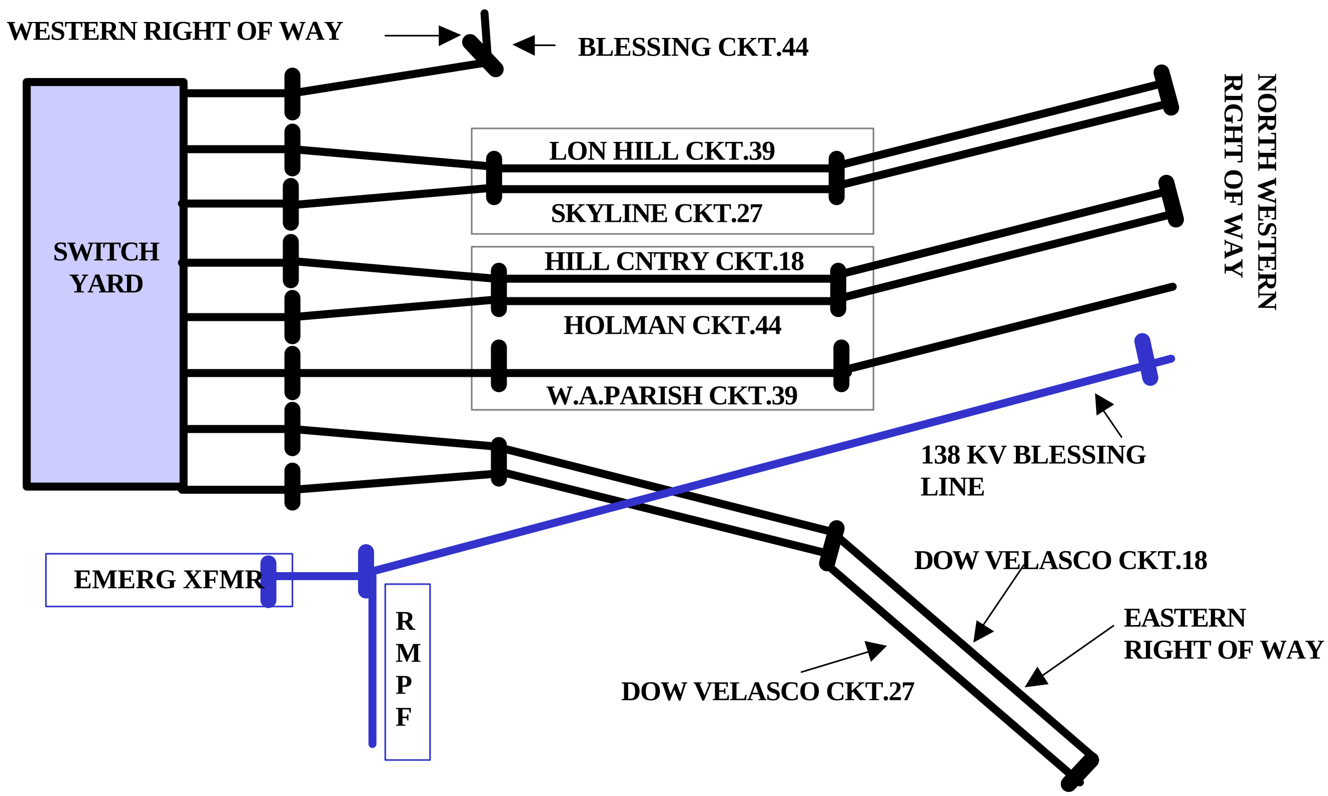
9.11 Data Sheet 8, Bus and Charger Voltage Data


BLESSING
SKYLINE
HILL COUNTRY
W A PARRISH
DOW VELASCO 18
LON HILL
HOLMAN
DOW VELASCO 27
345 KV NORTH BUS
Y620
Y590
Y560
Y530
Y500
NC
Y630
Y600
Y570
Y540
Y510
Y640
Y610
Y580
Y550
Y520
345 KV
SOUTH BUS
NC
BKR CLOSED
BKR OPEN
MT2
SBT 2
MT 1
SBT 1
GEN 1
GEN 2
UAT 2
UAT 1

1) At all times, at least two physically independent circuits must be in service. (Technical Specification 3.8.1.1, [ITS 3.8.1])

   a) This is an NRC requirement.

   b) Note that the 400 ft. wide "common corridor" right-of-way out of STP property are considered as two independent right-of-ways: one with circuits to Lon Hill and Sky Line and the other with circuits to W.A. Parish, Hill Country, and Hollman. (Reference UFSAR 8.2.1)



   c) Examples of "at least two physically independent circuits":

      - Lon Hill Ckt.39 and Hollman Ckt.44 (circuits are in different right-of-ways and the circuits do not share the same towers) (400 ft. wide "common corridor" right-of-way out of STP property can be considered as two independent right-of-ways)

      - Lon Hill Ckt.39 and Dow Velasco Ckt.18 (circuits are in different right-of-ways and the circuits do not share the same towers.)

UNIT 1 **(Circle Unit Performing Lineup)** **UNIT 2**

NOTE

- IF this surveillance is being performed to satisfy Technical Specification Surveillance Requirement 4.8.1.1.1.a [ITS SR 3.8.1.1], THEN Data Sheet 1 through 8 SHALL be performed.
- IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY Data Sheet 1, 2, 3, and 8 are required to be performed.
- Permission to start test is required only for manipulation of a system.

1. Data Takers and Procedure Performers:

   Robert Miller ________________

   ________________ ________________

2. Reason for Test:

   (Mode 1,2,3 & 4) 4.8.1.1.1.a [ITS SR 3.8.1.1], 4.8.2.1.a.2 [ITS SR 3.8.5.1], 4.8.3.1 [ITS SR 3.8.8.1], 4.8.3.1 [ITS SR 3.8.10.1]

   ________ Periodic Test

   ✓ Other (explain) *To verify compliance with Electrical Technical Specification 3/4.8.1.1.b*

3. Test Results:

   ________ Acceptable ✓ Unacceptable

   IF unacceptable, THEN immediately INFORM the Shift Supervisor.

   Robert Miller *6/1/2003* *0600*
   Test Performer Date Time

4. Test Results Second Review:

   ________ Acceptable ________ Unacceptable (complete section below)

   Refer to Technical Specification __________ LCO Action Requirements

   Is this condition a potentially reportable occurrence? _____ Yes

   _____ No

   Should an LCO Action Statement be entered? _____ Yes

   _____ No

   Explain____

   ____

   ____

   ____

   ____

   ____

   ____

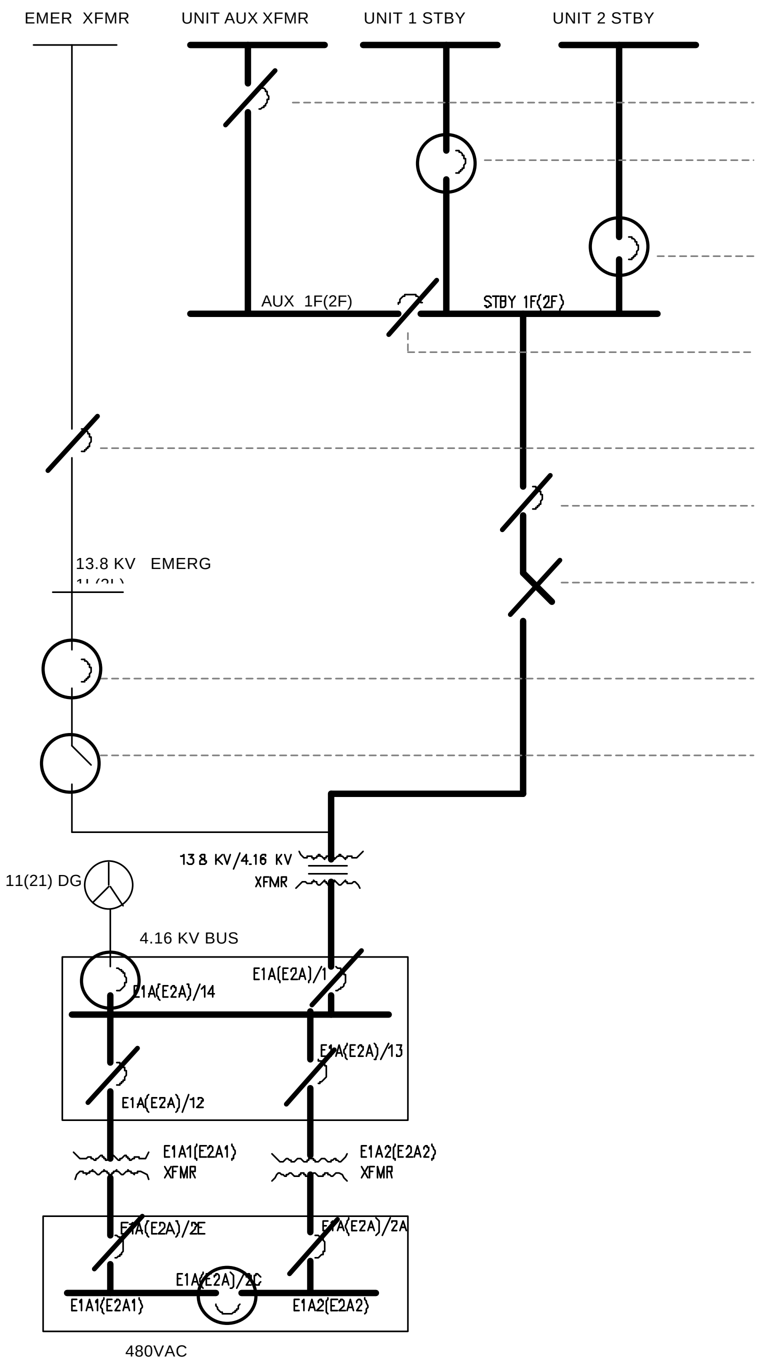
   ______________________________ ________ ________
   Shift Supervisor Date Time

5. Data Review:

   ______________________________ ________ ________
   Surveillance Coordinator Date Time

This procedure, when complete, SHALL be retained for five years.

UNIT 1 (Circle Unit Performing Data Sheet) UNIT 2



DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1) ✓	(2)	(3)	(4)	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1F(2F) SUPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1F(2F) SUPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1F(2F) SUPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1F(2F) TIE	CLOSED	OPEN	N/A	OPEN	N/A

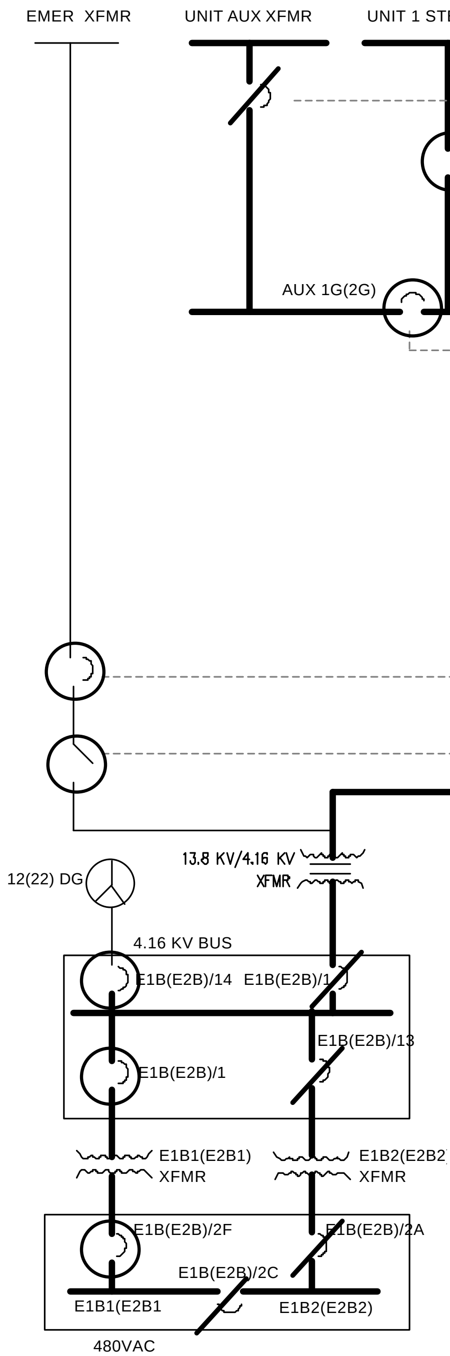
BREAKER/DISC POSITION	REQ'D	UNSAT
EMER XFMR TO BUS 1K/1L (2K/2L) SPLY	N/A	N/A
STBY BUS 1F(2F) TO XFMR E1A(E2A) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1F(2F) TO XFMR E1A(E2A) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L/2L TO XFMR E1A(E2A) BKR SW-EMER	N/A	N/A
EMER BUS 1L/2L TO XFMR E1A(E2A) DISC SW-EMER	N/A	N/A
SPLY BKR E1A(E2A)/1	CLOSED	OPEN
DG OUTP BKR E1A(E2A)/14	N/A	N/A
SPLY BKR E1A(E2A)/12	CLOSED	OPEN
SPLY BKR E1A(E2A)/13	CLOSED	OPEN
OUTP BKR E1A(E2A)/2E	CLOSED	OPEN
OUTP BKR E1A(E2A)/2A	CLOSED	OPEN
CROSS TIE E1A(E2A)/2C	OPEN	CLOSED

Note 1, ▬▬▬ Indicates Technical Specification related electrical lineup.
Note 2, Required per Technical Specifications, EITHER UNIT AUX XFMR OR UNIT 1 STBY XFMR OR UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1A(E2A).

Robert Miller	*6/1/2003*	*0530*
PERFORMED BY	DATE	TIME

Data Sheet 2	Required ESF Power Train B	Page 1 of 1

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3)	(4) ✓	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1G(2G) SPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1G(2G) SPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1G(2G) SPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1G(2G) TIE	CLOSED	OPEN	N/A	OPEN	N/A

BREAKER/DISC POSITION	REQ'D	UNSAT
STBY BUS 1G(2G) TO XFMR E1B(E2B) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1G(2G) TO XFMR E1B(E2B) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L(2L) TO XFMR E1B(E2B) BKR SW-EMER	N/A	N/A
EMER BUS 1L(2L) TO XFMR E1B(E2B) BKR DISC SW-EMER	N/A	N/A
SPLY BKR E1B(E2B)/1	CLOSED	OPEN
DG OUTP BKR E1B(E2B)/14	N/A	N/A
SPLY BKR E1B(E2B)/12	CLOSED	OPEN
SPLY BKR E1B(E2B)/13	CLOSED	OPEN
OUTP BKR E1B(E2B)/2F	CLOSED	OPEN
OUTP BKR E1B(E2B)/2A	CLOSED	OPEN
CROSS TIE E1B(E2B)/2C	OPEN	CLOSED

Notes:

Unit 1 STBY Transformer OOS. (Electrical Transient)

ESF D/G #12 OOS. (Lube oil failure)

480 VAC Load Center E1B1 Normal Supply Breaker tripped open, bus being supplied from Load Center E1B2 through the cross-tie

Note 1, ▬▬▬ Indicates Technical Specification related electrical lineup.

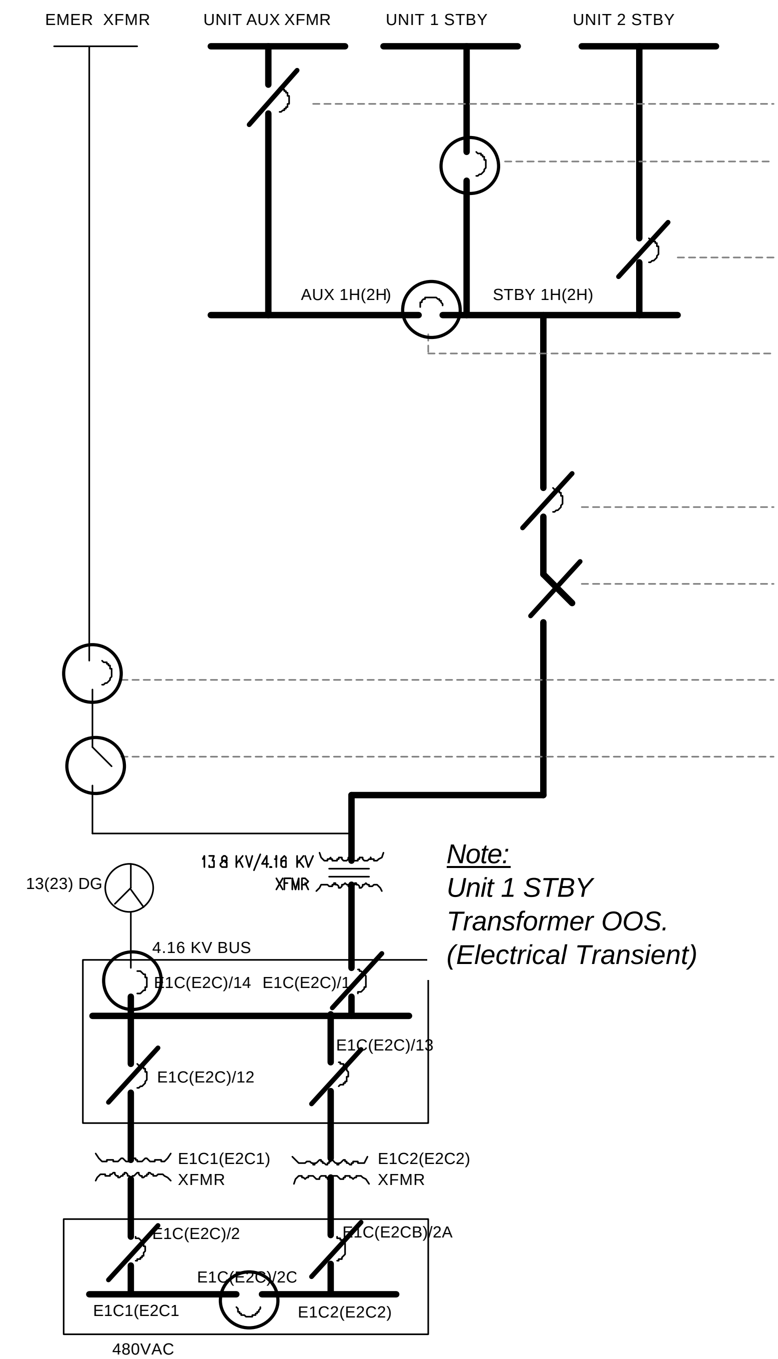
Note 2, Required per Technical Specifications, EITHER UNIT AUX XFMR OR UNIT 1 STBY XFMR OR UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1B(E2B).

Robert Miller	*6/1/2003*	*0540*
PERFORMED BY	DATE	TIME

This procedure, when complete, SHALL be retained for five years.

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**

DESIGNATE (✓) Class 1E 4160 VAC Bus Power Source (note 2)	(1)	(2)	(3)	(4) ✓	(5)
	UNIT AUX XFMR	UNIT 1 STBY XFMR	UNIT 1 STBY XFMR	UNIT 2 STBY XFMR	UNIT 2 STBY XFMR
UAT TO AUX BUS 1H(2H) SPLY	CLOSED	CLOSED	OPEN	CLOSED	OPEN
STBY XFMR 1 TO STBY BUS 1H(2H) SPLY	OPEN	CLOSED	CLOSED	OPEN	OPEN
STBY XFMR 2 TO STBY BUS 1H(2H) SPLY	OPEN	OPEN	OPEN	CLOSED	CLOSED
AUX TO STBY BUS 1H(2H) TIE	CLOSED	OPEN	N/A	OPEN	N/A



BREAKER/DISC POSITION	REQ'D	UNSAT
STBY BUS 1H(2H) TO XFMR E1C(E2C) BKR SW-NORM	CLOSED	OPEN
STBY BUS 1H(2H) TO XFMR E1C(E2C) DISC SW-NORM	CLOSED	OPEN
EMER BUS 1L(2L) TO XFMR E1C(E2C) BKR SW-EMER	N/A	N/A
EMER BUS 1L(2L) TO XFMR E1C(E2C) BKR DISC SW-EMER	N/A	N/A
SPLY BKR E1C(E2C)/1	CLOSED	OPEN
DG OUTP BKR E1C(E2C)/14	N/A	N/A
SPLY BKR E1C(E2C)/12	CLOSED	OPEN
SPLY BKR E1C(E2C)/13	CLOSED	OPEN
OUTP BKR E1C(E2C)/2E	CLOSED	OPEN
OUTP BKR E1C(E2C)/2A	CLOSED	OPEN
CROSS TIE E1C(E2C)/2C	OPEN	CLOSED

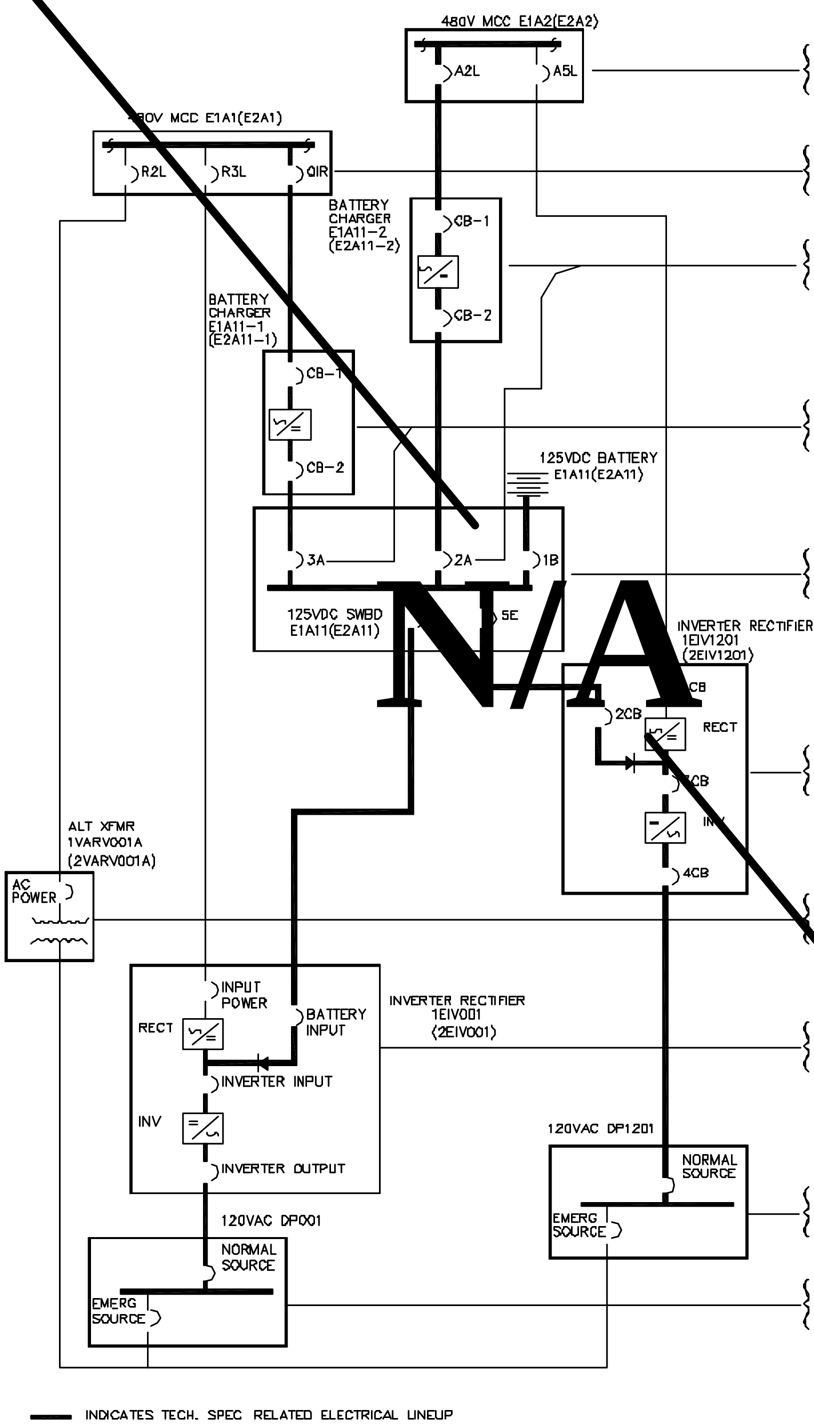
Note 1, ▬▬ Indicates Technical Specification related electrical lineup.
Note 2, Required per Technical Specifications, <u>EITHER</u> UNIT AUX XFMR <u>OR</u> UNIT 1 STBY XFMR <u>OR</u> UNIT 2 STBY XFMR **SHALL** be the power source for 4.16 KV Bus E1C(E2C).

Robert Miller	*6/1/2003*	*0545*
PERFORMED BY	DATE	TIME

Data Sheet 4	Channel I, 120 VAC and 125 VDC Vital Bus Availability	Page 1 of 1

UNIT 1 (Circle Unit Performing Data Sheet) **UNIT 2**

CHANNEL I VITAL BUS SCHEMATIC



N/A

BREAKER POSITION

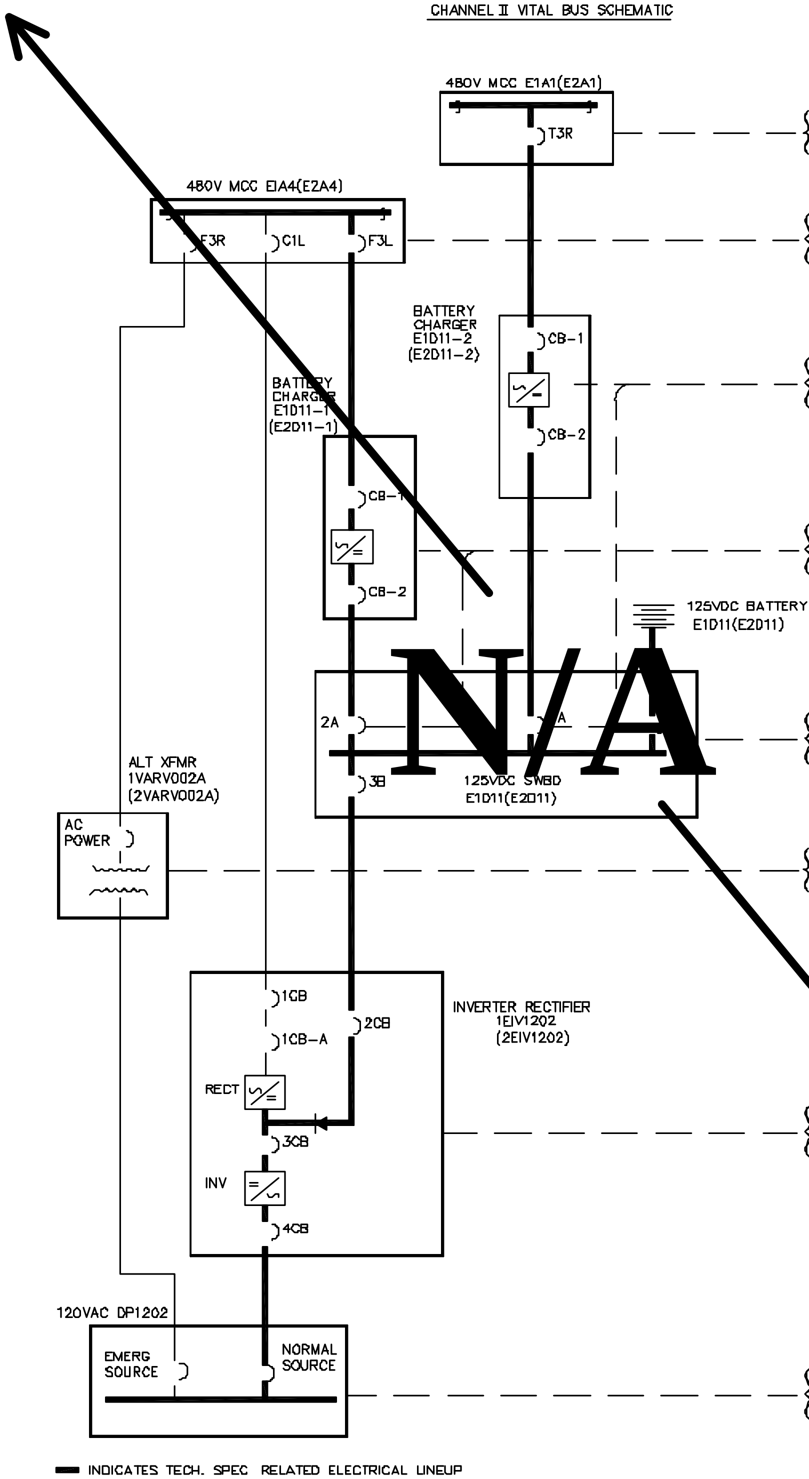
	NORMAL	ABNORMAL
"E1A2(E2A2)/A2L"	ON	OFF
"E1A2(E2A2)/A5L"	ON	OFF
"E1A1(E2A1)/R2L"	ON	OFF
"E1A1(E2A1)/R3L"	ON	OFF
"E1A1(E2A1)/QIR"	ON	OFF
E1A11(E2A11)-2 "CB-1"		
E1A11(E2A11)-2 "CB-2"		
"E1A11(E2A11)/2A"		
E1A11(E2A11)-1 "CB-1"		
E1A11(E2A11)-1 "CB-2"		
"E1A11(E2A11)/3A"		
"E1A11(E2A11)/1B"	CLOSED	OPEN
"E1A11(E2A11)/5D"	ON	OFF
"E1A11(E2A11)/5E"	ON	OFF
1E1V1201(2E1V1201) "1CB"	ON	OFF
1E1V1201(2E1V1201) "2CB"	ON	OFF
1E1V1201(2E1V1201) "3CB"	ON	OFF
1E1V1201(2E1V1201) "4CB"	ON	OFF
"AC POWER"	ON	OFF
1EIV001(2E1V001) "INPUT POWER"	ON	OFF
1EIV001(2E1V001) "BATTERY INPUT"	ON	OFF
1EIV001(2E1V001) "INVERTER INPUT"	ON	OFF
1EIV001(2E1V001) "INVERTER OUTPUT"	ON	OFF
DP1201 "NORMAL SOURCE"	ON	OFF
DP1201 "EMERG SOURCE"	OFF	ON
"DP001 NORMAL SOURCE"	ON	OFF
"DP001 EMERG SOURCE"	OFF	ON

PERFORMED BY ____________ DATE ________ TIME ________

ADI00608A(01/22/02)

UNIT 1 **(Circle Unit Performing Data Sheet)** UNIT 2

CHANNEL II VITAL BUS SCHEMATIC



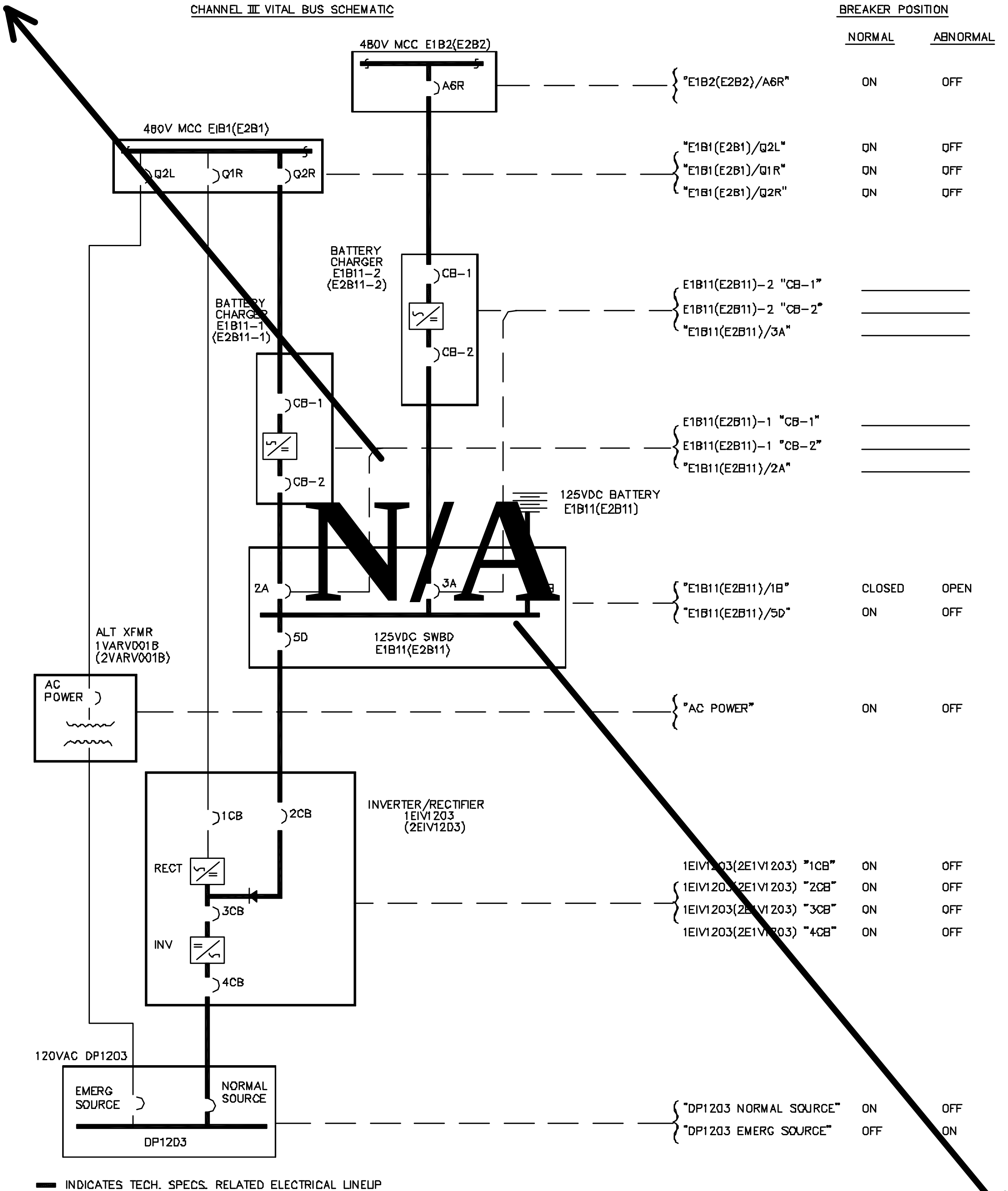
BREAKER POSITION

	NORMAL	ABNORMAL
"E1A1(E2A1)/T3R	ON	OFF
"E1A4(E2A4)/F3R"	ON	OFF
"E1A4(E2A4)/C1L"	ON	OFF
"E1A4(E2A4)/F3L"	ON	OFF
E1D11(E2D11)-2 "CB-1"	____________	
E1D11(E2D11)-2 "CB-2"	____________	
"E1D11(E2D11)/3A"	____________	
E1D11(E2D11)-1 "CB-1"	____________	
E1D11(E2D11)-1 "CB-2"	____________	
"E1D11(E2D11)/2A"	____________	
"E1D11(E2D11)/1B"	CLOSED	OPEN
"E1D11(E2D11)/3B"	ON	OFF
"AC POWER"	ON	OFF
1EIV1202(2E1V1202) "1CB-A"	ON	OFF
1EIV1202(2E1V1202) "1CB"	ON	OFF
1EIV1202(2E1V1202) "2CB"	ON	OFF
1EIV1202(2E1V1202) "3CB"	ON	OFF
1EIV1202(2E1V1202) "4CB"	ON	OFF
"DP1202 NORMAL SOURCE"	ON	OFF
"DP1202 EMERG SOURCE"	OFF	ON

ADI00808D(01/21/02)

______________________ PERFORMED BY ____________ DATE ____________ TIME

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**

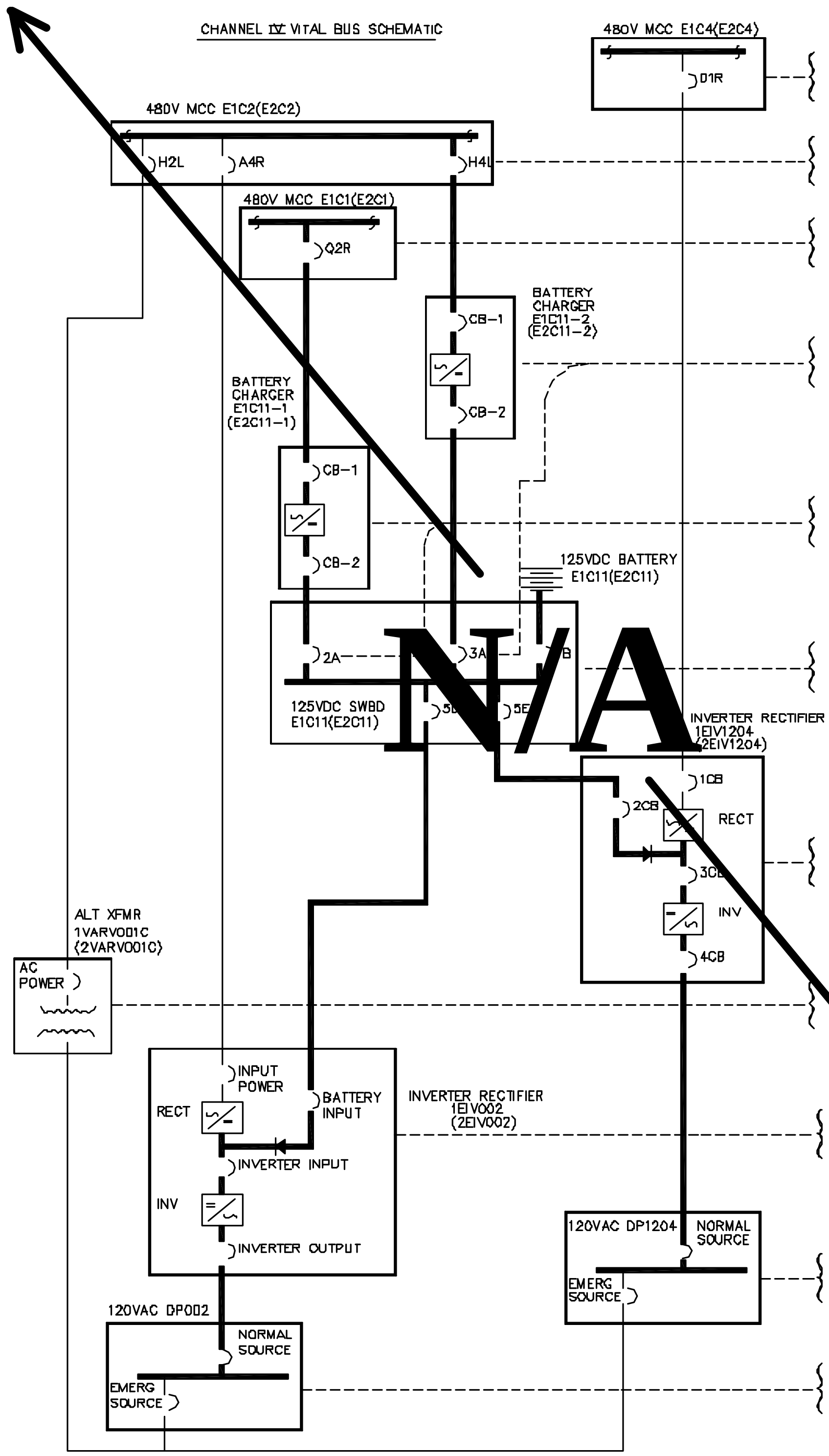


PERFORMED BY ____________ DATE ____________ TIME ____________

AD10060BC (01/21/02)

This procedure, when complete, SHALL be retained for five years.

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**



	BREAKER POSITION	
	NORMAL	ABNORMAL
"E1C4(E2C4)/D1R"	ON	OFF
"E1C2(E2C2)/H2L"	ON	OFF
"E1C2(E2C2)/A4R"	ON	OFF
"E1C2(E2C2)/H4L"	ON	OFF
"E1C1(E2C1)/Q2R"	ON	OFF
E1C11(E2C11)-2 "CB-1"		
E1C11(E2C11)-2 "CB-2"		
"E1C11(E2C11)/3A"		
E1C11(E2C11)-1 "CB-1"		
E1C11(E2C11)-1 "CB-2"		
"E1C11(E2C11)/2A"		
"E1C11(E2C11)/1B"	CLOSED	OPEN
"E1C11(E2C11)/5D"	ON	OFF
"E1C11(E2C11)/5E"	ON	OFF
1EIV1204(2E1V1204) "1CB"	ON	OFF
1EIV1204(2E1V1204) "2CB"	ON	OFF
1EIV1204(2E1V1204) "3CB"	ON	OFF
1EIV1204(2E1V1204) "4CB"	ON	OFF
"AC POWER"	ON	OFF
1EIV002(2E1V002) "INPUT POWER"	ON	OFF
1EIV002(2E1V002) "BATTERY INPUT"	ON	OFF
1EIV002(2E1V002) "INVERTER INPUT"	ON	OFF
1EIV002(2E1V002) "INVERTER OUTPUT"	ON	OFF
DP1204 "NORMAL SOURCE"	ON	OFF
DP1204 "EMERG SOURCE"	OFF	ON
"DP002 NORMAL SOURCE"	ON	OFF
"DP002 EMERG SOURCE"	OFF	ON

▬ INDICATES TECH. SPEC. RELATED ELECTRICAL LINEUP

PERFORMED BY ____________ DATE ________ TIME ________

ADI00608B(01/21/02)

UNIT 1 **(Circle Unit Performing Data Sheet)** **UNIT 2**

REMARKS

DEVICE NUMBER	DESCRIPTION	REMARKS

1. Operators Participating in Performance of Data Sheet 8.

Operator	Time	Date
Robert Miller	*0550*	*6/1/2003*

2. Data Sheet 8, Bus and Charger Voltage Data Completed By:

Robert Miller *0550* *6/1/2003*
Operator Time Date

3. Data Sheet 8, Bus and Charger Voltage Data Reviewed By:

____________________ ________ ________
Unit Supervisor Time Date

1. IF this surveillance is being performed to satisfy the requirements of Technical Specification 3.8.1.1 ACTION Items a, b or c [ITS 3.8.1 CONDITION A or B], THEN ONLY those readings indicated with an asterisk (*) are required to be completed (Reference 8.2).

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

3. Determines the availability of the 138 KV Emergency Transformer for possible use during a Loss of Offsite Power. (3) This meets commitments made for the SDG, ECW and Essential Chilled Water Technical Specification Change. (Reference 8.7).

Table 1. 13.8 KV Bus Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
* Aux Bus 1F(2F) (CP010)	*14.0* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1F(2F) (CP010)	*14.2* KV	12.8 - 14.5 KV	*RM*
* Aux Bus 1G(2G) (CP010)	*14.1* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1G(2G) (CP010)	*14.1* KV	12.8 - 14.5 KV	*RM*
* Aux Bus 1H(2H) (CP010)	*14.0* KV	12.8 - 14.5 KV	*RM*
* Stby Bus 1H(2H) (CP010)	*14.3* KV	12.8 - 14.5 KV	*RM*
(3) Emer Bus 1L(2L) (CP010)	*14.4* KV	12.8 - 14.5 KV	*RM*
* 4.16 KV Bus E1A(E2A) (CP003)	*4.2* KV	3.9 - 4.4 KV	*RM*
* 4.16 KV Bus E1B(E2B) (CP003)	*4.2* KV	3.9 - 4.4 KV	*RM*
* 4.16 KV Bus E1C(E2C) (CP003)	*4.3* KV	3.9 - 4.4 KV	*RM*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1]) (**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 2. Channel I Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1A1(E2A1) (EAB 10' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1A2(E2A2) (EAB 10' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1A11-1(E2A11-1) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1A11-2(E2A11-2) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1A11(E2A11) (EAB 10', Rm 007)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP001 (EAB 10', Rm 007)	*N/A* VAC	117 - 122 VAC	*N/A*
Vital AC Panel DP1201 (EAB 10', Rm 007)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 3. Channel II Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
**Charger E1D11-1(E2D11-1) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
**Charger E1D11-2(E2D11-2) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1D11(E2D11) (EAB 10', Rm 009)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP1202 (EAB 10', Rm 009)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 4. Channel III Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1B1(E2B1) (EAB 35', Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1B2(E2B2) (EAB 35', Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1B11-1(E2B11-1) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1B11-2(E2B11-2) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1B11(E2B11) (EAB 35', Rm 213)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP1203 (EAB 35', Rm 213)	*N/A* VAC	115 - 125 VAC	*N/A*

1. Technical Specification Operability for Battery Banks and associated Chargers are verified every 7 days per 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test, with a parameter of 129 - 132 Volts. (Technical Specification 4.8.2.1 [ITS SR 3.8.5.1])(**)

2. IF any voltage readings are NOT within Satisfactory Range, THEN immediately NOTIFY the Unit Supervisor or Shift Supervisor. (References 8.4 and 8.5)

Table 5. Channel IV Bus and Charger Voltage Data

BUS/CHARGER (LOCATION)	RECORDED TEST VALUE	SATISFACTORY RANGE	INITIAL
480 V LC E1C1(E2C1) (EAB 60' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
480 V LC E1C2(E2C2) (EAB 60' Swgr Rm)	*N/A* VAC	443 - 506 VAC	*N/A*
** Charger E1C11-1(E2C11-1) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
** Charger E1C11-2(E2C11-2) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
DC SWITCHBOARD E1C11(E2C11) (EAB 60', Rm 319)	*N/A* VDC	129.2 – 131.8 VDC	*N/A*
Vital AC Panel DP002 (EAB 60', Rm 319)	*N/A* VAC	117 - 122 VAC	*N/A*
Vital AC Panel DP1204 (EAB 60', Rm 319)	*N/A* VAC	115 - 125 VAC	*N/A*

NUCLEAR TRAINING DEPARTMENT

JOB PERFORMANCE MEASURE

TITLE:	**DECLARE EMERGENCY ACTION LEVEL**
JPM NO.:	**A8**
REVISION:	**2**
LOCATION:	**Simulator**
NOTE:	**THIS JPM TO BE PERFORMED AT THE CONCLUSION OF SCENARIO 1**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: DECLARE EMERGENCY ACTION LEVEL

JPM No.: A8

Rev. No.: 2

Task No.: 74026 (SRO), Classify emergency conditions.

STP Objective: Given an emergency condition and a copy of the emergency classification tables from 0ERP01-ZV-IN01, Emergency Classification, classify the emergency condition.

Related K/A Reference: 2.4.41 [4.0], Knowledge of the emergency action level thresholds and classifications.

References: 0ERP01-ZV-IN01, Rev. 5, Emergency Classification
0ERP01-ZV-SH01, Rev. 16, Shift Supervisor

Task Normally Completed By: SRO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: YES (15 minutes based on E-Plan Evaluation criteria)

Alternate Path JPM: NO

Validation Time: 15 minutes

Required Materials (Tools/Equipment): NONE

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 was at 100% power when a Steam Generator Tube Rupture (SGTR) occurred on SG 1B that resulted in a Reactor Trip and Safety Injection. These are the basic conditions associated with the exam scenario just completed.

The Simulator is in FREEZE (not running) with the conditions that existed at the end of the exam scenario and is available for you to use in your Emergency Plan Classification determination. No Control Board controls are functional, however computer system screens may be selected to obtain additional information.

INITIATING CUE:

You are the Unit 1 Shift Supervisor. Based on the CURRENT, EXISTING Plant (simulator) conditions, classify the event at its **MINIMUM** Emergency Action Level.

This JPM is time-critical. The time limit starts when you (the applicant) understands the Initial Conditions and Initiating Cue.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

An ALERT is declared based on Emergency Action Level FA1, Any Loss or Any Potential Loss of Fuel Clad or RCS.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

NONE

NOTES:

$ This JPM is to be performed in the Simulator immediately following exam Scenario #1. The plant conditions the Emergency Action Level declaration is based on are those that exist at the time Scenario #1 is stopped. The 'Initial Conditions' given in this JPM represent the major plant conditions of Scenario #1 relevant to the Emergency Plan Classification.

$ No handouts are provided for the performer. The student is to use the copy of the Emergency Plan in the Simulator.

$ A Key is provided for the evaluator with the applicable pages of 0ERP01-ZV-IN01, EMERGENCY CLASSIFICATION. **Do NOT hand this out to the student.**

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0ERP01-ZV-IN01, Emergency Classification.

Standard:

Obtains a copy of 0ERP01-ZV-IN01, Emergency Classification.

Comment:

A procedural handout will not be provided. The student is to use the Emergency Plan available in the Simulator

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2 (C)

Classify the event in accordance with Addendum 1 in 0ERP01-ZV-IN01.

Standard:

Classifies the event as an ALERT based on Initiating Condition FA1, Any Loss or Any Potential Loss of Fuel Clad or RCS.

Comment:

$ The ALERT classification is based on Recognition Category F, Fission Product Barrier Degradation, for the RCS. Refer to the KEY for details of classification.

$ Addendum 2 of 0ERP01-ZV-IN01 may also be consulted as it gives bases information for the various Emergency Action Levels.

Cue:

If necessary, ensure the student understands he/she can tour the simulator and call up various computer displays as needed.

Notes:

This step must be completed within <u>15 minutes</u> of the time when the applicant understands the initial conditions and initiating cue.

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: A8, DECLARE EMERGENCY ACTION LEVEL

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature** __________________________

Date ____________________

JPM - HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EXAMINER WHEN YOU HAVE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

Unit 1 was at 100% power when a Steam Generator Tube Rupture (SGTR) occurred on SG 1B that resulted in a Reactor Trip and Safety Injection. These are the basic conditions associated with the exam scenario just completed.

The Simulator is in FREEZE (not running) with the conditions that existed at the end of the exam scenario and is available for you to use in your Emergency Plan Classification determination. No Control Board controls are functional, however computer system screens may be selected to obtain additional information.

INITIATING CUE:

You are the Unit 1 Shift Supervisor. Based on the CURRENT, EXISTING Plant (simulator) conditions, classify the event at its **MINIMUM** Emergency Action Level.

This JPM is time-critical. The time limit starts when you (the applicant) understands the Initial Conditions and Initiating Cue.

RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

Determine which combination of the three barriers are lost or have a potential loss and use the following matrix to classify the event. Also, an event (or multiple events) could occur which result in the conclusion that the loss or potential loss is IMMINENT (within 1 to 2 hours). In this IMMINENT loss situation use judgement and classify as if the thresholds are exceeded.

UNUSUAL EVENT (1-2)	ALERT (3-4)	SITE AREA EMERGENCY (5-8)	GENERAL EMERGENCY (9-10)
FU1 ANY Loss or ANY Potential Loss of Containment **FU2** Fuel Clad Degradation See SU6 **FU3** RCS Leakage - See SU7	**FA1** ANY Loss or ANY Potential Loss of Fuel Clad or RCS	**FS1** Loss of BOTH Fuel Clad and RCS OR Potential Loss of BOTH Fuel Clad and RCS OR Potential Loss of EITHER Fuel Clad or RCS AND Loss of ANY Additional Barrier	**FG1** Loss of ANY Two Barriers AND Potential Loss or Loss of Third Barrier

Determines an Alert Classification is warranted based on a value of 3 from Potential Loss of the RCS (see next page).

Operating Modes 1 through 4

Note:

1. At the Site Area Emergency level, there must be some ability to dynamic[...] y.
2. The ability to escalate to higher emergency classes as an event degrades r[...] t an increasing risk to public health and safety.

<u>Determination of Emergency Classification Level</u>

Select values from the top of the columns on the next page, which describe specific Fission Product Barrier degradation. Select the higher value that applies from each barrier. Add the values to arrive at the total challenge to the Fission Product Barriers. The emergency classification is determined from the range of values shown in parentheses in the table above.

RECOGNITION CATEGORY F
FISSION PRODUCT BARRIER DEGRADATION
INITIATING CONDITION MATRIX

EAL	FUEL CLAD		RCS		CONTAINMENT	
	POTENTIAL LOSS (3)	**LOSS (4)**	**POTENTIAL LOSS (3)**	**LOSS (4)**	**POTENTIAL LOSS (1)**	**LOSS (2)**
1	CSF Core Cooling - Orange OR Heat Sink - Red[2]	CSF Core Cooling - Red	CSF RCS Integrity – Red OR Heat Sink - Red[2]	CSF Core Cooling - Yellow with subcooling < 0 °F	CSF Containment - Red OR Core Cooling - Orange > 15 min.	–
2	RCS Activity Failed Fuel Monitor, RT-8039, equal to or greater than 870 µCi/ml	RCS Activity Dose Equivalent Iodine greater than 300 µCi/gm	RCS Leak Rate Unisolable leak exceeding the capacity of one centrifugal charging pump in the normal charging mode.	RCS Leak Rate Leak rate greater than CVCS System's ability to maintain RCS inventory as indicated by loss of RCS subcooling.	Containment Pressure Greater than 6% hydrogen concentration in containment OR containment pressure greater than 9.5 psig with neither containment spray nor RCFC running.	Containment Pressure Initial increase followed by rapid unexplained decrease OR containment pressure or sump level not increasing as expected with LOCA conditions.
3	Core Exit Thermocouple ≥ 708°F	Core Exit Thermocouple 1200°F	SG Tube Rupture SG Tube has ruptured and the primary to secondary leak rate is greater than the capacity of one centrifugal charging pump.	SG Tube Rupture SG Tube is ruptured and has a non-isolable secondary steam release	–	SG Tube Leak Primary to secondary leakage greater than 150 gpd through any one steam generator with direct secondary side leakage to atmosphere
4	Reactor Vessel Water Level Plenum level less then 20%	–	–	–	Containment Bypass VALID increase in reading on area or ventilation monitors in areas adjacent to the containment boundary with a known LOCA inside containment.	Containment Isolation Containment isolation signal **AND** Valves not closed **AND** A pathway to the environment exists.
5		…eater	–	RCB Rad Monitor RT-8050 or 8051 greater than 100 rem/hr	RCB Rad Monitor RT-8050 or 8051 greater than 1000 rem/hr	–

Determines a Potential Loss (3) of the RCS has occurred based on this criterion. Leakrate had to be > one CCP because of the need to trip the Reactor and initiate Safety Injection.

These do NOT apply because there is no secondary side leakage or release.

Note: 1. The Fuel Clad barriers and the RCS barrier are weighted more heavily than the Containment Barrier. Unusual Event Initiating Conditions (ICs) associated with RCS and Fuel Clad barriers are addressed under SU6 and SU7.

2. CSF indicators must be valid; outside the immediate control of the operator.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**DETERMINE AND ESTABLISH CONTAINMENT SPRAY PUMP REQUIREMENTS**
JPM NO.:	**C1**
REVISION:	**2**
LOCATION:	**UNIT 1, UNIT 2, OR SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title:	DETERMINE AND ESTABLISH CONTAINMENT SPRAY PUMP REQUIREMENTS
JPM No.:	C1
Rev. No:	2
STP Task:	82495 Respond to a Loss of Emergency Coolant Recirculation
STP Objective:	82495 Respond to a Loss of Emergency Coolant Recirculation Condition in accordance with POP05-EC-EC11.
Related K/A Reference:	013A1.06 [3.6/3.9], Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the ESFAS controls including: RWST level. 026A4.01 [4.5/4.3], Ability to manually operate and/or monitor in the control room: CSS controls.
References:	0POP05-EO-EC11, Rev. 12, Loss of Emergency Coolant Recirculation
Task Normally Completed By:	RO or SRO
Method of Testing:	Simulated
Location of Testing:	Control Room / Simulator
Time Critical Task:	NO
Alternate Path JPM:	NO
Validation Time:	20 minutes

Required Materials (Tools/Equipment):

Working copy of 0POP05-EO-EC11, Rev. 12, Loss of Emergency Coolant Recirculation if being performed in U1 or U2 Control Room (only need to include steps 5 through 14 and the CIP)

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

A Large Break LOCA has occurred in the RCS. Load Center E1(2)C2 lost power 10 minutes after the LOCA occurred. Control room operators were performing 0POP05-EO-EO10 when the RWST LO-LO Level alarm came in. The crew transitioned to 0POP05-EO-ES13, TRANSFER TO COLD LEG RECIRCULATION, however they were unable to open any of the Containment Sump to SI Suction Header Valves (SI-MOV-0016A, B, & C).

RCFC 11(21) B is tagged out for motor replacement. RCFC 12(22) B has tripped and cannot be restarted.

The Unit Supervisor has now transitioned to 0POP05-EO-EC11, LOSS OF EMERGENCY COOLANT RECIRCULATION, and has commenced cooldown per Step 5.

INITIATING CUE:

The Unit Supervisor directs you to continue with Step 6 and take appropriate actions per 0POP05-EO-EC11, LOSS OF EMERGENCY COOLANT RECIRCULATION.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Containment Spray Pumps are operated in accordance with 0POP05-EO-EC11 requirements.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.

THIS JPM CONTAINS 4 ATTACHMENTS THAT ARE TO BE HANDED OUT AFTER THE STUDENT HAS VERIFIED RELATED EQUIPMENT STATUS. THESE PAGES ARE IN BLUE, BUT ARE NOT TO BE HANDED OUT UNTIL CUED. THEY ARE IN A SEPARATE TAB IN YOUR EXAMINER BOOK TO AID IN KEEPING THEM SEPARATED UNTIL NEEDED.

NOTES:

1. This JPM will be performed statically in either the Unit 1 or Unit 2 Control Room or on a static simulator.

2. The Student Handout Copy of 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation, WILL NOT be the entire procedure. The Student Handout Copy will contain Steps 5, 6, 7, and 8. These are the steps that are requried for sucessful completion of this JPM.

3. The applicant may consult 0POP05-EO-ES13, Transfer to Cold Leg Recirculation before beginning. If he/she feels there's a discrepancy in the plant conditions based on actions in ES13, inform him/her that the current plant conditions are a result of appropriate operator actions and to proceed with the assigned task.

SIMULATOR SETUP:

1) Ensure Radio volume for both stations are set to a reasonable level.

2) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

3) Reset to the 100% power Storepoint and verify:

- Step counter position annunciator light is out
- Red light at the end of CP-010 is out

4) Check and clean the following procedures (JPM specific):

- 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation

5) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

6) Place the simulator in 'FREEZE'

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:
• Critical steps are identified by (C).
• Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME__________

<u>SAT/UNSAT</u> Performance Step: 1

Obtain a copy of 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation

Standard:

Obtains a copy of 0POP05-EO-EC11, Loss of Emergency Coolant Recirculation.

Comment:

1. Provide the applicant with a copy of the applicable sections of 0POP05-EO-EC11.
2. If this is being performed in the Simulator, applicant may use the controlled copy of the procedure in the Simulator.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Verify RCFCs Running.

Standard:

Identifies three (3) RCFCs are running:

_____ *RCFC 11(21)A* _____ *RCFC 12(22)A* _____ *RCFC 11(21)C*

Comment:

The table below is laid out in the same order as the Control Board indicating lights.

RCFC: 11(21)B Tagged Out for Motor Replacement
12(22)B Tripped and cannot be restarted
12(22)C No Power (E1(2)C2 De-energized)

Cue:

RCFC Run Status	11(21)A	12(22)A	11(21)B ***(tagged out)***	12(22)B ***(tripped)***	11(21)C	12(22)C ***(no power)***
Green	Off	Off	Off	On	Off	On
Red	On	On	Off	Off	On	Off

- **IF** applicant asks for RCFC air temperature, report inlet temperature is 95ºF on the three operating RCFCs.
- **AFTER** the applicant has verified the status of the above equipment, hand out Attachment 1 for the applicant's future reference.

Notes:

<u>SAT/UNSAT</u> Performance Step: 3

Verify RCFC cooling water transferred to CCW.

Standard:

Verifies RCFC cooling water transferred to CCW (for operable RCFCs):

RCB Chilled Water valves - CLOSED:	*CCW valves - OPEN:*
_____ *MOV-0059*	_____ *MOV-0057*
_____ *MOV-0070*	_____ *MOV-0069*
	_____ *MOV-0068**
_____ *MOV-0137*	_____ *MOV-0136*
_____ *MOV-0149*	_____ *MOV-0148*
	_____ *MOV-0147**
	_____ *MOV-0208**

**If asked*

Comment:

1. Valves MOV-0068, 0147 and 0208 are ICIVs that do not reposition and are normally open.

2. No light indication to Train C valves due to loss of LC E1(2)C2:

   - MOV-0199
   - MOV-0209
   - MOV-0197
   - MOV-0210

   Note: MOV-0208 on ‘C’ train still has indication because it receives power from ‘A’ Train.

3. Applicant can either use valve positions or flow as indicators.

Cue: See next page for cue information

Cue:

RCFC 11A/12A (21A/22A)	CHWS SPLY OCIV MOV-0059	CHWS RETURN OCIV MOV-0070	CCW SPLY OCIV MOV-0057	CCW RETURN OCIV MOV-0069	RCFC 11A/12A RET ICIV MOV-0068*
Green	On	On	Off	Off	Off
Red	Off	Off	On	On	On

RCFC 11B/12B (21B/22B)	CHWS SPLY OCIV MOV-0137	CHWS RETURN OCIV MOV-0149	CCW SPLY OCIV MOV-0136	CCW RETURN OCIV MOV-0148	RCFC 11B/12B RET ICIV MOV-0147*
Green	On	On	Off	Off	Off
Red	Off	Off	On	On	On

RCFC 11C/12C (21C/22C)	CHWS SPLY OCIV MOV-0199	CHWS RETURN OCIV MOV-0209	CCW SPLY OCIV MOV-0197	CCW RETURN OCIV MOV-0210	RCFC 11C/12C RET ICIV MOV-0208*
Green	Off	Off	Off	Off	Off
Red	Off	Off	Off	Off	On

- **AFTER** the above equipment status is verified by the applicant, hand out Attachment 2

- **IF** applicant checks CCW Flow to RCFCs, provide the following cues.

RCFC Flow Indicator	11A(21A) FI-4536	12A(22A) FI-4538	11B(21B) FI-4553	12B(22B) FI-4555	11C(21C) FI-4570	12C(22C) FI-4572
CCW Flow (gpm)	2000	2000	2000	2000	2000	2000

- **AFTER** the above equipment status is verified by the applicant, hand out Attachment 3

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Monitor RWST Level greater than 32,500 gallons (6%).

Standard:

Checks RWST level using any MCB Meter /Recorder, ICS Indications, or QDPS indications.

Comment:

ICS is the Integrated Computer System (Plant Computer) which uses CRT displays.
QDPS is the computer system that uses the plasma displays.

Cue:

- RWST level channels (LI-0931, LI-0932) or Level Recorder (LR-0931) = **73,000 gallons.**
- ICS or QDPS indication = **73,000 gallons.**

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5(C)

Verify Containment Spray Pump suction – ALIGNED TO RWST.

Standard:

Determines Containment Spray Pump suction is aligned to the RWST.

Comment:

Cue:

Train A	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016A	RWST TO SI SUCT HDR ISOL, SI-MOV-0001A
Green	ON	OFF
Red	OFF	ON

Train B	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016B	RWST TO SI SUCT HDR ISOL, SI-MOV-0001B
Green	ON	OFF
Red	OFF	ON

Train C	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016C	RWST TO SI SUCT HDR ISOL, SI-MOV-0001C
Green	OFF	OFF
Red	OFF	OFF

If asked, pump flows are as follows:

- EACH Low Head Safety Injection (LHSI) – 2500 gpm
- EACH High Head Safety Injection (HHSI) – 900 gpm
- EACH Containment Spray – 2200 gpm

AFTER the applicant has verified the status of the above equipment, hand out Attachment 4.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Determine the Containment Spray Pump Operating Requirements.

Standard:

*Determines **TWO (2)** Containment Spray Pumps should be running.*

Comment:

The operator should use RWST Level, CNTMT Pressure, and RCFC status to determine that two (2) Containment Spray Pumps should be running.

Cue:

- RWST level channels (LI-0931, LI-0932), or recorder (LR-0931) = **61,000 gallons**
- ICS/QDPS indication = **61,000 gallons**
- Containment Pressure (PR-935/934, PR-9759, or ICS/QDPS) = **9.0 psig**

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Verify Containment Spray Pumps running – EQUAL TO NUMBER REQUIRED.
Standard:

Identifies THREE (3) Containment Spray Pumps are running and only TWO (2) are required.

Comment:

Cue:

Run Status	CSS PUMP 1(2)A	CSS PUMP 1(2)B	CSS PUMP 1(2)C
Green	OFF	OFF	OFF
Red	ON	ON	ON

Discharge Valve	CSS PUMP 1(2)A	CSS PUMP 1(2)B	CSS PUMP 1(2)C
Number	MOV-0001A	MOV-0001B	MOV-0001C
Status	Red – ON Green - OFF	Red – ON Green - OFF	Red – OFF Green - OFF

Discharge Flow	CSS PUMP 1(2)A	CSS PUMP 1(2)B	CSS PUMP 1(2)C
Indicator	FI-0813A	FI-0823A	FI-0833A
Flow (gpm)	2,200	2,300	2,250

- Unit Supervisor directs that Containment Spray Pump “C” be secured after the need to secure one pump is identified.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8(C)

Manually operate Containment Spray Pumps.

Standard:

Secures Train "C" Containment Spray Pump

Comment:

1. The Containment Spray Actuation Signal has NOT been reset. If the operator places Containment Spray Pump 1(2)C control switch to stop and returns to auto, the pump will remain running. The operator must take the control switch to the Pull-To-Lock position or reset the Containment Spray Actuation Signal in order to stop the pump.

2. To satisfy this step, the applicant can secure any of the Containment Spray Pumps

Cue:

- **IF** the Containment Spray Pump 1(2)C handswitch is turned to **OFF** and the applicant asks, the Containment Spray Pump 1(2)C lights are: Red – ON; Green - OFF

  IF applicant informs the Unit Supervisor or requests direction, **THEN** direct applicant to place Containment Spray Pump 1(2)C handswitch in the Pull-To-Lock position

- **IF** the Containment Spray Pump 1(2)C handswitch is placed in the Pull-To-Lock position, the pump indicating lights are: Red – OFF; Green – ON.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: DETERMINE AND ESTABLISH CONTAINMENT SPRAY PUMP REQUIREMENTS

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature**

Date

JPM – STUDENT HANDOUT
ATTACHMENT 1

RCFC Run Status	11(21)A	12(22)A	11(21)B *(tagged out)*	12(22)B *(tripped)*	11(21)C	12(22)C *(no power)*
Green	Off	Off	Off	On	Off	On
Red	On	On	Off	Off	On	Off

JPM –STUDENT HANDOUT
ATTACHMENT 2

RCFC 11A/12A (21A/22A)	CHWS SPLY OCIV MOV-0059	CHWS RETURN OCIV MOV-0070	CCW SPLY OCIV MOV-0057	CCW RETURN OCIV MOV-0069	RCFC 11A/12A RET ICIV MOV-0068
Green	On	On	Off	Off	Off
Red	Off	Off	On	On	On

RCFC 11B/12B (21B/22B)	CHWS SPLY OCIV MOV-0137	CHWS RETURN OCIV MOV-0149	CCW SPLY OCIV MOV-0136	CCW RETURN OCIV MOV-0148	RCFC 11B/12B RET ICIV MOV-0147
Green	On	On	Off	Off	Off
Red	Off	Off	On	On	On

RCFC 11C/12C (21C/22C)	CHWS SPLY OCIV MOV-0199	CHWS RETURN OCIV MOV-0209	CCW SPLY OCIV MOV-0197	CCW RETURN OCIV MOV-0210	RCFC 11C/12C RET ICIV MOV-0208
Green	Off	Off	Off	Off	Off
Red	Off	Off	Off	Off	On

JPM – STUDENT HANDOUT
ATTACHMENT 3

RCFC Flow Indicator	11A(21A) FI-4536	12A(22A) FI-4538	11B(21B) FI-4553	12B(22B) FI-4555	11C(21C) FI-4570	12C(22C) FI-4572
CCW Flow (gpm)	2000	2000	2000	2000	2000	2000

JPM – STUDENT HANDOUT
ATTACHMENT 4

Train A	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016A	RWST TO SI SUCT HDR ISOL, SI-MOV-0001A
Green	ON	OFF
Red	OFF	ON

Train B	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016B	RWST TO SI SUCT HDR ISOL, SI-MOV-0001B
Green	ON	OFF
Red	OFF	ON

Train C	CNTMT SUMP TO SI SUCT HDR ISOL, SI-MOV-0016C	RWST TO SI SUCT HDR ISOL, SI-MOV-0001C
Green	OFF	OFF
Red	OFF	OFF

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A Large Break LOCA has occurred in the RCS. Load Center E1(2)C2 lost power 10 minutes after the LOCA occurred. Control room operators were performing 0POP05-EO-EO10 when the RWST LO-LO Level alarm came in. The crew transitioned to 0POP05-EO-ES13, TRANSFER TO COLD LEG RECIRCULATION, however they were unable to open any of the Containment Sump to SI Suction Header Valves (SI-MOV-0016A, B, & C).

RCFC 11(21) B is tagged out for motor replacement. RCFC 12(22) B has tripped and cannot be restarted.

The Unit Supervisor has now transitioned to 0POP05-EO-EC11, LOSS OF EMERGENCY COOLANT RECIRCULATION, and has commenced cooldown per Step 5.

INITIATING CUE:

The Unit Supervisor directs you to continue with Step 6 and take appropriate actions per 0POP05-EO-EC11, LOSS OF EMERGENCY COOLANT RECIRCULATION.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

IF any SG pressure decreases at GREATER THAN 100 PSI/SEC AND low steamline pressure has been blocked, THEN a main steam isolation will occur.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___5	**INITIATE RCS Cooldown To Cold Shutdown:**	
	___a. MAINTAIN cooldown rate in RCS cold legs - LESS THAN 100°F/HR	
	___b. Shutdown margin - RCS Cb GREATER THAN OR EQUAL TO SHUTDOWN MARGIN LIMIT PER PLANT CURVE BOOK, FIGURE 5.5, 68°F CURVE	b. BORATE RCS to GREATER THAN OR EQUAL TO shutdown margin per PLANT CURVE BOOK, FIGURE 5.5, 68°F CURVE.
	___c. CHECK pressurizer pressure LESS THAN 1985 PSIG	c. PERFORM the following: 1) WHEN pressurizer pressure lowers to LESS THAN 1985 PSIG, THEN BLOCK Low Steamline Pressure SI. 2) GO TO Step 5.e.
	___d. BLOCK Low Steamline Pressure SI	

Step 5 continued on next page.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

Step 5 continued from previous page.

	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___e.	CHECK condenser - AVAILABLE	e. PERFORM the following: 1) DUMP steam from intact SG(s) using SG PORV(s). 2) <u>IF</u> SG PORV(s) will <u>NOT</u> operate from control room, <u>THEN</u> DISPATCH operator to operate SG PORV(s) per ADDENDUM 2, SG PORV LOCAL OPERATION. 3) <u>IF</u> no intact SG available, <u>THEN</u> USE faulted SG(s). 4) GO TO Step 6.
___f.	CHECK steam dump in STEAM PRESSURE mode	f. PERFORM the following: 1) PLACE steam dump controller in manual with zero demand. 2) PLACE steam dump mode selector switch to STEAM PRESSURE mode.
___g.	CHECK RCS TAVG - LESS THAN 563°F	g. PERFORM the following: 1) <u>WHEN</u> RCS TAVG lowers to 563°F, <u>THEN</u> PLACE steam dump "INTLK SEL" switches to BYPASS INTERLCK. 2) GO TO Step 5.i.
___h.	PLACE steam dump "INTLK SEL" switches to BYPASS INTERLCK.	
___i.	DUMP steam to condenser from intact SG(s)	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___6	**VERIFY RCFC Status:**	
	___a. RCFCs - RUNNING	a. Manually START RCFCs.
	___b. Cooling water - TRANSFERRED TO CCW	b. PERFORM the following: 1) <u>IF</u> RCFC inlet temperatures are LESS THAN OR EQUAL TO 116°F, <u>THEN</u> manually TRANSFER cooling to CCW. 2) <u>IF</u> RCFC inlet temperatures are GREATER THAN 116°F, <u>THEN</u> CONTACT the TSC prior to tranferring cooling.
___7	**MONITOR RWST Level - GREATER THAN 32,500 GALLONS (6%)**	GO TO Step 29.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___8	**MONITOR Containment Spray Requirements (Suction From RWST):**	
	___a. Containment spray pump suction - ALIGNED TO RWST	a. IF containment spray pump suction aligned to sump, THEN GO TO Step 10.
	___b. DETERMINE number of containment spray pumps required from table	

RWST Level	Containment Pressure	NUMBER OF RCFCs RUNNING	NUMBER OF CONTAINMENT SPRAY PUMPS REQUIRED
GREATER THAN 75,000 gallons	GREATER THAN 56.5 psig	All Available	2
	BETWEEN 6.5 psig and 56.5 psig	0 or 1	2
		2 or 3	1
		4, 5 or 6	0
	LESS THAN 6.5 psig	As Needed	0
BETWEEN 33,000 and 75,000 gallons	GREATER THAN 6.5 psig	1, 2 or 3	2
		4, 5 or 6	0
	LESS THAN 6.5 psig	As Needed	0
LESS THAN 33,000 gallons	N/A	N/A	0

	___c. Containment spray pumps running - EQUAL TO NUMBER REQUIRED	c. Manually OPERATE containment spray pumps.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___9	**CHECK SI Pump Status:** o HHSI pumps - ANY RUNNING OR o LHSI pumps - ANY RUNNING	GO TO Step 22.
___10	**CHECK SI - RESET**	PERFORM the following: a. RESET SI. b. RESET ESF Load Sequencers.

CAUTION

IF offsite power is lost after the sequencers have been locally reset, THEN manual action may be required to restart safeguards equipment.

___11 **RESET ESF Load Sequencers Mode I Logic Per ADDENDUM 3, RESETTING ESF SEQUENCER MODE I LOGIC**

___12 **ENERGIZE MCCs And Distribution Panels Per ADDENDUM 4, MCC POWER RESTORATION**

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___13	**ESTABLISH One Train Of SI Flow:**	
	___a. HHSI pump - ONLY ONE RUNNING	a. START OR STOP HHSI pumps to establish only one pump running.
	___b. RCS pressure - LESS THAN 415 PSIG	b. PERFORM the following: 1) STOP LHSI pumps. 2) GO TO Step 14.
	___c. LHSI pump - ONLY ONE RUNNING	c. START OR STOP LHSI pumps to establish only one pump running.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___14	**STOP Backflow From RWST To Sump:**	
	___a. Containment sump suction valves - ANY OPEN	a. <u>IF</u> all three containment sump suction valves closed, <u>THEN</u> GO TO Step 15, OBSERVE caution and note prior to Step 15.
	___b. STOP pumps on trains with open containment sump suction valves: o LHSI pump o HHSI pump o Containment spray pump	
	___c. CLOSE containment sump suction valves	
	___d. OPEN RWST to SI suction header valves	
	___e. OPEN SI pump mini flow valves	
	___f. START SI pumps as necessary: o LHSI pump o HHSI pump	
	___g. START containment spray pumps as required by Step 8	

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

CAUTION

IF RCP seal cooling had previously been lost AND RCP seal inlet temperature has exceeded 230°F, THEN the affected RCP(s) SHALL NOT be started prior to an engineering evaluation.

NOTE

The RCP preferred running order to provide normal pressurizer spray is as follows:

o First - LOOP D
o Second - LOOP A
o Third - LOOPs B OR C

___15 **CHECK If An RCP Should Be Started:**

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___a. All RCPs - STOPPED	a. PERFORM the following: 1) STOP all but one RCP. 2) GO TO Step 16, OBSERVE note prior to Step 16.
___b. RCS subcooling based on core exit T/Cs - GREATER THAN 35°F [45°F]	b. GO TO Step 16, OBSERVE note prior to Step 16.
___c. START one RCP per 0POP02-RC-0004, OPERATION OF REACTOR COOLANT PUMP	

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE: **RESPOND TO RCB HIGH RADIATION**

JPM NO.: **C2**

REVISION: **2**

LOCATION: **UNIT 1 OR 2 CONTROL ROOM OR THE SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: RESPOND TO RCB HIGH RADIATION

JPM No.: C2

Rev. No: 2

STP Task: T83791, Respond to High Containment Radiation

STP Objective: CRO 83791, Respond to High Containment Radiation per 0POP05-EO-FRZ3, Response to High Containment Radiation

Related K/A Reference:

E16 EA2.2, Ability to determine and interpret the following as they apply to the High Containment Radiation: Adherence to appropriate procedures and operation with the limitations in the facility's license and amendments, 3.0/3.3

References: 0POP05-EO-F005, Rev. 0, Containment Critical Safety Function Status Tree
0POP050-EO-FRZ3, Rev. 1, Response to High Containment Radiation

Task Normally Completed By: RO

Method of Testing: Static Performance

Location of Testing: Unit 1 or 2 Control Room or Simulator

Time Critical Task: No

Alternate Path JPM: No

Validation Time: 15 minutes

Required Materials (Tools/Equipment):

IF being performed in U1 or U2 Control Room, THEN working copies of the following will be needed:

- 0POP05-EO-F005, Containment Critical Safety Function Status Tree (in color)
- 0POP05-EO-FRZ3, Response to High Containment Pressure

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

An RCS leak in excess of normal Charging capacity has occurred inside Containment. The crew has manually tripped the Reactor and initiated SI. The crew implemented 0POP05-EO-EO00, Reactor Trip or Safety Injection, then transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. When monitoring Critical Safety Functions it was noted there was a YELLOW PATH on the Containment Critical Safety Function.

INITIATING CUE:

The Unit Supervisor directs you to evaluate the YELLOW PATH on the Containment Critical Safety Function AND take the appropriate action.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Containment is verified isolated and Containment Carbon Filter Units are placed in service

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copies of:

- 0POP05-EO-F005, Containment Critical Safety Function Status Tree (copies are to be in color and a sufficient number available regardless of whether the student is performing in the plant or simulator)
- 0POP05-EO-FRZ3, Response to High Containment Pressure (only needed for those performing the JPM in the plant)

THE WORKING COPY OF 0POP05-EO-F005 IS A COLOR DIAGRAM ON WHITE PAPER. THIS IS TO BE HANDED OUT WITH THE OTHER REFERENCE. THESE HANDOUTS ARE LOCATED BEHIND A SEPARATE TAB IN THE EXAMINERS BOOK.

NOTES:

This JPM to be performed statically in either Unit 1 or 2 Control Room or the Simulator

SIMULATOR SETUP (if performed in the simulator):

1) Ensure Radio volume for both stations are set to a reasonable level.

2) Ensure the simulator PA buttons on the communications consoles are taped to help eliminate usage.

3) Reset to the 100% power Storepoint and verify:
   - Step counter position annunciator light is out
   - Red light at the end of CP-010 is out

4) Check and clean the following procedures (JPM specific):

   - 0POP05-EO-FRZ3, Response to High Containment Pressure

5) Place simulator in run, Silence/acknowledge/reset alarms as necessary.

6) Place the simulator in FREEZE

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- **$** Critical steps are identified by (C).
- **$** Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP05-EO-F005, Containment Critical Safety Function Status Tree

Standard:

Obtains a copy of 0POP05-EO-F005, Containment Critical Safety Function Status Tree

Comment:

Provide the operator with a color copy of 0POP05-EO-F005, Containment Critical Safety Function Status Tree.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Containment Pressure < 56.5 psig?

Standard:

Determines containment pressure is < 56.5 psig

Comment:

Student may check recorders on back panel CP-018 or computer indication (QDPS or ICS).

For this and other steps that involve retrieving information from a computer system the student should be able to actually operate the system to get to the page or point of interest. In the Unit 1 or 2 Control Rooms, the student should first obtain permission from the watchstander.

It will be difficult for the examiner to indicate values on the electronic recorders due their variation in scaling. All electronic recorders have digital readouts in addition to the history traces. Recommend the examiners provide these values rather than trying to point to the corresponding value on the chart portion of the recorder.

Cue:

If checking a computer screen display, once the student correctly shows where to obtain the indication, indicate the reading is 0.3 psig:

- If looking at QDPS, the value will be directly displayed on appropriate screens
- If looking at ICS, the individual must call up a computer point that displays Containment pressure or a graphic display that has the information on it (like on QDPS)

If checking a recorder indication, use a pointing device to indicate approximately 0.3 psig

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Containment Pressure < 9.5 psig?

Standard:

Determines containment pressure is < 9.5 psig

Comment:

By performing the actions of JPM Step 2, the individual will also be able to answer this procedure step

Cue:

None necessary. Use the cue in JPM step 2 if the student wishes to re-check indications.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Containment Water Level < 69 “?

Standard:

Determines Containment Water Level is < 69”

Comment:

Student may check recorders on back panel CP-018 or computer indication (QDPS or ICS). Ensure student is looking at Wide Range (W/R) Containment level indication and NOT Containment Normal or Secondary Sump levels.

Cue:

If checking a computer screen display, once the student correctly shows where to obtain the indication, indicate the reading is 0”:

- If looking at QDPS, the value will be directly displayed on appropriate screens either as a value or bar graph
- If looking at ICS, the individual must call up a computer point that displays Containment pressure or a graphic display that has the information on it (like on QDPS)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5 (C)

Containment Radiation < 2E +3 R/Hr?

Standard:

Determines Containment radiation > 2E +3 R/Hr

Comment:

There are 2 Rad Monitors that can be used to display high range doserate: RT-8050 and 8051. These monitors can be read on any of the following computer systems:

- RM-23
- RM-11
- QDPS
- ICS

Cue:

If the applicant obtains the reading from QUAL PAMS display of QDPS this is an average reading of the two monitors. Provide the following indication value:

- 3.1E+3 R/Hr.

If the applicant obtains readings from the individual Radiation Monitors, then provide the following indications:

- RT-8050 3E+3 R/Hr
- RT-8051 3.2E+3 R/Hr

.

These readings are above the ‘Alert’ alarm setpoint for these monitors. On the RM-23 modules there will be a yellow ‘Alert’ alarm light ON. On the RM-11 display, the monitors’ icons (blocks) will be yellow.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6

Based on RT-8050 and RT-8051 readings, implement 0POP05-EO-FRZ3, Response to High Containment Radiation Level.

Standard:

Obtains a copy of 0POP05-EO-FRZ3, Response to High Containment Radiation Level.

Comment:

Provide the operator with a copy of 0POP05-EO-FRZ3, Response to High Containment Radiation Level. If performed in the Simulator, applicant may use the controlled copy of the procedure in the Simulator.

Cue:

Notes:

SAT/UNSAT Performance Step: 7

Verify Containment Atmosphere Radiation Monitor Valves closed

Standard:

Verifies the following Containment Atmosphere Radiation Monitor Valves are closed:

- *MOV-0001*
- *MOV-0004*
- *MOV-0003*
- *MOV-0006*

Comment:
In a post-accident condition all these valves will be closed. Indications are on CP-002

Cue:
For all 4 valves: GREEN light ON
RED light OFF

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Verify Normal Purge Supply and Exhaust Fans stopped.

Standard:

Verifies Normal Purge Supply and Exhaust Fans are stopped:

Supply Fans	*Exhaust Fans*
SPLY FAN 11A HC-VFN007	*EXH FAN 11A HC-VFN009*
SPLY FAN 11B HC-VFN008	*EXH FAN 11B HC-VFN010*

Comment:

To comply with Tech Specs the Normal Purge Supply and Exhaust fans are placed in PTL (indicating lights operable, Green light on, Red light off).

Cue:

RED lights OFF, GREEN lights ON for Normal Purge Supply and Exhaust Fans

Supply Fans

- SPLY FAN 11A HC-VFN007
- SPLY FAN 11B HC-VFN008

Exhaust Fans

- EXH FAN 11A HC-VFN009
- EXH FAN 11B HC-VFN010

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

Verify Supplementary Purge Supply and Exhaust Fans stopped

Standard:

Verifies Supplementary Purge Supply and Exhaust Fans are stopped:

Supply Fans	*Exhaust Fans*
SPLY FAN 11A HC-VFN011	*EXH FAN 11A HC-VFN013*
SPLY FAN 11B HC-VFN012	*EXH FAN 11B HC-VFN014*

Comment:

Cue:

For both the Supplementary Supply and Exhaust Fans: GREEN light ON, RED light OFF

Supply Fans

- SPLY FAN 11A HC-VFN011
- SPLY FAN 11B HC-VFN012

Exhaust Fans

- EXH FAN 11A HC-VFN013
- EXH FAN 11B HC-VFN014

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10 (C)

Verify Purge Dampers closed

Standard:

Verifies Normal and Supplementary Purge Dampers closed

Comment:

This step includes checking both the Normal and Supplementary Purge Dampers. To comply with Tech Specs, the Normal Purge dampers have their supply breakers locked open (both indicating lights out).

Cue:

Supplementary Purge Dampers: GREEN light ON, RED light OFF

- FV-9776
- MOV-0003
- FV-9777
- MOV-0005

Normal Purge Dampers: GREEN light OFF, RED light OFF

- MOV-0007
- MOV-0008
- MOV-0009
- MOV-0010

Notes:

<u>SAT/UNSAT</u> Performance Step: 11

Check Containment Air Temperature < 200 Deg. F

Standard:

Determines Containment Air Temperature < 200 Deg. F

Comment:

This information can be retrieved from a computer point or CP-002

Cue:

Containment Air Temperature reads 185 Deg. F

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 12 (C)

Start Carbon Filter Units

Standard:

Places one fan of each train of Carbon Filter Units in service

Comment:

Per procedure, must hold the fan control switch in START until the associated intake and exhaust dampers open fully and then the fan starts. In actual operation this will take about 10 seconds.

Per procedure, only one fan per train shall be place in service. Train 'A' fan are Fans 11A and 12A, Train 'B' fans are 11B and 12B

Cue:

Initially for each train, the intake and exhaust dampers will be closed (GREEN lights ON, RED lights OFF) and the associated fans will not be running (GREEN light ON, RED light OFF). As student places a fan control switch to START, the following changes should take place:

- Intake and exhaust damper RED lights come ON, then, after several seconds, GREEN lights go OFF.
- Fan lights will then change: RED comes ON and GREEN goes OFF

The student should start one fan in each train, thus will see these indications twice.

- Train A - Fan 11A(21A) HC-VFN029 or Fan 12A(22A) HC-VFN030
- Train B - Fan 11B(21B) HC-VFN031 or Fan 12B(22B) HC-VFN032.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ______________________ **Signature**

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

An RCS leak in excess of normal Charging capacity has occurred inside Containment. The crew has manually tripped the Reactor and initiated SI. The crew implemented 0POP05-EO-EO00, Reactor Trip or Safety Injection, then transitioned to 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant. When monitoring Critical Safety Functions it was noted there was a YELLOW PATH on the Containment Critical Safety Function.

INITIATING CUE:

The Unit Supervisor directs you to evaluate the YELLOW PATH on the Containment Critical Safety Function AND take the appropriate action.

03/25/02
DATE EFFECTIVE

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D0527

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION

0POP05-EO-FRZ3 Rev. 1

RESPONSE TO HIGH CONTAINMENT RADIATION LEVEL

DEPARTMENT PROCEDURE

SAFETY RELATED (Q)

USAGE CONTROL: In Hand Controlling Station

LIST OF ATTACHMENTS:

None

This procedure is applicable in Modes 1, 2, 3, and 4.

PURPOSE

This procedure provides actions to respond to high containment radiation level.

SYMPTOMS OR ENTRY CONDITIONS

This procedure is entered from 0POP05-EO-F005, CONTAINMENT CRITICAL SAFETY FUNCTION STATUS TREE, on a YELLOW condition.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
___1	**VERIFY Containment Ventilation Isolation:**	
	___a. Containment atmosphere radiation monitor isolation valves - CLOSED	a. Manually CLOSE valves.
	___b. Normal Purge supply and exhaust fans - STOPPED	b. Manually STOP fans.
	___c. Supplementary Purge supply and exhaust fans - STOPPED	c. Manually STOP fans..
	___d. Purge Dampers - CLOSED	d. Manually CLOSE dampers.
___2	**DETERMINE If Containment Carbon Units Should Be Placed In Service:**	
	___a. CHECK containment air temperature - LESS THAN 200°F	a. GO TO Step 4.

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED

NOTE

Only one fan per train SHALL be placed in service.

___3 **START Selected Carbon Filter Unit(s) As Follows:**

___a. HOLD selected fan(s) in START until associated intake and exhaust dampers indicate FULL OPEN and fan(s) start:

o TRAIN A

"FAN 11A(21A) HC-VFN029"

"FAN 12A(22A) HC-VFN030"

o TRAIN B

"FAN 11B(21B) HC-VFN031"

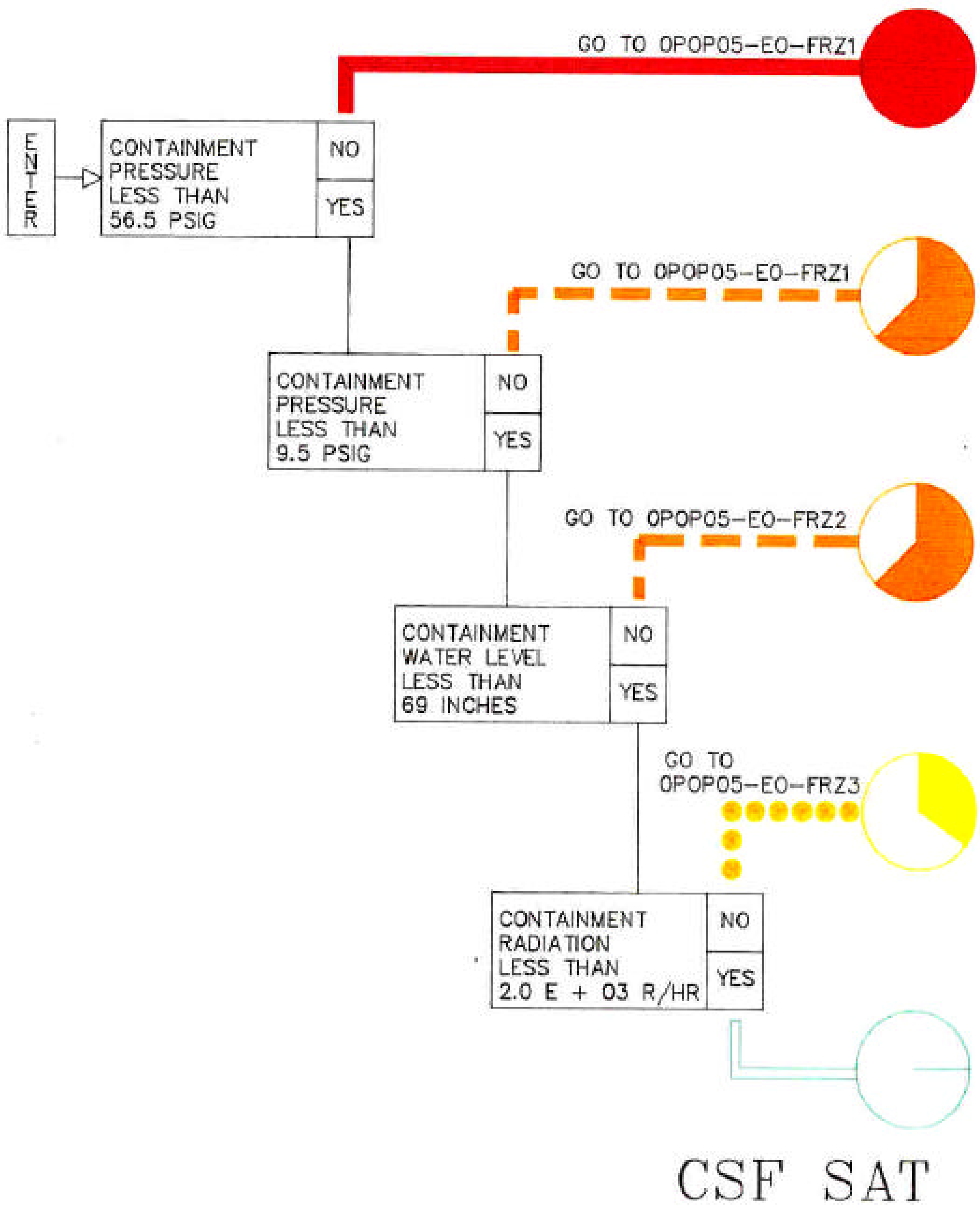
"FAN 12B(22B) HC-VFN032"

___4 **NOTIFY TSC Staff Of Containment Radiation Level To Obtain Recommended Action**

___5 **RETURN TO Procedure And Step In Effect**

-END-

CONTAINMENT
CRITICAL SAFETY FUNCTION STATUS TREE



NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**PERFORM LOCAL CHANNEL CHECK AND SOURCE CHECK OF RT-8038, LIQUID WASTE EFFLUENT MONITOR**
JPM NO.:	**P1**
REVISION:	**2**
LOCATION:	**UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	PERFORM LOCAL CHANNEL CHECK AND SOURCE CHECK OF RT-8038, LIQUID WASTE EFFLUENT MONITOR
JPM No.:	P1
Rev. No:	2
STP Task:	30100, Operate the Liquid Waste Processing Subsystem.
STP Objective:	NLO 30100, Given the specified procedure(s), logs/forms, tools, and equipment, Operate the Liquid Waste Processing Subsystem (LWPS) IAW the specified procedures, with no assistance allowed in operating the system.
Related K/A Reference:	072 A4.01 [3.0/3.3] Ability to manually operate and/or monitor alarm and interlock setpoint checks and adjustments. Generic 2.3.11, Ability to control radiation releases, 2.7, 3.2
References:	OPOP02-WL-0100, Rev. 7, Liquid Waste Release
Task Normally Completed By:	PO
Method of Testing:	Simulated
Location of Testing:	Plant
Time Critical Task:	NO
Alternate Path JPM:	NO
Validation Time:	20 minutes

Required Materials (Tools/Equipment): Student HO for specific Unit

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the applicant):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

You are the MAB Operator. Preliminary steps 5.1 through 5.23 of 0POP02-WL-0100 have been completed in preparation for a batch release of Waste Monitor Tank 1C(2C). Chemistry has returned the Release Package, proper dilution flowrate has been verified, and Waste Monitor Tank 1C(2C) has been on recirc for 60 minutes. RT-8038, Liquid Waste Effluent Radiation Monitor, is OPERABLE.

INITIATING CUE:

The Unit Supervisor directs you to locally perform a channel check AND source check on RT-8038, Liquid Waste Effluent Radiation Monitor in accordance with 0POP02-WL-0100, steps 5.30 through 5.33.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

A satisfactory channel check and source check of RT-8038 has been performed locally in accordance with 0POP02-WL-0100.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Student HO of working copy 0POP02-WL-0100, Liquid Waste Release (NOTE: the student HO procedure is specific to U1 or U2. Ensure you use the appropriate HO.

NOTES:

1) The Handout copy of the procedure has only the front section for Prerequisites and Notes/Precautions and the applicable sections for performance of the task.

2) This JPM should be performed in conjunction with JPM A-4, Determine Radiological Requirements to Enter a High Rad Area. This to help ensure a smooth flow of the exam schedule.

3) **The NRC Evaluator will use the following for RCA access:**

Unit 1: RWP- 2003-0-0003, Rev.1, and use 9701 for the WAN

Unit 2: RWP- 2003-0-0003, Rev.1, and use 9702 for the WAN

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of procedure 0POP02-WL-0100, Liquid Waste Release and review the Prerequisites and the Notes and Precautions.

Standard:

1) Obtains a copy of 0POP02-WL-0100, Liquid Waste Release

Comment:

1. Provide the Handout copy of the applicable sections of the procedure.
2. It is expected the candidate will review the Prerequisites and the Notes and Precautions.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Notify the control room that a channel check and source check of RT-8038 will be performed and that an alarm may actuate and be locked in until the setpoints are reset.

Standard:

Notifies the Control Room that a channel check and source check of RT-8038 will be performed.

Comment:

1. Don’t allow the applicant to actually contact the Control Room.

2. The applicant should proceed to the MAB 10' elevation, Room 72 - Floor Drain Tank Pump 1B (2B) Room.

Cue:

Acknowledge the applicant’s report as a member of the Control Room.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3 (C)

Open 1(2)-SRA-3267, WMT PUMPS 1A, B & C (2A, B, C) DISCHARGE RT-8038 SAMPLE INLET VALVE.

Standard:

Opens 1(2)-SRA-3267, WMT PUMPS 1A, B & C (2A, B, C) DISCHARGE RT-8038 SAMPLE INLET VALVE.

Comment:

1) All RT-8038 local components are located on the 10' elevation of the MAB in Room 072, Floor Drain Tank Pump 1B (2B) Room

2) Inlet valve is located at top-center of the RT-8038 Skid.

Cue:

SRA-3267: Initially - CLOSED
Finally – OPEN (valve handwheel stops turning)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 4 (C)

Place RT-8038 Sample Pump handswitch in AUTO.

Standard:

Places RT-8038 Sample PUMP handswitch in AUTO.

Comment:

1) The panel with the handswitch is on the left side of the RT-8038 skid when facing it.

2) The RT-8038 skid is in the same room and area in both Units, however, the skid faces South in Unit 1 and North in Unit 2.

Cue:

PUMP HANDSWITCH: Initially - OFF
Finally - AUTO

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5(C)

Depress the PUMP ON/OFF pushbutton on the local monitor control panel.

Standard:

Depresses the PUMP ON/OFF pushbutton on the control panel for 1(2)-RA-RT-8038 (RM-23L).

Comment:

Pushbutton is located behind the cover door for the control panel. This door has a viewing pane that allows observation of the pushbuttons and a digital display, thus it’s not necessary to open the cover door to simulate operating the pushbuttons.

Cue:

- PUMP ON/OFF pushbutton: Initially - OFF
  Finally - BACKLIT
- If applicant asks about the pump RED light: Initially - OFF
  Finally – ON
- If asked, applicant hears pump running

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6 (C)

Open 1(2)-SRA-3268, WMT PUMPS 1A, B & C (2A, B, C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE.

Standard:

Opens 1(2)-SRA-3268, WMT PUMPS 1A, B & C (2A, B, C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE.

Comment:

1. All RT-8038 local components are located on the 10' elevation of the MAB in Room 072, Floor Drain Tank Pump 1B (2B) Room.

2. Outlet valve is located at top-center of the RT-8038 Skid.

Cue:

SRA-3268: Initially - CLOSED
Finally – OPEN (valve handwheel stops turning)

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Observe channel check is satisfactory as indicated by illumination of green light on front of monitor.

Standard:

Verifies the Green OPERATE Light illuminated on front of control panel 1(2)-RA-RT-8038".

Comment:

1. Large Green Light located outside right control panel on door or small green light inside control panel (visible through viewing window).

2. Once the candidate has determined the channel check is satisfactory, he/she should proceed to procedure step 5.31 to perform a source check.

3. Student should ‘N/A’ step 5.30.9 and associated substeps.

Cue:

Green OPERATE Light: Initially - OFF
Finally - ON

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Press the "LIQ" button on the RM-23L and verify the "LIQ" button is illuminated.

Standard:

Depresses the "LIQ" button on the RM-23L for RT-8038 and verifies the "LIQ" button is illuminated.

Comment:

The RM-23L for RT-8038 is located on the Rad Monitor Skid.

Cue:

"LIQ" button: ON after "LIQ" button pressed

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 9 (C)

Press the "C/S" button on the RM-23L and verify the "C/S" button is illuminated.

Standard:

Depresses the "C/S" button on the RM-23L for RT-8038 and verifies the "C/S" button is illuminated.

Comment:

Cue:

"C/S" light is ON after the button is pressed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10 (C)

If the green operate light remains illuminated after the source check sequence completes, indicating that the source check passed, THEN GO TO Step 5.33

Standard:

Determines source check completes satisfactory and goes to procedure step 5.33.

Comment:

1. The source check sequence takes approximately 75 seconds to complete.

2. There is a digital display on the Control Panel, however there is no requirement to observe a particular reading during the source check.

Cue:

Green “OPERATE” light: Initially - ON
Finally – ON

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11

Document that the Acceptance Criteria were met.

Standard:

Document that the Acceptance Criteria were met for the Channel Check and the Source Check

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: P1, PERFORM LOCAL CHANNEL AND SOURCE CHECK OF RT-8038, LIQUID WASTE EFFLUENT MONITOR

Applicant's Name:

Date Performed:

Time to Complete: _______________

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature:**__________________________

Date: __________________________

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

You are the MAB Operator. Preliminary steps 5.1 through 5.23 of 0POP02-WL-0100 have been completed in preparation for a batch release of Waste Monitor Tank 1C(2C). Chemistry has returned the Release Package, proper dilution flowrate has been verified, and Waste Monitor Tank 1C(2C) has been on recirc for 60 minutes. RT-8038, Liquid Waste Effluent Radiation Monitor, is OPERABLE.

INITIATING CUE:

The Unit Supervisor directs you to locally perform a channel check AND source check on RT-8038, Liquid Waste Effluent Radiation Monitor in accordance with 0POP02-WL-0100, steps 5.30 through 5.33.

STI 31428189	**0POP02-WL-0100**	**Rev. 7**	Page 1 of 6
Liquid Waste Release			
Quality	Non Safety-Related	Usage: **IN HAND**	Effective Date: 04/04/02

J. King	B. C. Mukherji	Crew 2C	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

This procedure, when completed, shall be retained for the life of the plant.

1.0 Purpose and Scope

1.1 Provides instructions for release of all waste monitor tanks (WMTs) to the environment.

1.2 The following ODCM surveillance requirements are met by this procedure:

- ODCM 3/4.3.3.10, Table 4.3-8, Item 1, Daily Channel Check and Item 1, Source Check prior to release.
- ODCM 3/4.3.3.10, Table 4.3-8, Item 2, Daily Channel Check

2.0 References

2.1 P&IDs:

2.1.1 7R309F05023, Liquid Waste Processing System

2.1.2 7R309F90000, Liquid Waste Processing System

2.1.3 7R309F90001, Liquid Waste Processing System

2.1.4 7R309F90021, Liquid Waste Processing System

2.1.5 6T249F00033, Open Loop Auxiliary Cooling Water System

2.2 SPR/PRs/CRs:

2.2.1 SPR 880197, 799 Gallons of Liquid Waste was Inadvertently Discharged From Waste Monitor Tank 1E.

2.2.2 SPR 880208, Discharge from Waste Monitor Tank 1D was Initiated Instead of Waste Monitor Tank 1E.

2.2.3 SPR 890600, Contamination of Inorganic Basin, Non-Rad Chemical Waste Basin, and Below Aux Boiler FW Pumps.

2.2.4 SPR 921574, High Dose Rates Observed After Flush of Hot Spot in Cation Bed Demin 1A

2.2.5 SPR 940052, MAB Chiller Isolated During WMT Discharge.

2.2.6 SPR 940266, Chemistry Supervision Not Notified on RMS Monitor Alarm

2.2.7 SPR 940325, Procedural Non-Compliance.

2.2.8 SPR 940741, Long Path Recirculation of WMT 1F While Another WMT was in Short Path Recirculation.

2.2.9 SPR 941678, Independent Verification.

2.3 Procedures/Technical Manuals/UFSAR and ODCM Sections/Misc.:

2.3.1 0POP02-WL-0001, WHT 1A(2A) Operations

2.3.2 0POP02-WL-0002, Condensate Polisher Regeneration Waste Collection Tank (CPRWCT) Operations

2.3.3 0POP02-WL-0003, Floor Drain Tank (FDT) Operations

2.3.4 ODCM 3/4.3.3.10, Radioactive Liquid Effluent Monitoring Instrumentation.

2.3.5 UFSAR, Sections 11.2 and 11.5

2.3.6 ST-P2-HS-0593, Tank Recirculation Times.

2.3.7 ST-HL-AE-2477, Response to NOV 8764-01 Concerning Failure to Follow an Approved Procedure.

2.3.8 ST-HL-AE-2700, Licensee Event Report 88-036 Regarding an Unmonitored Release Of Radioactive Effluent Due to a Personnel Error

2.3.9 ST-AE-HL-91940, Inspection Report 88-70

2.3.10 DCP 01-190-7, Remove Strainer Baskets from RT 8038

Initials

3.0 Prerequisites

3.1 Plant Main Vent Header is in operation. Sm

3.2 The Radioactive Vent and Drain System is in service. Sm

3.3 Instrument Air is available. Sm

3.4 The Demineralized Water Storage and Transfer System is in service. Sm

3.5 IF releasing WMTs 1A(2A), 1B(2B) or 1C(2C), THEN Lineups 1, 2, and 3 in 0POP02-WL-0005, (Waste Monitor Tank Operations) have been completed. Sm

3.6 IF releasing WMTs 1D(2D), 1E(2E), or 1F(2F), THEN Lineups 4, 5, and 6 in 0POP02-WL-0005, (Waste Monitor Tank Operations) have been completed. NA

3.7 At least 1 CW pump will be running when the discharge is started. Sm

4.0 Notes and Precautions

4.1 Any activity that requires entry or access to a radiologically restricted area requires a Radiation Work Permit.

4.2 Improper performance of steps in this procedure could result in contamination of non-contaminated systems. (Reference 2.2.3)

4.3 LWPS discharge flow rate shall be limited to less than 280 gpm.

4.4 Radiation Monitor RT-8038 flow switch should be given time to reset before closing sample inlet and outlet valves (SRA-3267 & SRA-3268, respectively) to avoid RM-11 alarms when monitor secured.

4.5 The Channel Check of RT-8038 SHALL be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made. Since TDS Tank releases are “batch” releases which take less than 24 hours to complete, performance of the channel check prior to commencing the release satisfies this requirement. Re-performance of the channel check is NOT required if the release spans 2 calendar days.

4.6 Strainer baskets upstream of RT-8038 low flow switch have been removed. (Ref. 2.3.10)

4.7 1(2)WL-FQI-4078 LWPS Discharge Header Flow Totalizer Indicator is calibrated once every fuel cycle. The operator may use available information to determine indicator operability.

4.8 Prior to any liquid release, the Open Loop Auxiliary Cooling Water System SHALL be in operation.

4.9 IF the number of running CW pumps is decreased below the number used to generate the Pre-Release Permit, THEN the release SHALL be terminated immediately.

4.10 Steps or sections of this procedure which are NOT used may be marked N/A if not applicable for the evolution in progress. This is indicated by being routed around a step or section or by a conditional step or section where the condition is NOT met (IF - THEN, etc.).

Initials

5.30 IF RT-8038 is operable, THEN PERFORM a channel check on RT-8038 as follows, OTHERWISE GO TO Step 5.34 {10' MAB Room 072}

5.30.1 NOTIFY Control Room that a channel check and source check of RT-8038 will be performed. _____

5.30.2 NOTIFY Control Room that the alarm for RT-8038 may actuate and be locked in until RT-8038 alarm setpoints are reset. _____

5.30.3 OPEN "1(2)-SRA-3267 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE INLET VALVE". _____

5.30.4 PLACE RT-8038 Sample Pump handswitch in AUTO. _____

CAUTION

Step 5.30.6 to open "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE" must be performed as soon as possible after the sample pump has started to prevent damage to the pump.

5.30.5 DEPRESS the PUMP ON/OFF pushbutton on the local monitor control panel. _____

5.30.6 WHEN the pump has started, THEN OPEN "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

5.30.7 OBSERVE channel check is satisfactory as indicated by illumination of the green "OPERATE" light on front of the monitor. _____

5.30.8 IF the channel check is satisfactory, THEN GO TO Step 5.31. _____

Initials

5.30.9 IF the channel check is NOT satisfactory (green "OPERATE" light not lit), THEN PERFORM the following:

5.30.9.1 ENSURE sample pump has stopped. _____

5.30.9.2 CLOSE "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

CAUTION

Step 5.30.9.4 to open "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE" must be performed as soon as possible after the sample pump has started to prevent damage to the pump.

5.30.9.3 DEPRESS the PUMP ON/OFF pushbutton on the local monitor control panel to start the pump. _____

5.30.9.4 WHEN the pump has started, THEN OPEN "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

5.30.9.5 OBSERVE channel check is satisfactory as indicated by illumination of the green "OPERATE" light on front of the monitor. _____

5.30.9.6 IF the channel check is satisfactory, THEN GO TO Step 5.31. _____

5.30.9.7 IF the channel check is NOT satisfactory (green "OPERATE" light not lit), THEN PERFORM the following:

a. NOTIFY the Unit/Shift Supervisor and Chemistry. _____

b. REQUEST the Unit/Shift Supervisor to declare RT-8038 inoperable. _____

c. GO TO Step 5.34. _____

Initials

5.31 PERFORM a source check on monitor RT-8038 using the RM-23L (MAB + 10 ft): (ODCM Part A, Controls 4.3.3.10.1)

5.31.1 PRESS the “LIQ” button on the RM-23L. _____

5.31.2 VERIFY the “LIQ” button on the RM-23L is illuminated. _____

5.31.3 PRESS the “C/S” button on the RM-23L. _____

5.31.4 VERIFY the “C/S” button on the RM-23L illuminates. _____

5.31.5 WAIT approximately 75 seconds for the automatic source check sequence to complete. _____

5.31.6 IF the green operate light remains illuminated after the source check sequence completes, indicating that the source check passed, THEN GO TO Step 5.33. _____

5.31.7 IF the green operate light is NOT illuminated after the source check sequence completes, indicating that the source check failed, THEN PERFORM the following:

5.31.7.1 REATTEMPT a source check one time by repeating Steps 5.31.1 through 5.31.6. _____

5.31.7.2.1 IF the reattempt failed, THEN GO TO the next step to attempt the alternate method. _____

5.32 PERFORM a Source Check on RT-8038 using an RM-11 console (alternate method).

5.32.1 NOTIFY Control Room prior to performing a source check. _____

5.32.2 IF the STATUS DISPLAY is shown on the console screen, THEN GO TO Step 5.32.6 _____

5.32.3 SELECT or verify selected the appropriate grid to display monitor RT-8038 by pressing <GRID 3 or 4>. _____

5.32.4 ENTER the applicable number: _____

- For Unit 1, key in 1138 and press <SEL>.
- For Unit 2, key in 2138 and press <SEL>.

5.32.5 PRESS <STATUS>. _____

> NOTE
> Inadvertent pressing of the FLOW button may cause monitor RT-8038 to lose sample flow

Initials

5.32.6 PRESS <CHECK SOURCE> and wait approximately one minute for the automatic source check sequence to complete. _____

5.32.7 IF the CHANNEL CHECK SOURCE TEST FAILED display indicates dark blue (check source test failed), THEN PERFORM the following:

5.32.7.1 NOTIFY the Unit/Shift Supervisor and Chemistry. _____

5.32.7.2 REQUEST Unit Supervisor to declare RT-8038 inoperable. _____

5.32.7.3 IF RT-8038 has been declared inoperable, THEN GO TO Step 5.34 _____

5.32.8 IF the CHANNEL CHECK SOURCE TEST FAILED display does NOT indicate dark blue (check source test passed) AND the green operate cube is illuminated at the bottom of the status screen, THEN PERFORM the following:

5.32.8.1 PRESS <GRID 1, 2, 3, or 6> to clear RM-11 display. _____

5.32.8.2 GO TO Step 5.33. _____

AC 5.33 DOCUMENT that the Acceptance Criteria were met:

Acceptance Criteria: RT-8038 Channel Check passed.
(ODCM Part A, Controls 4.3.3.10, Table 4.3-8, Item 1)

Signed:___________________ Print Name:______________________

Date: _________ Time: _________

Acceptance Criteria: RT-8038 Source Check passed.
(ODCM Part A, Controls 4.3.3.10, Table 4.3-8, Item 1)

Signed:___________________ Print Name:______________________

Date: _________ Time: _________

Initials

5.34 NOTIFY Chemistry of the following: _____

- WMT to be discharged is in Long Path Recirculation
- RT-8038 status

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Liquid Waste Release			
Quality	Non Safety-Related	Usage: **IN HAND**	Effective Date: 04/04/02

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PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Table of Contents Page

This procedure, when completed, shall be retained for the life of the plant.

1.0 Purpose and Scope

1.1 Provides instructions for release of all waste monitor tanks (WMTs) to the environment.

1.2 The following ODCM surveillance requirements are met by this procedure:

- ODCM 3/4.3.3.10, Table 4.3-8, Item 1, Daily Channel Check and Item 1, Source Check prior to release.
- ODCM 3/4.3.3.10, Table 4.3-8, Item 2, Daily Channel Check

2.0 References

2.1 P&IDs:

2.1.1 7R309F05023, Liquid Waste Processing System

2.1.2 7R309F90000, Liquid Waste Processing System

2.1.3 7R309F90001, Liquid Waste Processing System

2.1.4 7R309F90021, Liquid Waste Processing System

2.1.5 6T249F00033, Open Loop Auxiliary Cooling Water System

2.2 SPR/PRs/CRs:

2.2.1 SPR 880197, 799 Gallons of Liquid Waste was Inadvertently Discharged From Waste Monitor Tank 1E.

2.2.2 SPR 880208, Discharge from Waste Monitor Tank 1D was Initiated Instead of Waste Monitor Tank 1E.

2.2.3 SPR 890600, Contamination of Inorganic Basin, Non-Rad Chemical Waste Basin, and Below Aux Boiler FW Pumps.

2.2.4 SPR 921574, High Dose Rates Observed After Flush of Hot Spot in Cation Bed Demin 1A

2.2.5 SPR 940052, MAB Chiller Isolated During WMT Discharge.

2.2.6 SPR 940266, Chemistry Supervision Not Notified on RMS Monitor Alarm

2.2.7 SPR 940325, Procedural Non-Compliance.

2.2.8 SPR 940741, Long Path Recirculation of WMT 1F While Another WMT was in Short Path Recirculation.

2.2.9 SPR 941678, Independent Verification.

2.3 Procedures/Technical Manuals/UFSAR and ODCM Sections/Misc.:

2.3.1 0POP02-WL-0001, WHT 1A(2A) Operations

2.3.2 0POP02-WL-0002, Condensate Polisher Regeneration Waste Collection Tank (CPRWCT) Operations

2.3.3 0POP02-WL-0003, Floor Drain Tank (FDT) Operations

2.3.4 ODCM 3/4.3.3.10, Radioactive Liquid Effluent Monitoring Instrumentation.

2.3.5 UFSAR, Sections 11.2 and 11.5

2.3.6 ST-P2-HS-0593, Tank Recirculation Times.

2.3.7 ST-HL-AE-2477, Response to NOV 8764-01 Concerning Failure to Follow an Approved Procedure.

2.3.8 ST-HL-AE-2700, Licensee Event Report 88-036 Regarding an Unmonitored Release Of Radioactive Effluent Due to a Personnel Error

2.3.9 ST-AE-HL-91940, Inspection Report 88-70

2.3.10 DCP 01-190-7, Remove Strainer Baskets from RT 8038

Initials

3.0 Prerequisites

3.1 Plant Main Vent Header is in operation. Sm

3.2 The Radioactive Vent and Drain System is in service. Sm

3.3 Instrument Air is available. Sm

3.4 The Demineralized Water Storage and Transfer System is in service. Sm

3.5 IF releasing WMTs 1A(2A), 1B(2B) or 1C(2C), THEN Lineups 1, 2, and 3 in 0POP02-WL-0005, (Waste Monitor Tank Operations) have been completed. Sm

3.6 IF releasing WMTs 1D(2D), 1E(2E), or 1F(2F), THEN Lineups 4, 5, and 6 in 0POP02-WL-0005, (Waste Monitor Tank Operations) have been completed. NA

3.7 At least 1 CW pump will be running when the discharge is started. Sm

4.0 Notes and Precautions

4.1 Any activity that requires entry or access to a radiologically restricted area requires a Radiation Work Permit.

4.2 Improper performance of steps in this procedure could result in contamination of non-contaminated systems. (Reference 2.2.3)

4.3 LWPS discharge flow rate shall be limited to less than 280 gpm.

4.4 Radiation Monitor RT-8038 flow switch should be given time to reset before closing sample inlet and outlet valves (SRA-3267 & SRA-3268, respectively) to avoid RM-11 alarms when monitor secured.

4.5 The Channel Check of RT-8038 SHALL be made at least once per 24 hours on days on which continuous, periodic, or batch releases are made. Since TDS Tank releases are "batch" releases which take less than 24 hours to complete, performance of the channel check prior to commencing the release satisfies this requirement. Re-performance of the channel check is NOT required if the release spans 2 calendar days.

4.6 Strainer baskets upstream of RT-8038 low flow switch have been removed. (Ref. 2.3.10)

4.7 1(2)WL-FQI-4078 LWPS Discharge Header Flow Totalizer Indicator is calibrated once every fuel cycle. The operator may use available information to determine indicator operability.

4.8 Prior to any liquid release, the Open Loop Auxiliary Cooling Water System SHALL be in operation.

4.9 IF the number of running CW pumps is decreased below the number used to generate the Pre-Release Permit, THEN the release SHALL be terminated immediately.

4.10 Steps or sections of this procedure which are NOT used may be marked N/A if not applicable for the evolution in progress. This is indicated by being routed around a step or section or by a conditional step or section where the condition is NOT met (IF - THEN, etc.).

Initials

5.30 IF RT-8038 is operable, THEN PERFORM a channel check on RT-8038 as follows, OTHERWISE GO TO Step 5.34 {10' MAB Room 072}

5.30.1 NOTIFY Control Room that a channel check and source check of RT-8038 will be performed. _____

5.30.2 NOTIFY Control Room that the alarm for RT-8038 may actuate and be locked in until RT-8038 alarm setpoints are reset. _____

5.30.3 OPEN "1(2)-SRA-3267 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE INLET VALVE". _____

5.30.4 PLACE RT-8038 Sample Pump handswitch in AUTO. _____

CAUTION

Step 5.30.6 to open "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE" must be performed as soon as possible after the sample pump has started to prevent damage to the pump.

5.30.5 DEPRESS the PUMP ON/OFF pushbutton on the local monitor control panel. _____

5.30.6 WHEN the pump has started, THEN OPEN "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

5.30.7 OBSERVE channel check is satisfactory as indicated by illumination of the green "OPERATE" light on front of the monitor. _____

5.30.8 IF the channel check is satisfactory, THEN GO TO Step 5.31. _____

Initials

5.30.9 IF the channel check is NOT satisfactory (green "OPERATE" light not lit), THEN PERFORM the following:

5.30.9.1 ENSURE sample pump has stopped. _____

5.30.9.2 CLOSE "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

CAUTION

Step 5.30.9.4 to open "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE" must be performed as soon as possible after the sample pump has started to prevent damage to the pump.

5.30.9.3 DEPRESS the PUMP ON/OFF pushbutton on the local monitor control panel to start the pump. _____

5.30.9.4 WHEN the pump has started, THEN OPEN "1(2)-SRA-3268 WMT PUMPS 1A, B & C (2A, B & C) DISCHARGE RT-8038 SAMPLE OUTLET VALVE". _____

5.30.9.5 OBSERVE channel check is satisfactory as indicated by illumination of the green "OPERATE" light on front of the monitor. _____

5.30.9.6 IF the channel check is satisfactory, THEN GO TO Step 5.31. _____

5.30.9.7 IF the channel check is NOT satisfactory (green "OPERATE" light not lit), THEN PERFORM the following:

a. NOTIFY the Unit/Shift Supervisor and Chemistry. _____

b. REQUEST the Unit/Shift Supervisor to declare RT-8038 inoperable. _____

c. GO TO Step 5.34. _____

Initials

5.31 PERFORM a source check on monitor RT-8038 using the RM-23L (MAB + 10 ft): (ODCM Part A, Controls 4.3.3.10.1)

5.31.1 PRESS the “LIQ” button on the RM-23L. _____

5.31.2 VERIFY the “LIQ” button on the RM-23L is illuminated. _____

5.31.3 PRESS the “C/S” button on the RM-23L. _____

5.31.4 VERIFY the “C/S” button on the RM-23L illuminates. _____

5.31.5 WAIT approximately 75 seconds for the automatic source check sequence to complete. _____

5.31.6 IF the green operate light remains illuminated after the source check sequence completes, indicating that the source check passed, THEN GO TO Step 5.33. _____

5.31.7 IF the green operate light is NOT illuminated after the source check sequence completes, indicating that the source check failed, THEN PERFORM the following:

5.31.7.1 REATTEMPT a source check one time by repeating Steps 5.31.1 through 5.31.6. _____

5.31.7.2.1 IF the reattempt failed, THEN GO TO the next step to attempt the alternate method. _____

5.32 PERFORM a Source Check on RT-8038 using an RM-11 console (alternate method).

5.32.1 NOTIFY Control Room prior to performing a source check. _____

5.32.2 IF the STATUS DISPLAY is shown on the console screen, THEN GO TO Step 5.32.6 _____

5.32.3 SELECT or verify selected the appropriate grid to display monitor RT-8038 by pressing <GRID 3 or 4>. _____

5.32.4 ENTER the applicable number: _____

- For Unit 1, key in 1138 and press <SEL>.
- For Unit 2, key in 2138 and press <SEL>.

5.32.5 PRESS <STATUS>. _____

NOTE
Inadvertent pressing of the FLOW button may cause monitor RT-8038 to lose sample flow

Initials

5.32.6 PRESS <CHECK SOURCE> and wait approximately one minute for the automatic source check sequence to complete. _____

5.32.7 IF the CHANNEL CHECK SOURCE TEST FAILED display indicates dark blue (check source test failed), THEN PERFORM the following:

5.32.7.1 NOTIFY the Unit/Shift Supervisor and Chemistry. _____

5.32.7.2 REQUEST Unit Supervisor to declare RT-8038 inoperable. _____

5.32.7.3 IF RT-8038 has been declared inoperable, THEN GO TO Step 5.34 _____

5.32.8 IF the CHANNEL CHECK SOURCE TEST FAILED display does NOT indicate dark blue (check source test passed) AND the green operate cube is illuminated at the bottom of the status screen, THEN PERFORM the following:

5.32.8.1 PRESS <GRID 1, 2, 3, or 6> to clear RM-11 display. _____

5.32.8.2 GO TO Step 5.33. _____

AC 5.33 DOCUMENT that the Acceptance Criteria were met:

Acceptance Criteria: RT-8038 Channel Check passed.
(ODCM Part A, Controls 4.3.3.10, Table 4.3-8, Item 1)

Signed:___________________ Print Name:______________________

Date: _________ Time: _________

Acceptance Criteria: RT-8038 Source Check passed.
(ODCM Part A, Controls 4.3.3.10, Table 4.3-8, Item 1)

Signed:___________________ Print Name:______________________

Date: _________ Time: _________

Initials

5.34 NOTIFY Chemistry of the following: _____

- WMT to be discharged is in Long Path Recirculation
- RT-8038 status

NUCLEAR TRAINING DEPARTMENT

JOB PERFORMANCE MEASURE

TITLE:	**PLACE A CLASS 1E 125V DC BATTERY CHARGER IN SERVICE**
JPM NO.:	**P2**
REVISION:	**2**
LOCATION:	**UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: P2, PLACE A CLASS 1E 125V DC BATTERY CHARGER IN SERVICE

JPM No.: P2

Rev. No.: 2

STP Task: T74950 Respond to DC Alarms.

STP Objective: CRO 74950 Respond as the Reactor Operator to DC Electrical Distribution alarms per POP09-AN-03M2 to include: 125V DC System E1A11 Trouble.

Related K/A Reference: 000063A3.01 [3.1] Ability to monitor automatic operation of the DC electrical distribution system, including: Meters, annunciators, dials, recorders, and indicating lights.

063 K1.03, Knowledge of the physical connections and/or cause-effect relationships between the DC electrical system and the following systems: Battery Charger and Battery, 2.9/3.5

References:
-0POP02-EE-0001, Rev 12, ESF (Class 1E) DC Distribution System
-Engineering Evaluation CREE 98-9069-5
-SPR-920485, Battery Charger Placed In Service With Output Voltage Less Than 129 VDC.

Task Normally Completed By: PO

Method of Testing: Simulated

Location of Testing: Unit 1 or 2 EAB

Time Critical Task: NO

Alternate Path JPM: YES

Validation Time: 30 minutes

Required Materials (Tools/Equipment):

Working copy of 0POP02-EE-0001, Rev 12, ESF (Class 1E) DC Distribution System

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU=VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is in Mode 1 at 100%. All equipment is operable.

Annunciator 03M2-C1 "125V DC SYSTEM E1B11 (E2B11) TRBL" has alarmed.
125 V DC Bus E1B11 (E2B11) voltage is currently 127 Volts in the Control Room with E1B11 (E2B11) Battery Charger #2 in service.

INITIATING CUE:

The Unit Supervisor directs you to transfer Battery Chargers and place Train B E1B11 (E2B11) Battery Charger #1 in service in accordance with 0POP02-EE-0001, ESF (Class 1E) DC Distribution System, section 7.2.

Addendum 1, Control Loop Alignment has been completed.

You are to record the time Battery E1B11 (E2B11) becomes inoperable and ensure that all procedure related operability requirements are satisfied (i.e. ensure Battery E1B11 (E2B11) is operable) prior to leaving the area.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

Completion Criteria:

Train B Channel III Battery Charger E1B11-1 (E2B11-1) is placed in service and placed on AEQUALIZE@ in accordance with 0POP02-EE-0001.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working Copy of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System.

NOTES:

1. This JPM is written to test the applicants ability to place a second battery charger in service and to test the understanding of an engineering evaluation of battery operability when both battery chargers have been disconnected from the battery for greater than 15 minutes. The battery is considered inoperable in this condition and must be placed through a series of charges prior to being returned to operable status. The intent is for the applicant to transition to the applicable procedure section after placing the battery charger in service.

JOB PERFORMANCE MEASURE CHECKSHEET

NOTE:

- $ Critical steps are identified by (C).
- $ Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System.

Standard:

Obtains a copy of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System.

Comment:

1) Provide a copy of 0POP02-EE-0001 to the applicant.

2) It is expected the performer will review the Prerequisites, Notes and Precautions.

3) Notes/Precautions 4.7 through 4.20 (except 4.17) apply to battery charger operation. Of interest is precaution 4.7, which indicates if a Class 1E battery is NOT aligned to an operating Charger, the battery is considered inoperable. If not aligned within 15 minutes, Section 9.0 must be performed to declare the battery operable.

Cue:

If asked Battery Charger E1B11 (E2B11) - 1 local indications are:	0 Volts; 0 Amps; All Breakers OFF; AC Light OFF
If asked Battery Charger E1B11 (E2B11) - 2 local indications are:	126 Volts; 30 Amps; Breakers ON; AC Light ON

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 2

Perform Addendum 1, Control-Loop Alignment.

Standard:

Addendum 1, Control Loop Alignment has been completed.

Comment:

This Addendum has been completed per the Initiating Cue.

Cue:

If asked, inform the candidate this Addendum has been completed

Notes:

SAT/UNSAT Performance Step: 3

Ensure the "FLOAT/EQUALIZE" toggle switch is in the "FLOAT" position for battery charger being placed in service.

Standard:

Ensures the "FLOAT/EQUALIZE" toggle switch is in the "FLOAT" position for Battery Charger E1B11-1 (E2B11-1).

Comment:

Location: 35' EAB, Room 213, south wall on Charger E1B11-1 (E2B11-1) upper panel face.

Cue:

INITIAL: "FLOAT/EQUALIZE" switch is in the "FLOAT" position.

FINAL: "FLOAT/EQUALIZE" switch is in the "FLOAT" position.

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 4

Ensure the 480V AC supply breaker closed for the Charger to be placed in service.

Standard:

Verifies breaker "125V DC BATT CHGR E1B11-1 (E2B11-1) " at 480 Volt AC Motor Control Center E1B1 (E2B1) breaker #Q2R is closed.

Comment:

Location: 35' EAB, Switchgear Room.

Cue:

INITIAL: Breaker Closed FINAL: Breaker Closed

Notes:

SAT/UNSAT Performance Step: 5 (C)

OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

Standard:

Opens AC INPUT CB-1 breaker on E1B11 (E2B11) Battery Charger #2.

Records time for Tech Spec entry for inoperable Battery.

Comment:

When this step is performed there will be no Chargers in service for Battery E1B11 (E2B11). Per the procedure Note & Precaution 4.7, this renders the battery inoperable.

Location: on Battery Charger #2 lower panel face, left breaker.

Cue:

INITIAL: Breaker Handle UP FINAL: Breaker Handle DOWN

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 6

OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

Standard:

Opens DC OUTPUT CB-2 breaker on E1B11 (E2B11) Battery Charger #2.

Comment:

Location: on Battery Charger #2 lower panel face, right breaker.

Cue:

INITIAL: Breaker Handle UP FINAL: Breaker Handle DOWN

Notes:

SAT/UNSAT Performance Step: 7 (C)

OPEN the "BATT CHGR TO 125V DC SWBD" breaker for the battery charger being removed from service.

Standard:

Opens ABATT CHGR E1B11-2 (E2B11-2) TO 125V DC SWBD E1B11 (E2B11)@ breaker on E1B11 (E2B11) Switchboard breaker #3A.

Comment:

Location: 35' EAB, Room 213 south wall on 125V DC Distribution Switchboard E1B11 (E2B11).

Cue:

INITIAL: Breaker Handle UP FINAL: Breaker Handle DOWN

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 8 (C)

Close the "BATT CHGR TO 125V DC SWBD" breaker for the battery charger being placed in service.

Standard:

Closes breaker "BATT CHGR E1B11-1 (E2B11-1) TO 125V DC SWBD E1B11 (E2B11)" at 125 Volt DC SWBD E1B11 (E2B11) breaker #2A.

Comment:

Cue:

INITIAL: Breaker Handle DOWN FINAL: Breaker Handle UP

Notes:

SAT/UNSAT Performance Step: 9 (C)

Close the "DC Output CB-2" breaker for battery charger being placed in service.

Standard:

Closes the "DC OUTPUT CB-2" breaker on Battery Charger E1B11-1 (E2B11-1).

Comment:

Location: On Charger E1B11-1 (E2B11-1) lower panel face, right breaker.

Cue:

INITIAL: Breaker Handle DOWN FINAL: Breaker Handle UP

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 10

Close the "AC Input CB-1" breaker for the battery charger being placed in service.

Standard:

Determines the AC Input CB-1 breaker tripped-open after closure.

Comment:

Location: On Charger E1B11-1 (E2B11-1) lower panel face, left breaker.

When the candidate simulates closing this breaker the evaluator should indicate the breaker has tripped (mid-position).

Cue:

1) INITIAL: Breaker Handle DOWN

FINAL: Breaker Handle MID-POSITION (tripped)

2) After Breaker Closure:

- Battery Charger Current initially spikes to 260 amps, then decreases to 0.
- DC Voltage initially increases to 100 -130 Volts, then goes to 0.

3) After Breaker Trips:

- Charger Current: 0
- DC Voltage: 0
- No alarm lights or abnormal indications: “GROUND” light is NOT LIT and did not come on when AC INPUT CB-1 breaker was closed.

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 11

Inform the Unit/Shift Supervisor of the condition

Standard:

Informs the Unit/Shift Supervisor of the condition

Comment:

Per the procedure NOTE prior to Step 7.2.9, the Unit/Shift Supervisor can direct the Charger output breaker be re-closed one time if no apparent cause for the trip could be identified.

Cue:

As Unit Supervisor, inform the candidate to stop in the procedure until Electrical Maintenance can be consulted.

After a few seconds, as the Unit Supervisor, inform the candidate that it is now **75 minutes later**. Current conditions are:

- Electrical Maintenance has been consulted and has recommended one re-closure on the breaker.
- The breaker has been reset to the fully open ("OFF") position.
- Resume with the current step of the procedure to close the AC Input breaker
- Ensure all procedural requirements concerning the E1B11 (E2B11) battery are met to ensure operability prior to leaving the area.

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 12 (C)

Close the "AC Input CB-1" breaker for the battery charger being placed in service.

Standard:

Closes the "AC INPUT CB-1" breaker on Battery Charger E1B11-1 (E2B11-1).

Comment:

Location: On Charger E1B11-1 (E2B11-1) lower panel face, left breaker.

Cue:

INITIAL: Breaker Handle DOWN FINAL: Breaker Handle UP

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 13

Verify Proper Charger Operation

Standard:

Performs the following to verify Battery Charger E1B11-1 (E2B11-1) is operating properly:

1) *Verifies the charger E1B11-1 (E2B11-1) current is less than 330 amps.*
2) *Verifies the charger E1B11-1 (E2B11-1) voltage is between 129.2 and 131.8 Volts DC.*
3) *Verifies the Control Room Annunciator 3M02-C-1 "125V DC SYSTEM E1B11 (E2B11) TRBL" IS CLEAR.*

Comment:

1) Procedure Step 7.2.12 is N/A since charger voltage is between 129 and 131 VDC.

Cue:

1) Charger E1B11-1 (E2B11-1) current initially spikes to 260 amps, then decreases to 115 amps and is very slowly decreasing.

2) Charger E1B11-1 (E2B11-1) voltage is 130 volts.

3) (When contacted) report that Control Room Annunciator 3M02-C-1 "125V DC SYSTEM E1B11 (E2B11) TRBL" is CLEAR.

4) If applicant stops at Procedure Step 7.2.14, inform applicant that E1B11 (E2B11) battery is NOT operable at this time and to perform the appropriate section or sections of 0POP02-EE-0001, ESF (Class 1E) DC Distribution System

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 14

Return switches to ‘As Found” positions per Addendum 1, Control-Loop Alignment

Standard:

Informs Unit/Shift Supervisors that switches are to be returned to ‘As Found” positions per Addendum 1, Control-Loop Alignment

Comment:

This is the final step to placing #1 Charger in service. The procedure states that if both chargers are not operating for > 15 minutes, procedure section 9.0 SHALL be performed prior to declaring the battery operable.

It is at this time the candidate should continue to Section 9.0.

Cue:

As the Unit Supervisor, inform the candidate that you’ll have another operator complete Addendum 1 to have switches returned to their “As Found” position.

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 15 (C)

Ensure a battery charger for the applicable battery is in service.

Standard:

Verifies battery charger E1B11-1 (E2B11-1) is in service.

Comment:

This is the first step of Section 9.0, Class 1E Battery Operability Following a Discharge Transient

Cue:

1) (If asked) Charger E1B11-1 (E2B11-1) current is 88 amps and very slowly decreasing.

2) (If asked) Charger E1B11-1 (E2B11-1) voltage is 130 volts.

Notes:

JOB PERFORMANCE MEASURE CHECKSHEET

SAT/UNSAT Performance Step: 16 (C)

If the discharge exceeded 1 hour, then Place the applicable charger's FLOAT/EQUALIZE toggle switch in the EQUALIZE position.

Standard:

Places Battery charger E1B11-1 (E2B11-1) FLOAT/EQUALIZE toggle switch in the EQUALIZE position.

Comment:

1) The battery has been discharging for > 75 minutes, therefore the battery must be given an equalizing charge.

2) The "FLOAT/EQUALIZE" switch is located on the E1B11-1 (E2B11-1) upper panel face.

Cue:

INITIAL: "FLOAT/EQUALIZE" switch is in the "FLOAT" position.

FINAL: "FLOAT/EQUALIZE" switch is in the "EQUALIZE" position.

Notes:

- TERMINATE THE JPM -

JPM FINISH TIME

VERIFICATION OF COMPLETION

Job Performance Measure: P2, PLACE A CLASS 1E 125V DC BATTERY CHARGER IN SERVICE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results:

Sat / Unsat

Evaluator: ______________________ **Signature** ________________________

Date ___________________

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The unit is in Mode 1 at 100%. All equipment is operable.

Annunciator 03M2-C1 "125V DC SYSTEM E1B11 (E2B11) TRBL" has alarmed.
125 V DC Bus E1B11 (E2B11) voltage is currently 127 Volts in the Control Room with E1B11 (E2B11) Battery Charger #2 in service.

INITIATING CUE:

The Unit Supervisor directs you to transfer Battery Chargers and place Train B E1B11 (E2B11) Battery Charger #1 in service in accordance with 0POP02-EE-0001, ESF (Class 1E) DC Distribution, section 7.2.

Addendum 1, Control Loop Alignment has been completed.

You are to record the time Battery E1B11 (E2B11) becomes inoperable and ensure that all procedure related operability requirements are satisfied (i.e. ensure Battery E1B11 (E2B11) is operable) prior to leaving the area.

STI 31491447	**0POP02-EE-0001**	**Rev. 12**	Page 1 of 59
ESF (Class 1E) DC Distribution System			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 01/27/03

Mike Foster	S. Clark	Crew 2E	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT.

Usage Table of Contents Page

Usage

1 - IN HAND
2 - IN HAND CONTROLLING STATION
3 - REFERENCED
4 - AVAILABLE

1.0 Purpose

Provide instructions for operation of the ESF (Class 1E) DC Distribution System.

2.0 References

2.1 Technical Manual 8100-01008-FPO, Power Conversion Products for Model 3SD-130-300

2.2 System Description 4E520ED1111, Class 1E 125 Vdc Control Power

2.3 0PMP05-DJ-0010, 1E Battery Equalizing Charge

2.4 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions

2.5 0PSP06-DJ-0002, 125 Volt Class 1E Battery Quarterly Surveillance Test

2.6 Electrical Drawings

2.6.1 9-E-DJAA-01 #1(#2), 125VDC Class-1E Distribution SWBD E1A11(E2A11)

2.6.2 9-E-DJAB-01 #1(#2), 125VDC Class-1E Distribution SWBD E1D11(E2D11)

2.6.3 9-E-DJAC-01 #1(#2), 125VDC Class-1E Distribution SWBD E1B11(E2B11)

2.6.4 9-E-DJAD-01 #1(#2), 125VDC Class-1E Distribution SWBD E1C11(E2C11)

2.7 MATS 8500022-866 (SOER 83-005), DC Power System Failures

2.8 UFSAR Section 8.3.2.1

2.9 NRC IR 89-042

2.10 SPR 920485, Placed Charger in Service Less than 129 VDC

2.11 SR 189442, Class 1E Electrical System Min/Max Voltages

2.12 Design Basis Document, 4E529EB1111, Class 1E 125V DC System

2.13 Technical Specifications 3.0.6, 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1 [ITS 3.8.5 and 3.8.7], 3.8.2.2 [ITS 3.8.6], 3.8.3.1 [ITS 3.8.10], and 3.8.3.2 [ITS 3.8.11]

2.14 TRM 3.8.2.2

2.15 Calculation EC-5008, Class 1E Battery, Battery Charger and Inverter Sizing

2.16 CR 97-20070, Class 1E Battery Charger Overvoltage

2.17 ST-HL-AE-4254, Reply to Notice of Violation 9226-02 Regarding Failure to Maintain Adequate Procedures

2.18 Engineering Evaluation CREE 98-9069-5

2.19 CREE 99-3416, Evaluate DC voltage values used in 0PSP03-EA-0002

2.20 CREE 01-5161-1, Battery Charger Operability when reconnected to charger.

2.21 CREE 01-19885-7, CREE to justify jumpering 2 and 3 cells of the U1 C train battery.

2.22 T1-01-19885-1, T1-01-19885-2, T1-01-19885-8, Jumpering cells in U1 C train battery.

2.23 02-9755-12, LER 2-02-003, U2 experienced an automatic Rx trip after failure of Channel II Invertor (1202) and loss of DP 1202.

3.0 Prerequisites

3.1 Battery room ventilation is in service.

3.2 Battery cell fill caps and flash arrestors are in place on each cell.

3.3 Power is available to the following:

3.3.1 Channel I - 480V MCCs E1A1(E2A1) and E1A2(E2A2)

3.3.2 Channel II - 480V MCCs E1A1(E2A1) and E1A4(E2A4)

3.3.3 Channel III - 480V MCCs E1B1(E2B1) and E1B2(E2B2)

3.3.4 Channel IV - 480V MCCs E1C1(E2C1) and E1C2(E2C2)

3.4 IF work will be performed in the battery room, THEN the Emergency Wash Station or portable eye wash is available.

4.0 Notes and Precautions

4.1 Battery room ventilation SHALL remain in continuous operation.

4.2 IF battery room ventilation is lost during an equalizing charge, THEN Electrical Maintenance SHALL be notified to secure the equalizing charge.

4.3 IF battery acid comes in contact with the skin or eyes, THEN the following SHALL be performed:

- The affected area SHALL be flushed at the Emergency Wash Station.

- Control Room personnel SHALL be notified.

4.4 Smoking and activities which could produce sparks or flames are prohibited in the battery room.

4.5 Tools used in the battery room SHALL be insulated and sparkless.

4.6 All battery cell flash arrestors and fill caps SHALL be kept secure in place.

NOTE

The 15 minute allowance to not perform Section 9.0, Class 1E Battery Operability Following a Discharge Transient, is based upon the Class 1E battery's design capacity, even with one battery cell jumpered out of the battery bank. IF more than one cell in the battery bank is jumpered out of the battery bank, then there is no allowance for 15 minutes to restore the battery bank to the charger and Section 9.0 must be performed.

4.7 A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.

4.7.1 IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)

4.7.2 IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

4.8 Operations expectations for battery chargers relative to Technical Specification actions.

- Swapping battery chargers requires entry into Technical Specification action 3.8.2.1.a or Technical Specification action 3.8.2.2 because the battery is inoperable without a battery charger in service and battery charger current less than 2 amps.

- Placing an inoperable battery charger on the DC bus to complete maintenance or surveillance testing requires entry into Technical Specification 3.8.2.1 action b or the action of Technical Specification 3.8.2.2 since the battery is now being supplied by an inoperable charger and the operable charger is NOT connected to the bus. When WE are in shutdown modes of operation, WE must review TRM section 3.8.2.2 to ensure we understand the effects of this evolution. WE must ensure we know the extent of the maintenance or testing with the inoperable battery charger on the DC bus to prevent entry into a shutdown portion of action b. IF the operability testing will take longer than two (2) hours, THEN we need an administrative plan to enter Technical Specification 3.0.6 and ensure the battery charger is supplying the battery properly within 15 minutes.

- If there are trouble alarms and we declare the in-service battery charger inoperable, we must enter Technical Specification 3.8.2.1 action b or the appropriate action of Technical Specification 3.8.2.2 until we place the standby battery charger in-service and verify proper voltage.

4.9 WHEN **energizing** a battery charger, THEN the battery charger DC OUTPUT breaker SHALL be closed prior to closing AC INPUT breaker.

4.10 WHEN **deenergizing** a battery charger, THEN the battery charger AC INPUT breaker SHALL be opened prior to opening DC OUTPUT breaker.

4.11 IF a ground fault exists on a battery charger as indicated by a red ground fault light on front of the charger panel, THEN the following SHALL be performed at the discretion of the Shift Supervisor:

4.11.1 Removal of the affected battery charger from service.

4.11.2 Placing the standby battery charger in operation on the affected bus.

4.12 Simultaneous testing or maintenance on redundant battery chargers SHALL NOT be performed. (Reference 2.7)

4.13 Equalizing charges SHALL be performed by Electrical Maintenance per 0PMP05-DJ-0010, 1E Battery Equalizing Charge.

4.14 IF a battery charger is selected to EQUALIZE, THEN Electrical Maintenance SHALL be notified prior to transferring, or removing the battery charger from service.

4.15 The maximum and minimum limits for the Class 1E battery chargers are as follows: (Reference 2.11, 2.19)

4.15.1 The maximum limit for battery charger voltage is 140 VDC. IF charger voltage is greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

4.15.2 The DC output limits for normal float operation of the chargers is 129.2 to 131.8 VDC.

4.15.3 The DC output limits for equalize operation of the charger is 132.56 to 137.3 VDC.

4.16 Class 1E battery charger output breakers are administratively controlled to prevent both breakers being closed at the same time.

4.17 Opening battery output breaker results in Standby DG being **INOPERABLE,** take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.

4.18 Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).

4.19 Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

4.20 If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

5.0 Train A Channel I E1A11(E2A11) Operation

NOTE

- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

5.1 Placing Train A Channel I E1A11(E2A11) in Service

5.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

5.1.2 ENSURE the "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____

5.1.3 ENSURE the 480V AC SUPPLY BREAKER CLOSED for the battery charger being placed in service. {10 ft EAB, E1A(E2A) SWGR Rm}

E1A11(E2A11)-1	E1A11(E2A11)-2
"125V DC BATT CHGR E1A11(E2A11)-1" MCC E1A1(E2A1)/Q1R _____	"125V DC BATT CHGR E1A11(E2A11)-2" MCC E1A2(E2A2)/A2L _____

5.1.4 ENSURE the "125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)" breaker CLOSED. {SWBD E1A11(E2A11)/1B} _____

5.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/3A _____	"BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/2A _____

5.1.6 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

5.1.7 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

5.1.8 VERIFY battery charger voltage between 126 and 137.3 VDC. IF battery charger voltage is NOT between 126 and 137.3 VDC THEN NOTIFY the Shift Supervisor. _____

5.1.9 PERFORM Lineup 1, SWBD E1A11(E2A11) Channel I Lineup. _____

5.1.10 VERIFY battery charger current less than 330 amps. _____

5.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

5.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

5.1.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. GO TO Step 5.3 to complete shutdown of the battery charger. _____

5.1.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 5.2 to transfer to the other battery charger. _____

5.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

5.1.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

5.1.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 5.2 to transfer to the other battery charger. _____

5.1.12.6 INITIATE appropriate corrective action. _____

5.1.13 IF Annunciator Lampbox 3M02-A-1 “125V DC SYSTEM E1A11(E2A11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

5.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

5.2 Transfer of Train A Channel I Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC. (Reference 2.20, 2.21, 2.22)
- IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- WHEN the operating battery charger is removed from service during the transfer process, THEN the associated Class 1E 125V DC Distribution Switchboard is powered only from the battery.
- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

5.2.1 PERFORM Addendum 1, Control-Loop Alignment. _____

5.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
“FLOAT/EQUALIZE” Switch in “FLOAT” _____	“FLOAT/EQUALIZE” Switch in “FLOAT” _____

5.2.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {10 ft EAB, E1A(E2A) SWGR Rm}

E1A11(E2A11)-1	E1A11(E2A11)-2
"125V DC BATT CHGR E1A11(E2A11)-1" MCC E1A1(E2A1)/Q1R _____	"125V DC BATT CHGR E1A11(E2A11)-2" MCC E1A2(E2A2)/A2L _____

5.2.4 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

5.2.5 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

5.2.6 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/3A _____	"BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/2A _____

5.2.7 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/3A _____	"BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/2A _____

5.2.8 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

5.2.9 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

5.2.10 VERIFY battery charger current less than 330 amps. _____

5.2.11 VERIFY battery charger voltage is between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

5.2.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

5.2.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. RETURN TO Step 5.2.1 to transfer to the other battery charger. _____

5.2.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 5.2.1 to transfer to the other battery charger. _____

5.2.12.3 IF battery charger voltage exceeds 131.8 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

5.2.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

5.2.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 5.2.1 to transfer to the other battery charger. _____

5.2.12.6 INITIATE appropriate corrective action. _____

5.2.13 IF Annunciator Lampbox 3M02-A-1 “125V DC SYSTEM E1A11(E2A11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

5.2.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

5.3 Removing Train A Channel I E1A11(E2A11) from Service

NOTE

- All switches and breakers required for the performance of Section 5.0 are located in Train A Channel I Distribution Room 007 {10 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE,** take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

5.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

5.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the "125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)" breaker. {SWBD E1A11(E2A11)/1B} _____

5.3.3 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

5.3.4 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

5.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1A11(E2A11)-1	E1A11(E2A11)-2
"BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/3A _____	"BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)" E1A11(E2A11)/2A _____

5.3.6 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

6.0 Train D Channel II E1D11(E2D11) Operation

NOTE

- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.1 Placing Train D Channel II E1D11(E2D11) in Service

6.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

6.1.2 ENSURE the "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____

6.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {10 ft EAB, E1A(E2A) SWGR Rm}

E1D11(E2D11)-1	E1D11(E2D11)-2
"125V DC BATT CHGR E1D11(E2D11)-1" MCC E1A4(E2A4)/F3L _____	"125V DC BATT CHGR E1D11(E2D11)-2" MCC E1A1(E2A1)/T3R _____

6.1.4 ENSURE the "125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)" breaker closed. {SWBD E1D11(E2D11)/1B} _____

6.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
“BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)” E1D11(E2D11)/2A _____	“BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)” E1D11(E2D11)/3A _____

6.1.6 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
“DC OUTPUT CB-2” _____	“DC OUTPUT CB-2” _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the “AC INPUT CB-1” breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If “AC INPUT CB-1” breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

6.1.7 CLOSE the “AC INPUT CB-1” breaker for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
“AC INPUT CB-1” _____	“AC INPUT CB-1” _____

6.1.8 VERIFY battery charger voltage between 126 and 137.3 VDC. IF battery charger voltage is NOT between 126 and 137.3 VDC THEN NOTIFY the Shift Supervisor. _____

6.1.9 PERFORM Lineup 2, SWBD E1D11(E2D11) Channel II Lineup. _____

6.1.10 VERIFY battery charger current less than 330 amps. _____

6.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

6.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

6.1.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. GO TO Step 6.3 to complete shutdown of the battery charger. _____

6.1.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 6.2 to transfer to the other battery charger. _____

6.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

6.1.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

6.1.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 6.2 to transfer to the other battery charger. _____

6.1.12.6 INITIATE appropriate corrective action. _____

6.1.13 IF Annunciator Lampbox 3M02-B-1 "125V DC SYSTEM E1D11(E2D11) TRBL" is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

6.1.14 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

6.2 Transfer of Train D Channel II Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC.
(Reference 2.20, 2.21, 2.22)
- IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- WHEN the operating battery charger is removed from service during the transfer process, THEN the associated Class 1E 125V DC Distribution Switchboard is powered only from the battery.
- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 {10 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.2.1 PERFORM Addendum 1, Control-Loop Alignment. _____

6.2.2 ENSURE the "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____

6.2.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {10 ft EAB, E1A(E2A) SWGR Rm}

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"125V DC BATT CHGR E1D11(E2D11)-1" MCC E1A4(E2A4)/F3L _____	"125V DC BATT CHGR E1D11(E2D11)-2" MCC E1A1(E2A1)/T3R _____

6.2.4 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

6.2.5 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

6.2.6 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/2A _____	"BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/3A _____

6.2.7 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/2A _____	"BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/3A _____

6.2.8 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

<u>E1D11(E2D11)-1</u>	<u>E1D11(E2D11)-2</u>
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

6.2.9 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

6.2.10 VERIFY battery charger current less than 330 amps. _____

6.2.11 VERIFY battery charger voltage is between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

6.2.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

6.2.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. RETURN TO Step 6.2.1 to transfer to the other battery charger. _____

6.2.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 6.2.1 to transfer to the other battery charger. _____

6.2.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

6.2.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

6.2.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 6.2.1 to transfer to the other battery charger. _____

6.2.12.6 INITIATE appropriate corrective action. _____

6.2.13 IF Annunciator Lampbox 3M02-B-1 "125V DC SYSTEM E1D11(E2D11) TRBL" is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

6.2.14 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

6.3 Removing Train D Channel II E1D11(E2D11) from Service

NOTE

- All switches and breakers required for the performance of Section 6.0 are located in Train D Channel II Distribution Room 009 {10 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE,** take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

6.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

6.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the "125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)" breaker. {SWBD E1D11(E2D11)/1B} _____

6.3.3 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

6.3.4 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

6.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1D11(E2D11)-1	E1D11(E2D11)-2
"BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/2A _____	"BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)" E1D11(E2D11)/3A _____

6.3.6 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

7.0 Train B Channel III E1B11(E2B11) Operation

NOTE

- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

7.1 Placing Train B Channel III E1B11(E2B11) in Service

7.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

7.1.2 ENSURE the "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position for the battery charger being placed in service.

E1B11(E2B11)-1	E1B11(E2B11)-2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____

7.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {35 ft EAB, E1B(E2B) SWGR Rm}

E1B11(E2B11)-1	E1B11(E2B11)-2
"125V DC BATT CHGR E1B11(E2B11)-1" MCC E1B1(E2B1)/Q2R _____	"125V DC BATT CHGR E1B11(E2B11)-2" MCC E1B2(E2B2)/A6R _____

7.1.4 ENSURE the "125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)" breaker closed. {SWBD E1B11(E2B11)/1B} _____

7.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

<u>E1B11(E2B11)-1</u>	<u>E1B11(E2B11)-2</u>
"BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)" E1B11(E2B11)/2A _____	"BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)" E1B11(E2B11)/3A _____

7.1.6 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

<u>E1B11(E2B11)-1</u>	<u>E1B11(E2B11)-2</u>
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

<u>CAUTION</u>

<u>IF</u> charger voltage increases to greater than 140 VDC <u>THEN</u> the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

<u>NOTE</u>

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

7.1.7 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

<u>E1B11(E2B11)-1</u>	<u>E1B11(E2B11)-2</u>
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

7.1.8 VERIFY battery charger voltage between 126 and 137.3 VDC. <u>IF</u> battery charger voltage is <u>NOT</u> between 126 and 137.3 VDC <u>THEN</u> NOTIFY the Shift Supervisor. _____

7.1.9 PERFORM Lineup 3, SWBD E1B11(E2B11) Channel III Lineup. _____

7.1.10 VERIFY battery charger current less than 330 amps. _____

7.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) ____

7.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

7.1.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the “AC INPUT CB-1” breaker of the charger. ____

a. NOTIFY the Shift Supervisor. ____

b. GO TO Step 7.3 to complete shutdown of the battery charger. ____

7.1.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 7.2 to transfer to the other battery charger. ____

7.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. ____

7.1.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. ____

7.1.12.5 IF battery charger voltage is less than or 126 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 7.2 to transfer to the other battery charger. ____

7.1.12.6 INITIATE appropriate corrective action. ____

7.1.13 IF Annunciator Lampbox 3M02-C-1 “125V DC SYSTEM E1B11(E2B11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. ____

7.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. ____

7.2 Transfer of Train B Channel III Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC.
(Reference 2.20, 2.21, 2.22)
- IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- WHEN the operating battery charger is removed from service during the transfer process, THEN the associated Class 1E 125V DC Distribution Switchboard is powered only from the battery.
- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

7.2.1 PERFORM Addendum 1, Control-Loop Alignment. _____

7.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“FLOAT/EQUALIZE” Switch in “FLOAT” _____	“FLOAT/EQUALIZE” Switch in “FLOAT” _____

7.2.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {35 ft EAB, E1B(E2B) SWGR Rm}

E1B11(E2B11)-1	E1B11(E2B11)-2
“125V DC BATT CHGR E1B11(E2B11)-1” MCC E1B1(E2B1)/Q2R _____	“125V DC BATT CHGR E1B11(E2B11)-2” MCC E1B2(E2B2)/A6R _____

7.2.4 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“AC INPUT CB-1” _____	“AC INPUT CB-1” _____

7.2.5 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“DC OUTPUT CB-2” _____	“DC OUTPUT CB-2” _____

7.2.6 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)” E1B11(E2B11)/2A _____	“BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)” E1B11(E2B11)/3A _____

7.2.7 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)” E1B11(E2B11)/2A _____	“BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)” E1B11(E2B11)/3A _____

7.2.8 CLOSE the “DC OUTPUT CB-2” breaker for the battery charger being placed in service.

E1B11(E2B11)-1	E1B11(E2B11)-2
“DC OUTPUT CB-2” _____	“DC OUTPUT CB-2” _____

CAUTION

<u>IF</u> charger voltage increases to greater than 140 VDC <u>THEN</u> the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

7.2.9 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1B11(E2B11)-1	E1B11(E2B11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

7.2.10 VERIFY battery charger current less than 330 amps. _____

7.2.11 VERIFY battery charger voltage is between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

7.2.12 <u>IF</u> battery charger voltage is <u>NOT</u> between 129.2 and 131.8 VDC, <u>THEN</u> PERFORM the following:

7.2.12.1 <u>IF</u> charger voltage exceeds 140 VDC <u>THEN</u> IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. RETURN TO Step 7.2.1 to transfer to the other battery charger. _____

7.2.12.2 <u>IF</u> charger voltage exceeds 137.3 VDC, <u>THEN</u> NOTIFY the Shift Supervisor AND RETURN TO Step 7.2.1 to transfer to the other battery charger. _____

7.2.12.3 <u>IF</u> battery charger voltage exceeds 131.8 VDC <u>THEN</u> NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

7.2.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

7.2.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 7.2.1 to transfer to the other battery charger. _____

7.2.12.6 INITIATE appropriate corrective action. _____

7.2.13 IF Annunciator Lampbox 3M02-C-1 “125V DC SYSTEM E1B11(E2B11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

7.2.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

7.3 Removing Train B Channel III E1B11(E2B11) from Service

NOTE

- All switches and breakers required for the performance of Section 7.0 are located in Train B Channel III Distribution Room 213 {35 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE,** take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

7.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

7.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the "125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)" breaker. {SWBD E1B11(E2B11)/1B}. _____

7.3.3 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

E1B11(E2B11)-1	E1B11(E2B11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

7.3.4 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

E1B11(E2B11)-1	E1B11(E2B11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

7.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1B11(E2B11)-1	E1B11(E2B11)-2
"BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)" E1B11(E2B11)/2A _____	"BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)" E1B11(E2B11)/3A _____

7.3.6 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

8.0 Train C Channel IV E1C11(E2C11) Operation

NOTE

- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

8.1 Placing Train C Channel IV E1C11(E2C11) in Service

8.1.1 PERFORM Addendum 1, Control-Loop Alignment. _____

8.1.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
“FLOAT/EQUALIZE” Switch in “FLOAT” _____	“FLOAT/EQUALIZE” Switch in “FLOAT” _____

8.1.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {60 ft EAB, E1C(E2C) SWGR Rm}

E1C11(E2C11)-1	E1C11(E2C11)-2
“125V DC BATT CHGR E1C11(E2C11)-1” MCC E1C1(E2C1)/Q2R _____	“125V DC BATT CHGR E1C11(E2C11)-2” MCC E1C2(E2C2)/H4L _____

8.1.4 ENSURE the “125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)” breaker closed. {SWBD E1C11(E2C11)/1B} _____

8.1.5 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
“BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)” E1C11(E2C11)/2A _____	“BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)” E1C11(E2C11)/3A _____

8.1.6 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

8.1.7 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

8.1.8 VERIFY battery charger voltage between 126 and 137.3 VDC. IF battery charger voltage is NOT between 126 and 137.3 VDC THEN NOTIFY the Shift Supervisor. _____

8.1.9 PERFORM Lineup 4, SWBD E1C11(E2C11) Channel IV Lineup. _____

8.1.10 VERIFY battery charger current less than 330 amps. _____

8.1.11 VERIFY battery charger voltage between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

8.1.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

8.1.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. ______

b. GO TO Step 8.3 to complete shutdown of the battery charger. ______

8.1.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 8.2 to transfer to the other battery charger. ______

8.1.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. ______

8.1.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. ______

8.1.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND GO TO Step 8.2 to transfer to the other battery charger. ______

8.1.12.6 INITIATE appropriate corrective action. ______

8.1.13 IF Annunciator Lampbox 3M02-D-1 “125V DC SYSTEM E1C11(E2C11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. ______

8.1.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. ______

8.2 Transfer of Train C Channel IV Battery Chargers

CAUTION

- A Class 1E battery is **INOPERABLE** anytime it is **NOT** aligned to an operating battery charger.
- IF a Class 1E battery is realigned to an operating battery charger in less than or equal to **15 minutes** AND **only up to one battery cell is jumpered out**, THEN the Class 1E battery may be declared **OPERABLE** after verifying the operating battery charger normal float voltage is greater than or equal to 129.2 VDC.
(Reference 2.20, 2.21, 2.22)
- IF a Class 1E battery is **NOT** realigned to an operating battery charger within **15 minutes** OR **more than one battery cell is jumpered out**, THEN Section 9.0, Class 1E Battery Operability Following a Discharge Transient, must be performed prior to declaring the battery operable. (Reference 2.18, 2.21, 2.22)

NOTE

- WHEN the operating battery charger is removed from service during the transfer process, THEN the associated Class 1E 125V DC Distribution Switchboard is powered only from the battery.
- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

8.2.1 PERFORM Addendum 1, Control-Loop Alignment. _____

8.2.2 ENSURE the “FLOAT/EQUALIZE” toggle switch in the “FLOAT” position for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
“FLOAT/EQUALIZE” Switch in “FLOAT” _____	“FLOAT/EQUALIZE” Switch in “FLOAT” _____

8.2.3 ENSURE the 480V AC SUPPLY BREAKER closed for the battery charger being placed in service. {60 ft EAB, E1C(E2C) SWGR Rm}

E1C11(E2C11)-1	E1C11(E2C11)-2
"125V DC BATT CHGR E1C11(E2C11)-1" MCC E1C1(E2C1)/Q2R _____	"125V DC BATT CHGR E1C11(E2C11)-2" MCC E1C2(E2C2)/H4L _____

8.2.4 OPEN the "AC INPUT CB-1" breaker for the battery charger being removed from service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

8.2.5 OPEN the "DC OUTPUT CB-2" breaker for the battery charger being removed from service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

8.2.6 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed from service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/2A _____	"BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/3A _____

8.2.7 CLOSE the BATT CHGR TO 125V DC SWBD breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/2A _____	"BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/3A _____

8.2.8 CLOSE the "DC OUTPUT CB-2" breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"DC OUTPUT CB-2" _____	"DC OUTPUT CB-2" _____

CAUTION

IF charger voltage increases to greater than 140 VDC THEN the "AC INPUT CB-1" breaker for the battery charger SHALL be Opened IMMEDIATELY to prevent damage to system components. (Reference 2.16)

NOTE

If "AC INPUT CB-1" breaker trips and no apparent cause for the trip is identified, the Shift/Unit Supervisor may direct the breaker to be re-closed one time. The battery charger SHALL be declared inoperable if the breaker trips a second time.

8.2.9 CLOSE the "AC INPUT CB-1" breaker for the battery charger being placed in service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"AC INPUT CB-1" _____	"AC INPUT CB-1" _____

8.2.10 VERIFY battery charger current less than 330 amps. _____

8.2.11 VERIFY battery charger voltage is between 129.2 and 131.8 VDC. (Reference 2.10, 2.11, 2.13, and 2.19) _____

8.2.12 IF battery charger voltage is NOT between 129.2 and 131.8 VDC, THEN PERFORM the following:

8.2.12.1 IF charger voltage exceeds 140 VDC THEN IMMEDIATELY OPEN the "AC INPUT CB-1" breaker of the charger. _____

a. NOTIFY the Shift Supervisor. _____

b. RETURN TO Step 8.2.1 to transfer to the other battery charger. _____

8.2.12.2 IF charger voltage exceeds 137.3 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 8.2.1 to transfer to the other battery charger. _____

8.2.12.3 IF battery charger voltage exceeds 131.8 VDC, THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

8.2.12.4 IF battery charger voltage is less than 129.2 VDC but greater than or equal to 126 VDC THEN NOTIFY the Shift Supervisor AND initiate action to have Electrical Maintenance adjust float voltage. _____

8.2.12.5 IF battery charger voltage is less than 126 VDC THEN NOTIFY the Shift Supervisor AND RETURN TO Step 8.2.1 to transfer to the other battery charger. _____

8.2.12.6 INITIATE appropriate corrective action. _____

8.2.13 IF Annunciator Lampbox 3M02-D-1 “125V DC SYSTEM E1C11(E2C11) TRBL” is illuminated, THEN TAKE appropriate action per 1(2)POP09-AN-03M2, Annunciator Lampbox 1(2)-03M-2 Response Instructions. _____

8.2.14 RETURN switches to the “AS FOUND” positions per Addendum 1, Control-Loop Alignment. _____

8.3 Removing Train C Channel IV E1C11(E2C11) from Service

NOTE

- All switches and breakers required for the performance of Section 8.0 are located in Train C Channel IV Distribution Room 319 {60 ft EAB}, unless otherwise specified.
- Opening battery output breaker results in Standby DG being **INOPERABLE,** take appropriate actions per Technical Specifications 3.8.1.1, 3.8.1.2, 3.8.1.3, 3.8.2.1, 3.8.2.2, 3.8.3.1, 3.8.3.2, and TRM 3.8.2.2.
- Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23).
- Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

8.3.1 PERFORM Addendum 1, Control-Loop Alignment. _____

8.3.2 IF it is desired to disconnect the 125V DC BATT from the 125V DC SWBD, THEN OPEN the “125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)” breaker. {SWBD E1C11(E2C11)/1B} _____

8.3.3 OPEN the “AC INPUT CB-1” breaker for the battery charger being removed from service.

E1C11(E2C11)-1	E1C11(E2C11)-2
“AC INPUT CB-1” _____	“AC INPUT CB-1” _____

8.3.4 OPEN the “DC OUTPUT CB-2” breaker for the battery charger being removed from service.

E1C11(E2C11)-1	E1C11(E2C11)-2
“DC OUTPUT CB-2” _____	“DC OUTPUT CB-2” _____

8.3.5 OPEN the BATT CHGR TO 125V DC SWBD breaker for the battery charger being removed service.

E1C11(E2C11)-1	E1C11(E2C11)-2
"BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/2A _____	"BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)" E1C11(E2C11)/3A _____

8.3.6 RETURN switches to the "AS FOUND" positions per Addendum 1, Control-Loop Alignment. _____

9.0 Class 1E Battery Operability Following a Discharge Transient

9.1 ENSURE a battery charger for the applicable battery is in service.

E1A11(E2A11)-1/2 _____ E1B11(E2B11)-1/2 _____

E1C11(E2C11)-1/2 _____ E1D11(E2D11)-1/2 _____

NOTE

Step 9.2 should not be confused with performing an Equalize Charge PM. In this instance, the higher voltage setting is being used to reduce recharge time.

9.2 IF the discharge exceeded 1 hour, THEN PLACE the applicable charger's “FLOAT/EQUALIZE” toggle switch in the “EQUALIZE" position.

E1A11(E2A11)-1/2

“FLOAT/EQUALIZE”
Switch in “EQUALIZE” _____

E1B11(E2B11)-1/2

“FLOAT/EQUALIZE”
Switch in “EQUALIZE” _____

E1C11(E2C11)-1/2

“FLOAT/EQUALIZE”
Switch in “EQUALIZE” _____

E1D11(E2D11)-1/2

“FLOAT/EQUALIZE”
Switch in “EQUALIZE” _____

9.3 WHEN the charge current has dropped to less than 20 amps, as measured by ERFDADS/ICS, THEN PLACE the applicable charger's "FLOAT/EQUALIZE" toggle switch in the "FLOAT" position. _____

- ERFDADS/ICS pt. DJIA0060 - 125VDC E1A11 BATT AMPS
- ERFDADS/ICS pt. DJIA0063 - 125VDC E1B11 BATT AMPS
- ERFDADS/ICS pt. DJIA0066 - 125VDC E1C11 BATT AMPS
- ERFDADS/ICS pt. DJIA0069 - 125VDC E1D11 BATT AMPS

E1A11(E2A11)-1/2	E1B11(E2B11)-1/2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____
E1C11(E2C11)-1/2	E1D11(E2D11)-1/2
"FLOAT/EQUALIZE" Switch in "FLOAT" _____	"FLOAT/EQUALIZE" Switch in "FLOAT" _____

9.4 WHEN the charge current (with the charger set for **FLOAT** operation), as measured by M&TE (clamp on amp meter) at the battery lead (preferred) or ERFDADS/ICS is less than 2 amps, THEN NOTIFY Electrical Maintenence to perform 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test. _____

9.5 IF 0PSP06-DJ-0001, 125 Volt Class 1E Battery 7 Day Surveillance Test was completed satisfactorily, THEN DECLARE the applicable battery **OPERABLE**. _____

9.6 IF battery voltage decreased to less than 110 volts during the discharge, THEN NOTIFY Electrical Maintenence to perform 0PSP06-DJ-0002, 125 Volt Class 1E Battery Quarterly Surveillance Test, per Technical Specifications 4.8.2.1 [ITS SR 3.8.7.2]. _____

- Battery Voltage as read locally on the Main Bus Voltmeter
- Battery Voltage as read at 1E DC SYS 125 VOLT BUS Voltage (CP003)
- ERFDADS/ICS pt. DJEA0004 - 125VDC BUS E1A11 CH I VOLTS
- ERFDADS/ICS pt. DJEA0003 - 125VDC BUS E1B11 CH III VOLTS
- ERFDADS/ICS pt. DJEA0002 - 125VDC BUS E1C11 CH IV VOLTS
- ERFDADS/ICS pt. DJEA0001 - 125VDC BUS E1D11 CH II VOLTS

10.0 Support Documents

10.1 Addendum 1, Control-Loop Alignment

10.2 Lineup 1, SWBD E1A11(E2A11) Channel I Lineup

10.3 Lineup 2, SWBD E1D11(E2D11) Channel II Lineup

10.4 Lineup 3, SWBD E1B11(E2B11) Channel III Lineup

10.5 Lineup 4, SWBD E1C11(E2C11) Channel IV Lineup

NOTE

Routine swapping of battery chargers has resulted in the loss of the associated distribution panel. (Reference 2.23). Use of Addendum 1, Control-Loop Alignment, during swapping of battery chargers is an Operations good practice. The Unit/Shift Supervisor MAY authorize a different control-loop alignment.

1. CIRCLE "AS FOUND" switch positions. _____

2. REMOVE potentially failed "SG LVL" by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	LT-571	LT-519		
SG B	LT-572	LT-529		
SG C	LT-573	LT-539		
SG D	LT-574	LT-549		

3. REMOVE potentially failed "FW FLOW" by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	FT -510	FT -511		
SG B	FT -520	FT -521		
SG C	FT -530	FT -531		
SG D	FT -540	FT -541		

4. REMOVE potentially failed "STM FLOW" by selecting alternate channel: _____

Potentially Failed Instrument Channel/Power Supply				
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
SG A	FT -512	FT -513		
SG B	FT -522	FT -523		
SG C	FT -532	FT -533		
SG D	FT -542	FT -543		

5. REMOVE potentially failed "PRZR PRESS CONT SEL" by selecting alternate: _____

Position	Potentially Failed Instrument Channel/Power Supply			
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
P457/456		P456	P457	
P455/456	P455	P456		
P455/458	P455			P458
alternate	P457/456	P455/458	P455/456	P455/456

6. REMOVE potentially failed "PRZR LEVEL CONT SEL" by selecting alternate: _____

Position	Potentially Failed Instrument Channel/Power Supply			
	I (DP1201)	II (DP1202)	III (DP1203)	IV (DP1204)
L467/466		L466	L467	
L465/466	L465	L466		
L465/467	L465		L467	
alternate	L467/466	L465/467	L465/466	N/A

Unit 1 **(Circle Unit Performing Lineup)** **Unit 2**

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating in device manipulation:

______________________ ______________
Name Initials

______________________ ______________

______________________ ______________

______________________ ______________

Device lineup completed by: __________________________ ________ ________
Operator Date Time

Lineup 1 Reviewed: ___________________________________ ________
Unit Supervisor Date

This lineup, when completed, SHALL be retained for five years.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A1(E2A1)/Q1R	125V DC BATT CHGR E1A11(E2A11)-1	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A2(E2A2)/A2L	125V DC BATT CHGR E1A11(E2A11)-2	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A11(E2A11)/1B	125V BATT E1A11(E2A11) TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	CLOSED			
E1A11(E2A11)/2A	BATT CHGR E1A11(E2A11)-2 TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	(1) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-2 "AC INPUT CB-1"	EAB 10' BATT CHGR E1A11(E2A11)-2	(1) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-2 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1A11(E2A11)-2	(1) ON / OFF			
E1A11(E2A11)/3A	BATT CHGR E1A11(E2A11)-1 TO 125V DC SWBD E1A11(E2A11)	EAB 10' SWBD E1A11(E2A11)	(2) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-1 "AC INPUT CB-1"	EAB 10' BATT CHGR E1A11(E2A11)-1	(2) ON / OFF			
NONE	BATT CHGR E1A11(E2A11)-1 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1A11(E2A11)-1	(2) ON / OFF			
E1A11(E2A11)/2B	SPARE FOR BATT TEST EQUIP	EAB 10' SWBD E1A11(E2A11)	OFF			
E1A11(E2A11)/3B	TO 125V DC DIST PNL PL039A EAB 10' EL	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/3C	STBY DIESEL GEN 11(21) CONT PNL ZLP101	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/4A	TRAIN A RX TRIP SWGR CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/4B	TO 125V DC DIST PNL PL139A STBY D/G 11(21) RM 35' EL	EAB 10' SWBD E1A11(E2A11)	ON			

(1) IF Battery Charger E1A11(E2A11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)
(2) IF Battery Charger E1A11(E2A11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A11(E2A11)/4D	4.16KV BUS E1A(E2A) DC CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5B	480V ESF LC E1A(E2A) DC CONTROL PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5C	ESF LOAD SEQUENCER CABINET A-ZLP801	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5D	CH 1 INST/CONT PWR TMI INVERTER DC PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/5E	CH 1 INST/CONT PWR NSSS INVERTER DC PWR	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/7B	B/U BKR-PRZR PORV 0655A 1(2)-RC-PCV-0655A	EAB 10' SWBD E1A11(E2A11)	ON			
E1A11(E2A11)/7C	PRZR PORV 0655A 1(2)-RC-PCV-0655A	EAB 10' SWBD E1A11(E2A11)	ON			

Unit 1 **(Circle Unit Performing Lineup)** **Unit 2**

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating in device manipulation:

________________ Name ________ Initials

________________ ________

________________ ________

________________ ________

Device lineup completed by: ________________ Operator ______ Date ______ Time

Lineup 2 Reviewed: ________________ Unit Supervisor ______ Date

This lineup, when completed, SHALL be retained for five years.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A4(E2A4)/F3L	125V DC BATT CHGR E1D11(E2D11)-1	EAB 10' E1A(E2A) SWGR Rm	ON			
E1A1(E2A1)/T3R	125V DC BATT CHGR E1D11(E2D11)-2	EAB 10' E1A(E2A) SWGR Rm	ON			
E1D11(E2D11)/1B	125V BATT E1D11(E2D11) TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	CLOSED			
E1D11(E2D11)/2A	BATT CHGR E1D11(E2D11)-1 TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	(1) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-1 "AC INPUT CB-1"	EAB 10' BATT CHGR E1D11(E2D11)-1	(1) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-1 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1D11(E2D11)-1	(1) ON / OFF			
E1D11(E2D11)/3A	BATT CHGR E1D11(E2D11)-2 TO 125V DC SWBD E1D11(E2D11)	EAB 10' SWBD E1D11(E2D11)	(2) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-2 "AC INPUT CB-1"	EAB 10' BATT CHGR E1D11(E2D11)-2	(2) ON / OFF			
NONE	BATT CHGR E1D11(E2D11)-2 "DC OUTPUT CB-2"	EAB 10' BATT CHGR E1D11(E2D11)-2	(2) ON / OFF			
E1D11(E2D11)/2B	SPARE FOR BATTERY TEST EQUIP	EAB 10' SWBD E1D11(E2D11)	OFF			
E1D11(E2D11)/3B	CH II INST/CONT PWR NSSS INVERTER DC PWR	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/4C	AFW PUMP 14(24) TURB T AND T VLV 1(2)-AF-MOV-0514	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/5C	AFW PMP 14(24) TURB MAIN STM INLET VLV 1(2)-AF-MOV-0143	EAB 10' SWBD E1D11(E2D11)	ON			

(1) <u>IF</u> Battery Charger E1D11(E2D11)-1 is in service, <u>THEN</u> breaker SHALL be ON, <u>OTHERWISE</u> breaker shall be OFF. (circle position)
(2) <u>IF</u> Battery Charger E1D11(E2D11)-2 is in service, <u>THEN</u> breaker SHALL be ON, <u>OTHERWISE</u> breaker shall be OFF. (circle position)

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1D11(E2D11)/6A	TO 125V DC DIST PNL PL040A EAB 10' EL	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/6B	SG1D(SG2D) AFW OCIV 1(2)-AF-MOV-0019	EAB 10' SWBD E1D11(E2D11)	ON			
E1D11(E2D11)/7C	SG1D(SG2D) AFW REG VLV 1(2)-AF-FV-7526	EAB 10' SWBD E1D11(E2D11)	ON			

Unit 1 **(Circle Unit Performing Lineup)** **Unit 2**

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating in device manipulation:

______________________ ____________
Name Initials

______________________ ____________

______________________ ____________

______________________ ____________

Device lineup completed by: __________________________ ________ _______
Operator Date Time

Lineup 3 Reviewed: ___________________________________ _______
Unit Supervisor Date

This lineup, when completed, SHALL be retained for five years.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1B1(E2B1)/Q2R	125V DC BATT CHGR E1B11(E2B11)-1	EAB 35' E1B(E2B) SWGR Rm	ON			
E1B2(E2B2)/A6R	125V DC BATT CHGR E1B11(E2B11)-2	EAB 35' E1B(E2B) SWGR Rm	ON			
E1B11(E2B11)/1B	125V BATT E1B11(E2B11) TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	CLOSED			
E1B11(E2B11)/2A	BATT CHGR E1B11(E2B11)-1 TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	(1) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-1 "AC INPUT CB-1"	EAB 35' BATT CHGR E1B11(E2B11)-1	(1) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-1 "DC OUTPUT CB-2"	EAB 35' BATT CHGR E1B11(E2B11)-1	(1) ON / OFF			
E1B11(E2B11)/3A	BATT CHGR E1B11(E2B11)-2 TO 125V DC SWBD E1B11(E2B11)	EAB 35' SWBD E1B11(E2B11)	(2) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-2 "AC INPUT CB-1"	EAB 35' BATT CHGR E1B11(E2B11)-2	(2) ON / OFF			
NONE	BATT CHGR E1B11(E2B11)-2 "DC OUTPUT CB-2"	EAB 35' BATT CHGR E1B11(E2B11)-2	(2) ON / OFF			
E1B11(E2B11)/2B	SPARE FOR BATT TEST EQUIP	EAB 35' SWBD E1B11(E2B11)	OFF			
E1B11(E2B11)/3B	TO 125V DC DIST PNL PL039B EAB 35' EL	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/3C	STBY DIESEL GEN 12(22) CONT PNL ZLP103	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4B	480V ESF LC E1B(E2B) DC CONT PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4C	TO 125V DC DIST PNL PL 139B STBY DG 12(22) RM 35' EL	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/4D	4.16KV BUS E1B(E2B) DC CONTROL PWR	EAB 35' SWBD E1B11(E2B11)	ON			

(1) IF Battery Charger E1B11(E2B11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)
(2) IF Battery Charger E1B11(E2B11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1B11(E2B11)/5B	ESF LOAD SEQUENCER CABINET B-ZLP802	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/5C	TRAIN B RX TRIP SWGR CONTROL PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/5D	CH III INST/CONT PWR NSSS INVERTER DC PWR	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/7B	B/U BKR-PRZR PORV 0656A 1(2)-RC-PCV-0656A	EAB 35' SWBD E1B11(E2B11)	ON			
E1B11(E2B11)/7C	PRZR PORV 0656A 1(2)-RC-PCV-0656A	EAB 35' SWBD E1B11(E2B11)	ON			

Unit 1 **(Circle Unit Performing Lineup)** **Unit 2**

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating
in device manipulation:

____________________ ____________
Name Initials

____________________ ____________

____________________ ____________

____________________ ____________

Device lineup completed by: ____________________ ________ ________
Operator Date Time

Lineup 4 Reviewed: ____________________________ ________
Unit Supervisor Date

This lineup, when completed, SHALL be retained for five years.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1C1(E2C1)/Q2R	125V DC BATT CHGR E1C11(E2C11)-1	EAB 60' E1C(E2C) SWGR Rm	ON			
E1C2(E2C2)/H4L	125V DC BATT CHGR E1C11(E2C11)-2	EAB 60' E1C(E2C) SWGR Rm	ON			
E1C11(E2C11)/1B	125V BATT E1C11(E2C11) TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	CLOSED			
E1C11(E2C11)/2A	BATT CHGR E1C11(E2C11)-1 TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	(1) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-1 "AC INPUT CB-1"	EAB 60' BATT CHGR E1C11(E2C11)-1	(1) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-1 "DC OUTPUT CB-2"	EAB 60' BATT CHGR E1C11(E2C11)-1	(1) ON / OFF			
E1C11(E2C11)/3A	BATT CHGR E1C11(E2C11)-2 TO 125V DC SWBD E1C11(E2C11)	EAB 60' SWBD E1C11(E2C11)	(2) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-2 "AC INPUT CB-1"	EAB 60' BATT CHGR E1C11(E2C11)-2	(2) ON / OFF			
NONE	BATT CHGR E1C11(E2C11)-2 "DC OUTPUT CB-2"	EAB 60' BATT CHGR E1C11(E2C11)-2	(2) ON / OFF			
E1C11(E2C11)/2B	SPARE FOR BATT TEST EQUIP	EAB 60' SWBD E1C11(E2C11)	OFF			
E1C11(E2C11)/3B	STBY DIESEL GEN 13(23) CONT PNL ZLP105	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/3C	4.16KV BUS E1C(E2C) DC CONTROL PWR	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/4B	TO 125V DC DIST PNL PL 139C STBY D/G 13(23) RM 35' EL	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/4C	480V ESF LC E1C(E2C) DC CONTROL PWR	EAB 60' SWBD E1C11(E2C11)	ON			

(1) IF Battery Charger E1C11(E2C11)-1 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)
(2) IF Battery Charger E1C11(E2C11)-2 is in service, THEN breaker SHALL be ON, OTHERWISE breaker shall be OFF. (circle position)

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1C11(E2C11)/4D	TO 125V DC DIST PNL PL039C EAB 60' EL	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/5D	CH IV INST/CONT PWR TMI INVERTER DC PWR	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/5E	CH IV INST/CONT PWR NSSS INVERTER DC PWR	EAB 60' SWBD E1C11(E2C11)	ON			
E1C11(E2C11)/7B	ESF LOAD SEQUENCER CABINET C-ZLP803	EAB 60' SWBD E1C11(E2C11)	ON			

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**PLACE ROD CONTROL MG SET IN SERVICE**
JPM NO.:	**P3**
REVISION:	**2**
LOCATION:	**UNIT 1 or 2**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	PLACE ROD CONTROL MG SET IN SERVICE
JPM No.:	P3
Rev. No:	2
STP Task:	2200, Startup or Shutdown Rod Drive MG Sets
STP Objective:	NLO2200, Startup or Shutdown the Control Rod Drive MG Sets per 0POP02-RS-0001.
Related K/A Reference:	001.K6.10, [3.1/3.3], Knowledge of the effect of a loss or malfunction on the following: Location and operation of Rod Control MG sets and control panel, including trips
References:	0POP02-RS-0001, Rev. 11, Rod Control
Task Normally Completed By:	PO
Method of Testing:	Simulated
Location of Testing:	Plant
Time Critical Task:	NO
Alternate Path JPM:	YES
Validation Time:	15 min.

Required Materials (Tools/Equipment):

Working copy of 0POP02-RS-0001, Rod Control, with Section 5.0 initialed off as applicable.

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit is in MODE 5 with various maintenance projects ongoing. Maintenance has just been completed on the generator portion of Rod Drive MG Set #1, and Electrical Maintenance has requested that it be started and placed on the bus for voltage and current checks. Rod Drive MG Set #2 is secured (output breaker open, but racked-in). The off going crew has completed Section 5.0, System Preparation.

INITIATING CUE:

You are directed by the Unit Supervisor to startup Rod Control Motor Generator Set #1 and close the generator output breaker in accordance with 0POP02-RS-0001, section 6.0.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Motor Generator Set #1 is started and its generator output breaker is manually closed. The Motor Generator set is then secured when a "ROD DRIVE MG SET TRBL" annunciator is received in the Control Room.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Student HO of working copy of 0POP02-RS-0001, Rod Control, with Section 5.0 initialed off as applicable.

NOTES:

None

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:
• Critical steps are identified by (C). • Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

<u>**SAT/UNSAT**</u> **Performance Step:** 1

Obtain a current copy of 0POP02-RS-0001, Rod Control.

Standard:

Obtains a copy of 0POP02-RS-0001, Rod Control.

Comment:

Provide the candidate a copy of 0POP02-RS-0001, Rod Control.

It is expected the candidate will review the Prerequisites, Notes and Precautions.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Ensure MG Set #1 Voltage Adjust potentiometer is set at 5.

Standard:

Ensures MG Set #1 "Voltage Adjust" potentiometer is set at 5 (mid position).

Comment:

Cue:

Potentiometer is set at 5 (mid position).

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Ensure MG Set #1 switch positions are in the following positions: "SYNCHRONIZE" selector in OFF and the "VOLTMETER" selector NOT in the OFF position.

Standard:

1) Ensures MG Set #1 "SYNCHRONIZE" selector switch in OFF.

2) Ensures MG Set #1 "VOLTMETER" selector switch NOT in OFF.

Comment:

The Synchronizing Sw. handles are not normally inserted into the Sw. housing. In Unit 1 the Sw. handle must be obtained from the Control Room. In Unit 2 the Sw. handle is hanging off a door handle on the MG Set Control Panel.

Cue:

1) SYNCHRONIZE selector switch – OFF

UNIT 1: Whether the student has already simulated getting the Sw. handle from the Control Room or not, inform him/her that they have the handle and it has been inserted into the switch housing on the Control Panel.

UNIT 2: Once the student simulates placing the Sw handle (available locally) into the Sw housing, inform him/her it has been inserted into the switch housing on the Control Panel.

2) VOLTMETER selector switch - "C-A" position

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4(C)

Close MG Set #1 Motor Circuit Breaker.

Standard:

Closes MG Set #1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "CLOSE" position.

Comment:

Cue:

- Red light: Initially NOT LIT, then LIT
- Green light: Initially LIT, the NOT LIT
- (Audible) you hear the MG Set starting up.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5(C)

Apply power to "flash" the MG Set #1 generator field.

Standard:

Performs the following, when motor is at full speed (after about 15 seconds):

1) *Depresses and Holds the MG Set #1 "GEN FIELD FLASH" pushbutton*

2) *Verifies MG Set #1 "GENERATOR LINE VOLTS" stabilizes at > 225 VAC*

3) *Releases MG Set #1 "GEN FIELD FLASH" pushbutton.*

Comment:

Voltmeter is located on upper left section of Control Panel

Cue:

When the operator flashes the field, state that the generator output voltage is increasing, then stabilizes at 235 VAC.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Adjust MG Set #1 output voltage to between 255 and 265 VAC and checks all three phases.

Standard:

1) Rotates the "VOLTAGE ADJUST" potentiometer to adjust MG Set #1 output to 260 ±5 VAC.

2) Verifies all three phase outputs to 260 ±5 VAC.

Comment:

Cue:

1) Voltage increases from 235 to 260 VAC

2) Three phase outputs - 260/260/259 VAC

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 7 (C)

Close MG Set #1 Generator Circuit Breaker.

Standard:

Closes MG Set #1 Generator Circuit Breaker by taking the "GENERATOR" handswitch to "CLOSE"

Comment:

Cue:

1) (If examinee specifically asks) - Rod Drive MG Set #2 breaker is Racked In and open.

As the candidate closes the output breaker:

Initially: Red light NOT LIT
Green Light LIT

Finally: Red Light LIT
Green Light NOT LIT

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8(C)

Verify MG set trouble alarm on CP-005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is NOT lit.

Standard:

Removes MG Set #1 from service as follows when informed that annunciator 5M03/F5, "ROD DRIVE MG SET TRBL" is illuminated in the Control Room:

1) *Opens MG Set #1 Generator circuit breaker by momentarily turning the “GENERATOR” handswitch to "Trip".*

2) *Opens MG Set #1 Motor Circuit breaker by momentarily turning the “MOTOR “ handswitch to "Trip".*

Comment:

Cue:

As a Control Room Operator, when contacted, inform the candidate that Annunciator 5M03/F5, "ROD DRIVE MG SET TRBL" initially cleared and has just alarmed again in the Control Room and is currently in an alarm state.

When Generator Circuit Breaker is opened: Initially Red Light LIT, Green light NOT LIT
Finally: Red Light NOT LIT, Green light LIT

When Motor Circuit Breaker is opened: Initially Red Light LIT, Green light NOT LIT
Finally: Red Light NOT LIT, Green light LIT

Notes:

- TERMINATE THE JPM -

JPM FINISH TIME

VERIFICATION OF COMPLETION

Job Performance Measure: P3, PLACE ROD CONTROL MG SET IN SERVICE

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results:

Performer's Results: (Circle One) **Sat/Unsat**

Evaluator: __________________________ **Signature: __________________________**

Date: _____________________

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The unit is in MODE 5 with various maintenance projects ongoing. Maintenance has just been completed on the generator portion of Rod Drive MG Set #1, and Electrical Maintenance has requested that it be started and placed on the bus for voltage and current checks. Rod Drive MG Set #2 is secured (output breaker open, but racked-in). The off going crew has completed Section 5.0, System Preparation.

INITIATING CUE:

You are directed by the Unit Supervisor to startup Rod Control Motor Generator Set #1 and close the generator output breaker in accordance with 0POP02-RS-0001, section 6.0.

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Rod Control			
Quality	Safety-Related	Usage: **IN HAND**	Effective Date: 05/05/03

N. G. Corrick	R.J. Rocha	Crew 2E	Operations
PREPARER	TECHNICAL	USER	COGNIZANT DEPT

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Usage

1 - IN HAND
2 - IN HAND CONTROLLING STATION
3 - REFERENCED
4 - AVAILABLE

1.0 Purpose

This procedure provides instructions for the start-up, operation and shutdown of the Rod Control System.

2.0 References

2.1 NSSS Controls System DBD, 5Z529ZB1003 (Volume 1 of 2), Section 3.1.4, Rod Control System

2.2 STPEGS UFSAR Section 7.7.1.2, Rod Control System

2.3 Single Line Diagram 9-E-PEAF-01, 480V Load Center 1L(2L), EAB

2.4 Single Line Diagram 9-E-PEAE-01, 480V Load Center 1K(2K), EAB

2.5 Westinghouse Nuclear Energy Systems Nuclear Technology Division Rod Control System Technical Manual, VTD-W351-99, VTD-W351-101, VTD-W351-102, VTD-W351-103, VTD-W351-104, VTD-W351-107, VTD-W351-110

2.6 AC Power Supply System for Nuclear Reactor Rod Control, VTD-W351-0113

2.7 Westinghouse Precautions, Limitations and Setpoints for Nuclear Steam Supply Systems, Design Specification 5Z010ZS1101

2.8 0POP09-AN-05M3, ANNUNCIATOR LAMPBOX 5M03 RESPONSE INSTRUCTIONS, F5 “ROD DRIVE MG SET TRBL”

2.9 CR 01-17795-1, Evaluate to determine appropriate time to hold the DC Hold Switch in the "LATCH" position during a DC hold operation.

3.0 Prerequisites

None

4.0 Notes and Precautions

4.1 IF a Reactor Start-up is being performed after an extended shutdown AND the status of the Rod Control System is in doubt, THEN Sections 5.0, 6.0 or 7.0, 8.0 or 9.0 and 10.0 of this procedure SHALL be performed sequentially as directed.

4.2 IF a Reactor Start-up is being performed after a short duration shutdown AND the status of the Rod Control System has not changed since the Reactor Shutdown, THEN Section 5.0 may be bypassed at the discretion of the Shift Supervisor.

4.3 WHEN one MG Set is operating AND the other MG Set is to be placed in operation, THEN Section 8.0 OR Section 9.0 of this procedure may be performed independently to place the shutdown MG Set in operation.

4.4 Sections 11.0, 12.0 and 13.0 of this procedure are stand alone sections and may be performed individually as required.

4.5 WHEN the Logic Cabinet, Power Cabinet or DC Hold Supply Cabinet doors are open, THEN care should be exercised to prevent electrical shock.

4.6 Generator circuit breakers for MG Sets No. 1 and No. 2 are electrically interlocked. **BOTH** breakers must be racked in to allow the closure of one breaker electrically. IF it is NOT desired to have both generator circuit breakers racked in, THEN the generator circuit breaker for the MG set to be placed in service must be closed manually using the manual push-button on the generator circuit breaker.

5.0 System Preparation

5.1 OBTAIN the following Rod Control Cabinet keys:

- EM503 (CH503) *MD*
- EM504 *MD*

5.2 PERFORM Lineup 1, Rod Control Switch Lineup. *MD*

5.3 IF starting MG Sets for maintenance testing with Rod Control Power Cabinets disabled, THEN mark Step 5.4 N/A, OTHERWISE N/A. *MD*

5.4 ENSURE all lift coil disconnect switches in the “CONTROL ROD DISCONNECT SWITCH BOX” are in the CONNECTED (Down) position. {On West Wall Behind Main Control Panel} *N/A*

5.5 ENSURE the “ROD BANK SELECTOR SW” is in the SBA (Shutdown Bank A) position. {CP005} *MD*

5.6 VERIFY Reactor Trip and Trip Bypass Breakers OPEN. {CP005}

- "R NORM" _MD
- "S NORM" _MD
- "R BYP" _MD
- "S BYP" _MD

CAUTION

WHEN the Three Pole Grounding Switch, 1KS, is operated, THEN care should be exercised to prevent electrical shock.

5.7 PLACE the Three Pole Grounding Switch, 1KS, in the "OPEN" position.
{Inside "GENERATOR NO. 2" Control Cabinet} _MD

5.8 PLACE the "ICB" switch in the "ON" position.
{Inside "GENERATOR NO. 2" Control Cabinet} _MD

5.9 GO TO Section 6.0 or 7.0 as applicable. _MD

6.0 Starting MG Set No. 1 with MG Set No. 2 Idle

> NOTE
>
> All controls for MG Set No. 1 are located on “GENERATOR NO. 1” Control Panel.

6.1 ENSURE MG Set No. 1 “VOLTAGE ADJUST” potentiometer is set at 5 (mid position). _____

6.2 ENSURE MG Set No. 1 “SYNCHRONIZE” selector switch is in the “OFF” position. _____

6.3 ENSURE MG Set No. 1 “VOLTMETER” selector switch is NOT in the “OFF” position. _____

6.4 CLOSE MG Set No. 1 Motor Circuit Breaker by momentarily turning the “MOTOR” handswitch to the “CLOSE” position. _____

6.5 WHEN MG Set No. 1 is up to speed (approximately 15 seconds), THEN DEPRESS and HOLD MG Set No. 1 “GEN. FIELD FLASH” push button. _____

6.6 WHEN generator line voltage has stabilized greater than 225 VAC, THEN RELEASE the “GEN. FIELD FLASH” push button. _____

6.7 ROTATE MG Set No. 1 “VOLTAGE ADJUST” potentiometer to adjust generator line voltage to between 255 and 265 VAC. _____

6.8 ROTATE MG Set No. 1 “VOLTMETER” selector switch to check all three phases of generator line voltage between 255 and 265 VAC. _____

6.9 CLOSE MG Set No. 1 Generator Circuit Breaker. _____

> NOTE
>
> IF MG Set 2 Output Breaker is “RACKED OUT”, THEN MG Set trouble alarm on CP005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is expected.

6.10 VERIFY MG Set trouble alarm on CP005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is NOT lit _____

6.10.1 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is due to MG Set 2 Output Breaker being “RACKED OUT”, THEN VERIFY the following, OTHERWISE N/A this step:

6.10.1.1 MG Set 1 Output Breaker – CLOSED _____

6.10.1.2 MG Set 2 Output Breaker – RACKED OUT _____

6.10.1.3 MG Set 1 Switchgear relays

- Directional Overcurrent A – RESET _____
- Directional Overcurrent C – RESET _____
- Ground Protective Relay – RESET _____

6.10.2 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 “ROD DRIVE MG SET TRBL” is NOT due to MG Set 2 Output Breaker being “RACKED OUT”, THEN ENSURE MG Set No. 1 SHALL be taken out of service by performing the following, OTHERWISE N/A this step:

6.10.2.1 OPEN MG Set No. 1 Generator Circuit Breaker by momentarily turning the “GENERATOR” handswitch to the TRIP position. _____

NOTE

Generator voltage will be maintained for a short time due to an intended time delay.

6.10.2.2 OPEN MG Set No. 1 Motor Circuit Breaker by momentarily turning the “MOTOR” handswitch to the “TRIP” position. _____

6.10.2.3 CONTACT Electrical Maintenance for troubleshooting. _____

6.11 IF it is desired to start MG Set No. 2, THEN GO TO Section 9.0, OTHERWISE “N/A” this step. _____

6.12 IF starting MG Set No. 1 for maintenance testing with Rod Control Power Cabinets disabled, WHEN maintenance testing is complete, THEN GO TO Section 11.0, OTHERWISE “N/A” this step. _____

6.13 GO TO Section 10.0. _____

7.0 Starting MG Set No. 2 with MG Set No. 1 Idle

> NOTE
>
> All controls for MG Set No. 2 are located on "GENERATOR NO. 2" Control Panel.

7.1 ENSURE MG Set No. 2 "VOLTAGE ADJUST" potentiometer is set at 5 (mid position). ______

7.2 ENSURE MG Set No. 2 "SYNCHRONIZE" selector switch in the OFF position. ______

7.3 ENSURE MG Set No. 2 "VOLTMETER" selector switch is NOT in the OFF position. ______

7.4 CLOSE MG Set No. 2 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the CLOSE position. ______

7.5 WHEN MG Set No. 2 is up to speed (approximately 15 seconds), THEN DEPRESS and HOLD MG Set No. 2 "GEN. FIELD FLASH" push button. ______

7.6 WHEN generator line voltage has stabilized greater than 225 VAC, THEN RELEASE the "GEN. FIELD FLASH" push button. ______

7.7 ROTATE MG Set No. 2 "VOLTAGE ADJUST" potentiometer to adjust generator line voltage to between 255 and 265 VAC. ______

7.8 ROTATE MG Set No. 2 "VOLTMETER" selector switch to check all three phases of generator line voltage between 255 and 265 VAC. ______

7.9 CLOSE MG Set No. 2 Generator Circuit Breaker. ______

> NOTE
>
> IF MG Set 1 Output Breaker is "RACKED OUT", THEN MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is expected.

7.10 VERIFY MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT lit. ______

7.10.1 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is due to MG Set 1 Output Breaker being "RACKED OUT", THEN VERIFY the following, OTHERWISE N/A this step: _____

7.10.1.1 MG Set 1 Output Breaker – RACKED OUT _____

7.10.1.2 MG Set 2 Output Breaker – CLOSED _____

7.10.1.3 MG Set 2 Switchgear relays

- Directional Overcurrent A – RESET _____
- Directional Overcurrent C – RESET _____

7.10.2 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT due to MG Set 1 Output Breaker being "RACKED OUT", THEN ENSURE MG Set No. 2 out of service by performing the following, OTHERWISE N/A this step:

7.10.2.1 OPEN MG Set No. 2 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position. _____

NOTE

Generator voltage will be maintained for a short time due to an intended time delay.

7.10.2.2 OPEN MG Set No. 2 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position. _____

7.10.2.3 CONTACT Electrical Maintenance for troubleshooting. _____

7.11 IF it is desired to start MG Set No. 1, THEN GO TO Section 8.0, OTHERWISE "N/A" this step. _____

7.12 IF starting MG Set No. 2 for maintenance testing with Rod Control Power Cabinets disabled, WHEN maintenance testing is complete, THEN GO TO Section 12.0, OTHERWISE "N/A" this step. _____

7.13 GO TO Section 10.0. _____

8.0 Starting MG Set No. 1 with MG Set No. 2 Operating

> NOTE
>
> All controls for MG Set No. 1 are located on "GENERATOR NO. 1" Control Panel.

8.1 ENSURE MG Set No. 1 "VOLTAGE ADJUST" potentiometer is set at 5 (mid position). _____

8.2 ENSURE MG Set No. 1 "SYNCHRONIZE" selector switch in the OFF position. _____

8.3 ENSURE MG Set No. 1 "VOLTMETER" selector switch is NOT in the OFF position. _____

8.4 CLOSE MG Set No. 1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "CLOSE" position. _____

8.5 WHEN MG Set No. 1 is up to speed (approximately 15 seconds), THEN DEPRESS and HOLD MG Set No. 1 "GEN. FIELD FLASH" push button. _____

8.6 WHEN generator line voltage has stabilized greater than 225 VAC, THEN RELEASE the "GEN. FIELD FLASH" push button. _____

8.7 ROTATE MG Set No. 1 "VOLTAGE ADJUST" potentiometer to adjust generator line voltage to between 255 and 265 VAC. _____

8.8 ROTATE MG Set No. 1 "VOLTMETER" selector switch to check all three phases of generator line voltage between 255 and 265 VAC. _____

8.9 ENSURE MG Set No. 1 "GENERATOR" circuit breaker control switch in the mid position. _____

> NOTE
>
> The MG Set No. 1 Generator Circuit Breaker will NOT automatically close in phase unless the Reactor Trip Breakers are closed.

8.10 NOTIFY Control Room personnel to CLOSE the Reactor Trip Breakers. _____

NOTE

WHEN the Synchronize Switch is positioned to the ON position, THEN the MG Set No. 1 Generator Circuit Breaker will close after a few moments.

8.11 WHEN the Reactor Trip Breakers are closed, THEN PLACE MG Set No. 1 "SYNCHRONIZE" selector switch in the "ON" position. _____

8.12 WHEN MG Set No. 1 Generator Circuit Breaker is closed, THEN PLACE the "SYNCHRONIZE" selector switch in the "OFF" position. _____

8.13 WHEN the MG Sets are paralleled, THEN NOTIFY Main Control Room Personnel. _____

8.14 VERIFY MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT lit. _____

8.14.1 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is lit, THEN ENSURE MG Set No. 1 out of service by performing the following:

8.14.1.1 OPEN MG Set No. 1 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position. _____

NOTE

Generator voltage will be maintained for a short time due to an intended time delay.

8.14.1.2 OPEN MG Set No. 1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position. _____

8.14.1.3 CONTACT Electrical Maintenance for troubleshooting. _____

8.15 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT lit, THEN GO TO Section 10.0. _____

9.0 Starting MG Set No. 2 with MG Set No. 1 Operating

NOTE

All controls for MG Set No. 2 are located on “GENERATOR NO. 2” Control Panel.

9.1 ENSURE MG Set No. 2 “VOLTAGE ADJUST” potentiometer is set at 5 (mid position). _____

9.2 ENSURE MG Set No. 2 “SYNCHRONIZE” selector switch in the “OFF” position. _____

9.3 ENSURE MG Set No. 2 “VOLTMETER” selector switch is NOT in the “OFF” position. _____

9.4 CLOSE MG Set No. 2 Motor Circuit Breaker by momentarily turning the “MOTOR” handswitch to the “CLOSE” position. _____

9.5 WHEN MG Set No. 2 is up to speed (approximately 15 seconds), THEN DEPRESS and HOLD MG Set No. 2 “GEN. FIELD FLASH” push button. _____

9.6 WHEN generator line voltage has stabilized greater than 225 VAC, THEN RELEASE the “GEN. FIELD FLASH” push button. _____

9.7 ROTATE MG Set No. 2 “VOLTAGE ADJUST” potentiometer to adjust generator line voltage to between 255 and 265 VAC. _____

9.8 ROTATE MG Set No. 2 “VOLTMETER” selector switch to check all three phases of generator line voltage between 255 and 265 VAC. _____

9.9 ENSURE MG Set No. 2 “GENERATOR” circuit breaker control switch in the mid position. _____

NOTE

The MG Set No. 2 Generator Circuit Breaker will NOT automatically close in phase unless the Reactor Trip Breakers are closed.

9.10 NOTIFY Control Room personnel to close the Reactor Trip Breakers. _____

NOTE

WHEN the Synchronize Switch is positioned to the ON position, THEN the MG Set No. 2 Generator Circuit Breaker will close after a few moments.

9.11 WHEN the Reactor Trip Breakers are closed, THEN PLACE MG Set No. 2 "SYNCHRONIZE" selector switch in the "ON" position. _____

9.12 WHEN MG Set No. 2 Generator Circuit Breaker is closed, THEN PLACE the "SYNCHRONIZE" selector switch in the "OFF" position. _____

9.13 WHEN the MG Sets are paralleled, THEN NOTIFY Main Control Room personnel. _____

9.14 VERIFY MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT lit. _____

9.14.1 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is lit, THEN ENSURE MG Set No. 2 out of service by performing the following:

9.14.1.1 OPEN MG Set No. 2 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position. _____

NOTE

Generator voltage will be maintained for a short time due to an intended time delay.

9.14.1.2 OPEN MG Set No. 2 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position. _____

9.14.1.3 CONTACT Electrical Maintenance for troubleshooting. _____

9.15 IF MG Set trouble alarm on CP005 Lampbox 5M03 F5 "ROD DRIVE MG SET TRBL" is NOT lit, THEN GO TO Section 10.0. _____

10.0 Cabinet Alignment

10.1 VERIFY the green "DE-ENERGIZED" light on the Rod Hold Out Control System Sequencing Panel inside each of the following Rod Control Power Cabinets is illuminated:

10.1.1 "ROD CONTROL POWER CABINET 1AC". _____

10.1.2 "ROD CONTROL POWER CABINET 2AC". _____

10.1.3 "ROD CONTROL POWER CABINET 1BD". _____

10.1.4 "ROD CONTROL POWER CABINET 2BD". _____

10.1.5 "ROD CONTROL POWER CABINET SCDE". _____

11.0 Securing MG Set No. 1

11.1 VERIFY operation of MG Set No. 1 is no longer required for plant operation. _____

11.2 OPEN MG Set No. 1 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position. _____

11.3 OPEN MG Set No. 1 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position. _____

12.0 Securing MG Set No. 2

12.1 VERIFY operation of MG Set No. 2 is no longer required for plant operation. _____

12.2 OPEN MG Set No. 2 Generator Circuit Breaker by momentarily turning the "GENERATOR" handswitch to the "TRIP" position. _____

12.3 OPEN MG Set No. 2 Motor Circuit Breaker by momentarily turning the "MOTOR" handswitch to the "TRIP" position. _____

13.0 Transferring Control Rod Groups to and from the D.C. Hold Power Supply

NOTE

- Only Groups of control rods can be transferred to the D.C. Hold Power Supply
- Control rod Groups transferred to the D.C. Hold Power Supply can NOT be moved with the “IN-HOLD-OUT” switch.

13.1 PLACE switch “S1” in the “ON” position.{Inside the “ROD CONTROL DC HOLD SUPPLY CAB”} _____

13.2 VERIFY the red “125V ON” indication lamp illuminated.{On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} _____

13.3 VERIFY the red “70V ON” indication lamp illuminated.{On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} _____

13.4 VERIFY the white “AC POWER ON” indication lamp illuminated.
{On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} _____

13.5 OPEN door to the “ROD CONTROL POWER CAB” that contains the Group of control rods to be transferred to the D.C. Hold Power Supply.{Rod Groups are listed on front of each “ROD CONTROL POWER CABINET”.} _____

NOTE

- WHEN transferring a Group of control rods to the D.C. Hold Power Supply, THEN pause at least one second while the “GROUP HOLD” switch is in the “LATCH” position, before positioning the “GROUP HOLD” switch to the “HOLD” position. (Reference 2.9)
- In addition, coil currents for the Group of control rods to be placed in D.C. Hold can and should be monitored by I&C Maintenance through the transition to obtain positive indication that the D.C. Hold cabinet is supplying the current to the coils.

13.6 ENSURE desired group of control rods transferred to the D.C. Hold Power Supply by turning the respective Group Hold Switch from the “OFF” position to the “LATCH” position AND, after at least a one second time delay, to the “HOLD” position.

- CABINET ____________________________ ______
  1AC, 2AC, 1BD, 2BD or SCDE
- GROUP ___________ HOLD
  A, B or C ______

13.7 WHEN it is desired to remove the group of control rods selected in Step 13.5 from the D.C. Hold Power Supply, THEN TURN the respective Group Hold Switch from the “HOLD” to the “LATCH” position AND then to the “OFF” position.

- CABINET ____________________________ ______
  1AC, 2AC, 1BD, 2BD or SCDE
- GROUP ___________ HOLD
  A, B or C ______

13.8 IF no other rod groups are to be placed on the D.C. Hold Power Supply, THEN PLACE switch “S1” to the “OFF” position. {Inside the “ROD CONTROL DC HOLD SUPPLY CAB”} ______

13.9 VERIFY the red “125V ON” indication lamp extinguished. {On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} ______

13.10 VERIFY the red “70V ON” indication lamp extinguished. {On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} ______

13.11 VERIFY the white “AC POWER ON” indication lamp extinguished. {On Front of the “ROD CONTROL DC HOLD SUPPLY CAB”} ______

14.0 Support Documents

14.1 Lineup 1, Rod Control Switch Lineup

UNIT 1 **(Circle Unit Performing Test)** **UNIT 2**

EXCEPTIONS

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	REMARKS

Personnel participating in device manipulation:

Name	Initials

Device lineup completed by: ______________ Operator ______ Date ______________ Time

Lineup 1 Reviewed By: ______________ Unit Supervisor ______________ Date

This form, when completed, SHALL be retained for five years.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
E1A11(E2A11)/4A	TRAIN A RX TRIP SWGR CONTROL PWR	EAB 10' Distribution Room 007 125V DC SWBD E1A11(E2A11)	ON			
1K1(2K1)/3D	CONTROL ROD DRIVE MOTOR/GENERATOR SET 1	EAB 35' Train B Switchgear Room 212 480V Load Center 1K1(2K1)	RACKED IN OPEN			
E1B11(E2B11)/5C	TRAIN B RX TRIP SWGR CONTROL PWR	EAB 35' Distribution Room 213 125V DC SWBD E1B11(E2B11)	ON			
PL125H BKR 21	MG 1 ROD DRIVE CONT CAB	EAB 60' Hallway 125 VDC Distribution Panel PL125H	ON			
PL125H BKR 22	MG 2 ROD DRIVE CONT CAB	EAB 60' Hallway 125 VDC Distribution Panel PL125H	ON			
1L1(2L1)/3D	CONTROL ROD DRIVE MOTOR/GENERATOR SET 2	EAB 60' Train C Switchgear Room 318 480V Load Center 1L1(2L1)	RACKED IN OPEN			
S1	(TOGGLE SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control DC Hold Supply Cabinet	OFF			
S1	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			
S2	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			
S3	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			
S4	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			
S5	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			
S6	(THUMBWHEEL)	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Logic Cab	(1)			

(1) Record current settings from Plant Curve Book Table 1.1 in Position Required block.

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
NONE	GROUP A HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1AC	OFF			
NONE	GROUP B HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1AC	OFF			
NONE	GROUP C HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1AC	OFF			
NONE	GROUP A HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2AC	OFF			
NONE	GROUP B HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2AC	OFF			
NONE	GROUP C HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2AC	OFF			
NONE	GROUP A HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab SCDE	OFF			
NONE	GROUP B HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab SCDE	OFF			
NONE	GROUP C HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab SCDE	OFF			
NONE	DIRECTIONAL OVERCURRENT A	EAB 60' Rod Drive Power Cab Room 323 Generator No. 1 Control Panel	RESET			
NONE	GROUND PROTECTIVE RELAY	EAB 60' Rod Drive Power Cab Room 323 Generator No. 1 Control Panel	RESET			
NONE	DIRECTIONAL OVERCURRENT C	EAB 60' Rod Drive Power Cab Room 323 Generator No. 1 Control Panel	RESET			
NONE	DIRECTIONAL OVERCURRENT A	EAB 60' Rod Drive Power Cab Room 323 Generator No. 2 Control Panel	RESET			

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
NONE	DIRECTIONAL OVERCURRENT C	EAB 60' Rod Drive Power Cab Room 323 Generator No. 2 Control Panel	RESET			
NONE	(GENERATOR CIRCUIT BREAKER NO. 1)	EAB 60' Rod Drive Power Cab Room 323 Generator No. 1 Control Panel Inside Bottom Cubicle	RACKED IN OPEN			
NONE	(GENERATOR CIRCUIT BREAKER NO. 2)	EAB 60' Rod Drive Power Cab Room 323 Generator No. 2 Control Panel Inside Bottom Cubicle	RACKED IN OPEN			
NONE	GROUP A HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2BD	OFF			
NONE	GROUP B HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2BD	OFF			
NONE	GROUP C HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 2BD	OFF			
NONE	GROUP A HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1BD	OFF			
NONE	GROUP B HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1BD	OFF			
NONE	GROUP C HOLD	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Power Cab 1BD	OFF			
NONE	MANUAL AUTOMATIC	EAB 60' Rod Drive Power Cab Room 323 Inside Rod Control Pulse-Analog Converter Cabinet	AUTOMATIC			
N1(2)RSB D1ACCS	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1AC	CLOSED			
N1(2)RSB D1ACCL	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1AC	CLOSED			

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
N1(2)RSBD1ACCM	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1AC	CLOSED			
N1(2)RSBD2ACCS	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2AC	CLOSED			
N1(2)RSBD2ACCL	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2AC	CLOSED			
N1(2)RSBD2ACCM	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2AC	CLOSED			
N1(2)RSBDSCDECS	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab SCDE	CLOSED			
N1(2)RSBDSCDECL	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab SCDE	CLOSED			
N1(2)RSBDSCDEDH	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab SCDE	CLOSED			
N1(2)RSBDSCDECM	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab SCDE	CLOSED			
N1(2)RSBD2BDCS	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2BD	CLOSED			
N1(2)RSBD2BDCL	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2BD	CLOSED			
N1(2)RSBD2BDCM	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 2BD	CLOSED			
N1(2)RSBD1BDCS	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1BD	CLOSED			
N1(2)RSBD1BDCL	(DISCONNECT SWITCH)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1BD	CLOSED			

DEVICE NUMBER	COMPONENT NOUN DESCRIPTION	LOCATION	POSITION REQUIRED	ALIGNED BY	VERIFIED BY	NEW TAG NEEDED
N1(2)RSBD1BDCM	(Disconnect Switch)	EAB 60' Rod Drive Power Cab Room 323 Above Rod Control Power Cab 1BD	CLOSED			
DP004 BKR 2	DRPI MULTIPLE ROD DROP TEST SYSTEM	EAB 60' MG Set Room Non-Class 1E 120 VAC Dist Panel DP004	OFF			
N1(2)VCLD004B BKR	(DRPI Multiple Rod Drop Test System)	EAB 60' MG Set Room Single Bkr on E Wall (Unit 1), N Wall(Unit 2)	OFF			
DP004 BKR 3	ROD CONTROL POWER CABINET RDSCDE	EAB 60' MG Set Room Non-Class 1E 120 VAC Dist Panel DP004	ON			

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**RECOVER A DROPPED CONTROL ROD**
JPM NO.:	**S1**
REVISION:	**2**
LOCATION:	**SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	RECOVER A DROPPED CONTROL ROD
JPM No.:	S1
Rev. No:	2
STP Task:	T86850, Respond to a stuck or dropped Control Rod.
STP Objective:	CRO 86850, Respond to a stuck or dropped Control Rod in accordance with 0POP04-RS-0001.
Related K/A Reference:	001A2.03 [3.5/4.2] Ability to predict the impacts of a stuck or misaligned Rod on the CRDS, and based on those predictions, use procedures to correct, control, or mitigate the consequences.
References:	0POP04-RS-0001, Rev. 15, Control Rod Malfunction
Task Normally Completed By:	RO
Method of Testing:	Actual Performance
Location of Testing:	Simulator
Time Critical Task:	NO
Alternate Path JPM:	NO
Validation Time:	25 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The unit had been at 73% power for several hours when Control Bank "B" Rod K-14 dropped due to a blown fuse 30 minutes ago. The immediate and subsequent actions of OPOP04-RS-0001, "Control Rod Malfunction" have been completed to step 3. I&C has completed troubleshooting, replaced the fuse, inspected the remaining fuses and reported the rod ready for recovery. All other Control Bank "B" rods are at 249 steps.

INITIATING CUE:

The Unit Supervisor directs you to recover and realign Control Bank Rod K-14 to 249 steps per 0POP04-RS-0001, Addendum 1. Reactor Engineering has requested that Tave be allowed to recover during the rod retrieval rather than reducing turbine load.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Control Bank Rod K-14 is recovered and realigned to 249 steps per 0POP04-RS-0001.

HANDOUTS:

Working copy of 0POP04-RS-0001, Control Rod Malfunction

JOB PERFORMANCE MEASURE INFORMATION SHEET

NOTES:

1) JPMs S1 and S3 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

2) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (NO Indication type Cues are provided).

3) The following information is provided concerning information recorded at step 16.0 of 0POP04-RS-0001, if requested by the applicant:

   - Core location of malfunctioned rod **– K14**
   - Digital Rod Position Indication (DRPI) for malfunctioned rod - **0 steps**
   - Affected Bank **– Bravo Control Bank**
   - Group Step Counter Demand position - **249**
   - Type of malfunction - **dropped**
   - Date and time malfunction occurred - **current date/30 min. before present time**

4) RCS average temperature (Tavg) will be approximately 3ºF below Tref prior to Rod recovery due to the dropped rod. When applicant mentions this temperature deviation, inform him/her that actions to adjust RCS temperature will be deferred until rod recovery is completed.

SIMULATOR SETUP:

1) Ensure Radio volume for both stations are set to a reasonable level.

2) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

3) Reset to IC storepoint #134 and verify:
   - Step counter position annunciator light is out on CP-005
   - Red light at the end of CP-010 is out

4) Check and clean the following procedures (JPM specific):

   - 0POP04-RS-0001, Control Rod Malfunction

5) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

6) Verify the following:

- Verify Control Bank B Rod K-14 is at 0 steps by DRPI indication.
- Verify Control Bank B step counters for groups #1 and #2 are 249 steps.

7) Execute lesson plan # 7 under Lesson Plan Group ‘nrc2003’ AND go to ‘Start Lesson’.

8) Place the simulator in ‘FREEZE’ until the examiners are ready to proceed.

INSTRUCTOR ACTIONS:

When directed to reset the Pulse to Analog Converter (Addendum 1, Step 14.0 of 0POP04-RS-0001, Control Rod Malfunction), THEN perform the following:

a) Go the ACTIVE INSTRUCTOR ACTIONS page and remove the Rod K14 drop malfunction.
b) Go to the REMOTE FUNCTIONS Page. Scroll down to the ROD CONTROL SYSTEM and open this page (Rod Control Remote Page 751). Locate the PADIS, Pulse to Analog Display, indication. It is located approximately two-thirds of the way down on the page. DO NOT click on this display. It will be used for indication only.
c) TRIGGER Step #2 of Lesson Plan, Resetting P-A Converter Part 1
d) WHEN Step #2 is triggered, PADIS will go to an indication of 249 and start counting down towards zero.
e) WHEN the PADIS indication indicates zero, THEN trigger Step #3 of Lesson Plan, Reset P-A Converter Part 2.
f) Now inform the Control Room that the Pulse to Analog Converter has been reset.
g) WHEN both JPMs S1 and S3 are complete, THEN TERMINATE Lesson Plan #7.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP04-RS-0001 and transition to addendum 1.

Standard:

Obtains a copy of 0POP04-RS-0001 and transitions to addendum 1, Recovery of Single Dropped or Misaligned Rod.

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant may choose to review the notes and precautions again, however it is intended that he/she transition to Addendum 1 as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

Cue:

(If asked about RCS Temperature)
Inform applicant that actions to adjust RCS temperature will be deferred until rod recovery is completed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Document entry into T.S. Action Statement 3.1.3.1.b.3 in the Control Room Logbook. (Addendum 1, step 1.0)

Standard:

Ensures Control Room Logbook entry is made regarding entry into T.S. Action Statement 3.1.3.1.b.3 or indicates one is required.

Comment:

Cue:

A Control Room Logbook entry has been made.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT **Performance Step:** 3

Verify power reduction requirements. (Addendum 1, steps 2.0 – 8.0)

Standard:

Verifies the following are NOT required at this time:

1) Power reduction to 75%
2) Notification to Reactor Engineering to perform core flux map
3) Notification to I&C to perform NI setpoint reduction

Comment:

The applicant may choose to notify Reactor Engineering anyway as a courtesy.

Cue:

1) If asked, 30 minutes have elapsed since rod K-14 dropped (initial conditions stipulate the rod dropped due to blown fuse 30 minutes ago).
2) If asked, the Unit Supervisor determines power reduction is not required (initial conditions stipulate that power has been at 73% for several hours before the control rod dropped).

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Ensure both groups of each bank are at the same step counter position. (Addendum 1, step 9.0)

Standard:

Verifies groups 1 and 2 step counters for Control Bank "B" are both at 249 steps.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 5(C)

Select the affected bank on "ROD BANK SELECTOR SW". (Addendum 1, step 10.0)

Standard:

Selects Control Bank "B" at CP-005.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6(C)

Open the Lift Coil Disconnect Switches for all rods in the affected bank except the misaligned rod. (Addendum 1, step 11.0)

Standard:

Opens the Lift Coil Disconnect Switches for "B" Control Bank Rods at the Control Rod Disconnect Switch box N1RSZCP020:

- *Group 1 Rods F-2, B-10, and P-6*
- *Group 2 Rods B-6, F-14, P-10, and K-2*

Comment:

1) The disconnect switch box is located behind the simulator on the south wall, west of the transfer panels.

2) The Lift Coil is disconnected when its applicable switch is pulled upward.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Set the affected Group Step Counter to the position of the misaligned rod. (Addendum 1, step 12.0)

Standard:

Sets Control Bank "B" Group 1 Step Counter to 0 steps at CP-005.

Comment:

The Step Counters used in the simulator are different than those used in the actual plant. The ones used in the simulator are Electronic Step Counters, while the ones in the plant are Electro-mechanical. The method used to manually set each is different. This JPM is performed in the simulator, therefore the applicant should perform the following:

1) Open cover on Control Bank "B" Group 1 Step Counter (one on the left)
2) Depress and hold or push repeatedly the Upper Button of the three buttons on the left side of the Step Counter under its cover (may also push the upper & middle buttons to get a fast change in counter indication). This is done until the indication is "000". The student may also press the leftmost button to immediately re-zero the counter rather than counting it down.

Any method the student uses to re-zero the counter with the buttons behind the counter cover is acceptable.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

Check Malfunctioned Rod located in a Control Bank (Addendum 1, Step 13.0)

Standard:

Determines that rod is located in a Control Bank and proceeds on to Step 14.0 of Addendum 1.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 9

Setting Pulse to Analog Converter for Misaligned Control Rod (Addendum 1, Step 14.0)

Standard:

Dispatches an Operator with key to EAB 60 ft Room 323. Directs the operator to perform Steps to align the Pulse to Analog Converter for Control Bank B at zero steps.

Comment:

The student will have to contact the simulator booth instructor as a Plant Operator to accomplish this step as it's a local system operation.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Maintain Tavg within 1.5ºF of Tref during rod movement by adjusting the following as necessary while maintaining reactor power stable:

$ Turbine load or
$ RCS boron concentration

(Addendum 1, Step 15.0)

Standard:

Mentions need to maintain Tave within 1.5ºF of Tref by adjusting turbine load and/or boron concentration as necessary.

Comment:

The Primary Reactor Operator would not be responsible for RCS temperature during Control Rod recovery; also temperature is expected to rise by almost 3ºF when the rod is recovered.

Cue:

(When mentioned) Inform applicant that actions to adjust RCS temperature will be deferred until rod recovery is completed.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 11(C)

Withdraw the rod using the IN-HOLD-OUT switch until the rod is aligned with the affected bank. (Addendum 1, step 16.0)

Standard:

Withdraws Control Bank Rod K-14 to 249 steps using the IN-HOLD-OUT switch at CP-005.

Comment:

Cue:

If asked, No Control Rod withdrawal restrictions apply. (Max speed in "CB B" position is 48 steps/minute)

Notes:

SAT/UNSAT Performance Step: 12(C)

Place all lift coil disconnect switches in the ROD CONNECTED position. (Addendum 1, Step 17.0)

Standard:

Places all Lift Coil Disconnect Switches previously opened for the unaffected rods in Shutdown Bank "B" in the ROD CONNECTED position.

Comment:

The Lift Coil is connected when its applicable switch is pulled downward.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT **Performance Step:** 13

Record the time of realignment in the Control Room Logbook. (Addendum 1, step 18.0)

Standard:

Verifies Control Room logbook entry is made regarding recovered rod C-9 realignment.

Comment:

Cue:

Control Room Logbook entry has been made.

Notes:

SAT/UNSAT **Performance Step:** 14(C)

Reset the Urgent Alarm. (Addendum 1, step 19.0)

Standard:

Resets the Rod Control Urgent Alarm by depressing the "ROD CONT ALARM RESET" pushbutton at CP-005.

Comment:

1) This pushbutton resets all internal inputs for the Rod Control Urgent Alarm annunciator.

2) 5M03/B5 ROD CONT URGENT ALARM will clear.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 15

Place "ROD BANK SELECTOR SW" in manual. (Addendum 1, step 20.0)

Standard:

Places the "ROD BANK SELECTOR SW" at CP-005 in manual.

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure: S1, RECOVER A DROPPED CONTROL ROD

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature**

Date

JPM - STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The unit had been at 73% power for several hours when Control Bank "B" Rod K-14 dropped due to a blown fuse 30 minutes ago. The immediate and subsequent actions of OPOP04-RS-0001, "Control Rod Malfunction" have been completed to step 3. I&C has completed troubleshooting, replaced the fuse, inspected the remaining fuses and reported the rod ready for recovery. All other Control Bank "B" rods are at 249 steps.

INITIATING CUE:

The Unit Supervisor directs you to recover and realign Control Bank Rod K-14 to 249 steps per 0POP04-RS-0001, Addendum 1. Reactor Engineering has requested that Tave be allowed to recover during the rod retrieval rather than reducing turbine load.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**ESTABLISH RCP SEALS WITH THE PDP**
JPM NO.:	**S2**
REVISION:	**2**
LOCATION:	**SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title:	ESTABLISH RCP SEALS WITH THE PDP
JPM No.:	S2
Rev. No:	2
STP Task:	T502700, Place the Positive Displacement Charging Pump in service.
STP Objective:	CRO 502700, When directed by plant procedure or at Unit Supervisor direction, START the Positive Displacement Charging Pump in accordance with 0POP02-CV-0004, Chemical and Volume Control System Subsystem operating procedure.
Related K/A Reference:	015/017 AA1.07, Ability to operate and/or monitor the following as they apply to the RCP malfunctions: RCP seal water injection system, 3.5/3.4
References:	0POP02-CV-0004, Rev 32, Chemical and Volume Control System Subsystem
Task Normally Completed By:	RO
Method of Testing:	Actual Performance
Location of Testing:	Simulator
Time Critical Task:	NO
Alternate Path JPM:	NO
Validation Time:	12 minutes

Required Materials (Tools/Equipment):

None

JOB PERFORMANCE MEASURE INFORMATION SHEET

DO NOT START THIS JPM UNTIL PERSONNEL PERFORMING THE COMPANION JPM (S5) MOVE TO THE BACK OF THE CONTROL ROOM.

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The Unit is at 50% power. Centrifugal Charging Pump (CCP) 1B has been removed from service for motor replacement due to motor failure. Work on the motor replacement has been in progress for 2 days and is expected to take an additional 2 days.

CCP 1A has tripped due to motor overload and cannot be restarted. Charging Flow Control Valve, FCV-0205 has been taken to manual and closed. Letdown Orifice Header Isolation Valve, FV-0011 has been closed. Component Cooling Water (CCW) flows has been verified to the RCP Thermal Barriers.

INITIATING CUE:

The Unit Supervisor directs you to place the Positive Displacement Charging Pump (PDP) in service and establish RCP seal injection between 8-13 gpm for each RCP in accordance with 0POP02-CV-0004, Chemical and Volume Control System Subsystem, Section 30.0, Positive Displacement pump Operations.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Positive Displacement Charging Pump is started and RCP seal injection for each RCP is established between 8-13 gpm.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of 0POP02-CV-0004, Chemical and Volume Control System Subsystem

NOTES:

This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (NO Indication type Cues are provided).

SIMULATOR SETUP:

1) JPMs S2 and S5 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

2) Ensure Radio volume for both stations are set to a reasonable level.

3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

4) Reset to IC # 135 and verify:
   - Step counter position annunciator light is out on CP-005
   - Red light at the end of CP-010 is out

5) Check and clean the following procedures (JPM specific):

   - 0POP02-CV-0004, Chemical and Volume Control System Subsystem

6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

ADDITIONAL INSTRUCTIONS ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

7) Verify the following:

- CCP 1B Control Room Handswitch is in the PTL position.
- CCP 1B Red and Green Light Indications are both OFF.
- CCP 1B Discharge Isolation MOV-8377B Red and Green Light Indications are both OFF.
- CCP 1B LO Available White Light is OFF.
- FV-0011 is CLOSED.
- FCV-0205 is in MANUAL and CLOSED.
- CCB 1A is not running. Control room Handswitch is in the NEUTRAL Position.
- Place Equipment Clearance Order (ECO) Danger tags on the following:

  - CCP 1B Control Room Handswitch
  - CCP 1B Discharge Isolation MOV-8377B Control Room Handswitch

8) Place the simulator in ‘FREEZE’ until the examiners are ready to proceed.

9) There is no Simulator Lesson Plan associated with this JPM.

INSTRUCTOR ACTIONS:

1) If contacted as a Plant Operator to check the PDP ready for start, report that it is ready to be started.

2) If contacted as a Plant Operator to report pump status after the start, report the start was satisfactory.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME__________

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP02-CV-0004, Chemical and Volume Control System Subsystem and transitions to Section 30.0.

Standard:

Obtains a copy of 0POP02-CV-0004, Chemical and Volume Control System Subsystem and transitions to Section 30.0, Positive Displacement Pump Operation.

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant may choose to review the notes and precautions again, however it is intended that he/she transition to Section 30.0 as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

The Applicant may choose to review applicable Annunciator Response Procedures for alarms caused by this plant condition, however it is intended that he/she transition to Section 30.0 of 0POP02-CV-0004 as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

Cue:

If the applicant wants to use the steps in the Annunciator Response Procedures to start and place the PDP in service, inform him/her that the Unit Supervisor wants them to use the steps contained in Section 30.0 of 0POP02-CV-0004.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Ensure HCV-0285, Recirc Throttle Valve controller set at full open position.

Standard:

Ensures that HCV-0285, Recirc Throttle Valve controller is set at the full open position on CP004.

Comment:

HCV-0285 is a Hagan Controller utilizing a ten-turn potentiometer. Full open is when the potentiometer is fully clockwise and the red pointer is pointing to 100 on the scale.

Cue:

Notes:

SAT/UNSAT Performance Step: 3(C)

Start the PDP.

Standard:

Starts the PDP by momentarily turning its handswitch to the "START" position on CP-004.

Comment:

The applicant may dispatch a Plant Operator to check the PDP ready for start. Following the start the applicant will expect the Plant Operator to report the start was satisfactory if no problems are noted. Also, the applicant will likely want to make PA announcement before starting the pump (DO NOT let him/her make an actual announcement).

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Ensure PDP Pump Cubicles Cooler (PDP SUPP CLR) HM-VAH006 is running at CP022.

Standard:

Verifies that the PDP Pump Cubicle Cooler (PDP SUPP CLR) HM-VAH006 is running at CP022.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 5(C)

Slowly throttle close HCV-0285, Recirc Throttle Valve on CP004 to obtain necessary seal injection flow or discharge pressure.

Standard:

Takes HCV-0285 controller potentiometer slowly counter-clockwise while monitoring the following indications:

- *Charging Header Pressure PI-0204 (If this pressure approaches 2800 psig, the candidate should inform the Unit Supervisor)*

- *RCP Seal Injection flow maintained between 8 and 13 gal/min and is monitored on:*

  ◊ *RCP 1A Seal Flow Recorder FR0156 (Green Pen)*
  ◊ *RCP 1B Seal Flow Recorder FR0157 (Green Pen)*
  ◊ *RCP 1C Seal Flow Recorder FR0158 (Green Pen)*
  ◊ *RCP 1D Seal Flow Recorder FR0159 (Green Pen)*

  or

  ◊ *Seal Injection Flows on the Integrated Computer System (ICS) Normal Inventory Screen*.

Comment:

RCP seal injection flow/pressure may have to be adjusted using a coordination of HCV-0285, Recirc Throttle Valve and Seal Injection Control Valve, HCV-0218.

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME__________

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name: ____

Date Performed: ____________________________

Time to Complete: ___________________________

JPM Results: **Sat / Unsat**

Evaluator: ________________________ **Signature: ___________________________**

Date: ____________________________

JPM STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is at 50% power. Centrifugal Charging Pump (CCP) 1B has been removed from service for motor replacement due to motor failure. Work on the motor replacement has been in progress for 2 days and is expected to take an additional 2 days.

CCP 1A has tripped due to motor overload and cannot be restarted. Charging Flow Control Valve, FCV-0205 has been taken to manual and closed. Letdown Orifice Header Isolation Valve, FV-0011 has been closed. Component Cooling Water (CCW) flows has been verified to the RCP Thermal Barriers.

INITIATING CUE:

The Unit Supervisor directs you to place the Positive Displacement Charging Pump (PDP) in service and establish RCP seal injection between 8-13 gpm for each RCP in accordance with 0POP02-CV-0004, Chemical and Volume Control System Subsystem, Section 30.0, Positive Displacement pump Operations.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE: **MANUALLY ENERGIZE AN ESF BUS**

JPM NO.: **S3**

REVISION: **2**

LOCATION: **SIMULATOR**

JOB PERFORMANCE MEASURE WORKSHEET

JPM Title: MANUALLY ENERGIZE AN ESF BUS

JPM No.: S3

Rev. No: 2

STP Task: 62550, Energize an Engineered Safeguards Bus

STP Objective: CRO 62550, Energize an ESF 4160v Bus per 0POP04-AE-0001

Related K/A Reference:

062 A4.01, Ability to manually operate and/or monitor in the control room: All breakers (including available switchyard), 3.3/3.1

062 A2.05, Ability to (a) predict the impacts of the following malfunctions or operations on the AC distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Methods for energizing a dead bus, 2.9/3.3

References: 0POP04-AE-0001, Rev. 27, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus

0POP09-AN-03M3-A-4, Rev. 18, Annunciator Lampbox 3M3 Response Instructions

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: No

Alternate Path JPM: Yes

Validation Time: 15 min.

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The plant is in Mode 1 operating at approximately 73 % power. The feeder breaker from 13.8 kV Standby Bus 1G has tripped open causing a loss of normal power to 4160v ESF Bus 1B. The control switch for this breaker on CP-010 has been placed in PTL.

#12 ESF DG has JUST started, but has not automatically connected to 4160v ESF Bus 1B due to a Sequencer failure on Train 'B'. A Plant Operator (Yard Watch) has been dispatched to # 12 ESF DG, but has not yet arrived.

INITIATING CUE:

The Unit Supervisor has directed you to energize 4160v ESF Bus 1B AND load it by performing 0POP04-AE-0001, Steps 3, 4 and 5.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

4160v ESF Bus 1B is energized from it's respective ESF DG. ESF DG # 12 is immediately stopped when low lube oil pressure is noted.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copy of:

- 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus
- 0POP09-AN-03M3-A-4, Annunciator Lampbox 3M3 Response Instructions

NOTES:

1. This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance (NO indication type cues are provided).
2. Use the Simulator Setup section below to prepare the simulator
3. This JPM is an Alternate path JPM. Basically, the student will energize the 4160v ESF Bus from it's respective DG and verify proper ECW operation. Once this is done a low lube oil condition will develop on the DG causing a DG Trouble alarm. The student should refer to the annunciator response, determine the DG must be tripped and carry out this action. This is the termination point of the JPM.
4. **ANY ALARMS ON CONTROL ROOM PANELS CP-001, 002 AND 003 WILL BE RELATED TO ACTIVITIES OF THIS JPM.**

SIMULATOR SETUP:

1) JPMs S1 and S3 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

2) Ensure Radio volume for both stations are set to a reasonable level.

3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

4) Reset to IC # 134 and verify:
   - Step counter position annunciator light is out on CP-005
   - Red light at the end of CP-010 is out

5) Check and clean the following procedures (JPM specific):
   - 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus
   - 0POP09-AN-03M3-A-4, Annunciator Lampbox 3M3 Response Instructions

ADDITIONAL ACTIONS ARE ON NEXT PAGE

JOB PERFORMANCE MEASURE INFORMATION SHEET

6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

7) Execute lesson plan # 7 under Lesson Plan Group 'nrc2003' AND go to 'Start Lesson'.

8) Place the simulator in 'FREEZE' until the examiners are ready to proceed.

INSTRUCTOR ACTIONS:

(1) WHEN student COMPLETES Step 4 of 0POP04-AE-0001 (Checking ECW status and ensuring ECW is properly in service), THEN Trigger Step 1 (DG low lube oil pressure) of the simulator lesson plan.

(2) As Yard Operator, if contacted by the Control Room AFTER THE DG TROUBLE ALARM COMES IN, inform them you just entered the DG Room and there is a large puddle of oil on the floor.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- $ Critical steps are identified by (C).
- $ Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain procedure 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus

Standard:

Copy of 0POP04-AE-0001, First Response to Loss of Any or All 13.8 kV or 4.16 kV Bus obtained

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 2

Any STBY DG required to be running AND output breaker closed on running STBY DG?

Standard:

From 0POP04-AE-0001, Step 3, Determines there's an ESF DG is running, but it's output breaker is open. Refers to Step 3 RNO actions

Comment:

This is the procedure entry point for the specified task. The conditions of this step were established in the JPM task statement. The student may go directly to the Step 3 RNO actions or first verify their applicability by doing Step 3.

Cue:

None

Notes:

<u>SAT/UNSAT</u> Performance Step: 3

Ensure protective devices on the affected DG are logged, investigated and reset

- 4.16 kV Bus overcurrent lockout
- SDG generator differential lockout
- SDG overspeed lockout

Standard:

The student should use the status panel at CP-003 to determine protective relay status – none have been actuated.

Comment:

There are no protective relays actuated. The student may use the Yard Watch to locally check protective relays.

Cue: If asked, report there are no protective relays actuated.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Ensure ESF Bus ‘SPLY BKR’ open

Standard:

Student verifies the normal supply breaker to the ESF Bus is open.

Comment:

Cue:

None

Notes:

SAT/UNSAT Performance Step: 5

Place the Synchronizing Sw for the STBY DG to the ON position

Standard:

Places the Synchronizing Sw for the STBY DG to the ON position.

Comment:

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>**SAT/UNSAT**</u> **Performance Step:** 6 (C)

Close the affected STBY DG output breaker

Standard:

Closes the DG output breaker

Comment:

Once the output breaker is closed, the student should verify the bus is energized by observing the bus voltmeter and/or annunciators clearing.

Cue:

None

Notes:

<u>**SAT/UNSAT**</u> **Performance Step:** 7

Place the Synchronizing Sw to the OFF position

Standard:

Places the Synchronizing Sw to the OFF position

Comment:

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

STAND ON RIGHT SIDE OF CANDIDATE TO ALLOW BOOTH TO OBSERVE ACTIONS IN ORDER TO INITIATE DG LOW L.O. PRESSURE AT THE APPROPRIATE TIME.

SAT/UNSAT Performance Step: 8

Check ECW Status:
- ECW Pump running*
- ECW Pump Discharge Isolation Valve open*
- ECW Blowdown Isolation Valve closed

Standard:

Verifies correct ECW system operation per the above

Comment:

1) The ECW Pump Discharge Valve will still be de-energized at this time and cannot be opened until the 480 VAC Load Centers are powered back up. The student may want to secure the DG at this point, but do not allow this. Refer to the cue below to address this situation.

2) To re-energize this valve the student can either re-energize the 480v Load Centers and MCC's now or during performance of procedure Step 5 in Addendum 1. If done now, he/she may or may not seek permission from the Unit Supervisor.

Cue:

If the student wants to stop the DG because ECW cooling hasn't yet been established (discharge valve has no power), DO NOT allow this. As Unit Supervisor, direct the student to immediately re-energize 480v Load Centers and MCC's,

If asked as the Unit Supervisor which loads are to be energized from procedure Addendum 1, indicate the following:

- ECW pump
- 480V Load Centers
- Essential Chiller and Chilled water pump

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9

DG 12 TRBL annunciator alarms

Standard:

Acknowledges DG Trouble alarm and refers to Annunciator Response Instructions

Comment:

The DG Trouble alarm is the initiating event for the alternate path. This won't occur until the student has verified ECW in service for DG #12.

Cue:

None

Notes:

SAT/UNSAT Performance Step: 10 (C)

If lube oil pressure is less than 30 psig then ensure the DG is tripped.

Standard:

Determines lube oil pressure is less than 30 psig and trips the DG

Comment:

This is an immediate action step of the Annunciator Response Instructions

Cue:

None

Notes:

TERMINATE THE JPM

JPM STOP TIME ______

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ______________________ **Signature**

Date

JPM - STUDENT HANDOUT

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The plant is in Mode 1 operating at approximately 73 % power. The feeder breaker from 13.8 kV Standby Bus 1G has tripped open causing a loss of normal power to 4160v ESF Bus 1B. The control switch for this breaker on CP-010 has been placed in PTL.

#12 ESF DG has JUST started, but has not automatically connected to 4160v ESF Bus 1B due to a Sequencer failure on Train 'B'. A Plant Operator (Yard Watch) has been dispatched to # 12 ESF DG, but has not yet arrived.

INITIATING CUE:

The Unit Supervisor has directed you to energize 4160v ESF Bus 1B AND load it by performing 0POP04-AE-0001, Steps 3, 4 and 5.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE:	**ISOLATE SI ACCUMULATORS**
JPM NO.:	**S4**
REVISION:	**2**
LOCATION:	**SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: ISOLATE SI ACCUMULATORS

JPM No.: S4

Rev. No: 2

STP Task: T81063, Respond to a LOCA Involving a Break Size in Which Reactor Coolant System Pressure Remains Above High Head Safety Injection Pump Shutoff Head.

STP Objective: CRO81063, Respond to a LOCA Involving a Break Size in Which Reactor Coolant System Pressure Remains Above High Head Safety Injection Pump Shutoff Head per POP05-EO-EO10.

Related K/A Reference: 00600K1.03, 006000K4.10, 006000K6.02, 006000A3.01, 006000A4.02, 006000K1.04, 006000K6.03, 006020A1.07, 006000SG07, 006000SG09, 000009EA1.01, 000009SG06, 000009SG12, 000011EA1.15, 000011SG06, 000011SG12, 194001A1.01, 194001A1.02, 194001A1.13

References: 0POP03-ZG-0007, Plant Cooldown Rev 38
0POP02-SI-0001, Safety Injection Accumulators Rev 20

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: NO

Alternate Path JPM: YES

Validation Time: 15 minutes

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440ºF and 450ºF. RCS Pressure is between 900 and 1000 psig. Steps of 0POP03-ZG-0007, Plant Cooldown have been completed through Step 5.36.

INITIATING CUE:

The Unit Supervisor directs you to CLOSE Safety Injection Accumulator Discharge Valves in accordance with 0POP03-ZG-0007, Plant Cooldown, Step 5.37.

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Safety Injection Accumulator Discharge Valves MOV-0039A and MOV-0039B are closed.

Safety Injection Accumulator 1C venting is in progress.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copies of the following procedures:

- 0POP03-ZG-0007, Plant Cooldown.
- 0POP02-SI-0001, Safety Injection Accumulators

NOTES:

1) This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance. (NO Indication type Cues are provided).

SIMULATOR SETUP:

1) JPMs S4 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

2) Ensure Radio volume for both stations are set to a reasonable level.

3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

4) Reset to IC #136 and verify:
   - Step counter position Annunciator light is out
   - Red light at the end of CP-010 is out

5) Check and clean the following procedures (JPM specific):
   - 0POP03-ZG-0007, Plant Cooldown
   - 0POP02-SI-0001, Safety Injection Accumulators

6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

7) Place the simulator in 'FREEZE' until the examiners are ready to proceed.

8) There is no simulator lesson for either of these JPM's.

INSTRUCTOR ACTIONS:

If contacted as a Plant Operator to station yourself in the vicinity of Accumulator 1C with an O2 instrument, report that you are on station with the O2 instrument after a short time delay.

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME__________

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP03-ZG-0007, Plant Cooldown and transition to Step 5.37.

Standard:

Obtains a copy of 0POP03-ZG-0007, Plant Cooldown and transitions to Step 5.37, close safety injection accumulator discharge valves.

Comment:

The applicant should use the simulator copy of the procedure. No working copy is to be provided by the evaluator.

The applicant may choose to review the notes and precautions again, however it is intended that he/she transition to Step 5.37 as quickly as possible for time considerations. Provide cues as necessary to ensure this occurs.

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

CLOSE accumulator discharge valve breakers using the power lockout switches:

- ACC 1A PWR LOCKOUT MOV-0039A
- ACC 1B PWR LOCKOUT MOV-0039B
- ACC 1C PWR LOCKOUT MOV-0039C

Standard:

Closes the Accumulator Discharge Valve Breakers by momentarily taking the Accumulator Power Lockout Switches to the Power On position:

______ *ACC 1A PWR LOCKOUT MOV-0039A*
______ *ACC 1B PWR LOCKOUT MOV-0039B*
______ *ACC 1C PWR LOCKOUT MOV-0039C*

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: **3(C)**

Close accumulator discharge valves:

- ACC 1A DISCH ISOL MOV-0039A
- ACC 1B DISCH ISOL MOV-0039B
- ACC 1C DISCH ISOL MOV-0039C

Standard:

Closes the Accumulator Discharge Valve by momentarily taking the Accumulator Discharge Isolation Valve Switches to the close position:

______ *ACC 1A DISCHARGE ISOL MOV-0039A**
______ *ACC 1B DISCHARGE ISOL MOV-0039B**
______ *ACC 1C DISCHARGE ISOL MOV-0039C (Fails to close)*

Comment:

* Denotes critical portion of step

Accumulator 1C Discharge Isolation Valve MOV-0039C will fail to close. Applicant should inform the Unit Supervisor that MOV-0039C has failed to close.

Cue:

When informed by the applicant that MOV-0039C has failed to close, as Unit Supervisor inform him/her to vent Accumulator 1C in accordance with 0POP02-SI-0001, Safety Injection Accumulators, Section 8.0.

If the applicant requests to open Accumulator 1A, 1B, or 1C Discharge Isolation Valve Breakers by taking their Power Lockout Switches to OFF, as Unit Supervisor, inform him/her that you concur.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

VERIFY local area around Safety Injection Accumulator 1C is clear of personnel, by making an announcement over Site PA System.

Standard:

Makes PA announcement that venting of Safety Injection Accumulator 1C will take place and personnel should stand clear of Safety Injection Accumulator 1C.

Comment:

The applicant may dispatch a Plant Operator to the vicinity of Accumulator 1C with an O2 instrument to monitor the atmosphere at this location.

Cue:

1. Do not allow applicant to make an actual PA announcement. When applicant indicates that they would make a PA announcement informing personnel to stand clear of Safety Injection Accumulator 1C, inform him/her that the announcement has been made and personnel have been informed of Safety Injection Accumulator 1C venting.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

MONITOR Accumulator pressure for Safety Injection Accumulator 1C:

- ACC 1C PRESS 1-SI-PI-0964/0965

Standard:

Monitors Safety Injection Accumulator Pressure on pressure indicators PI-0964/0965.

Comment:

Cue:

Notes:

SAT/UNSAT Performance Step: 6(C)

OPEN the N2 SPLY/VENT valve for Accumulator PV-3928.

Standard:

Opens the N2 SPLY/VENT valve for Accumulator PV-3928.

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7(C)

OPEN HDR VENT HCV-0900 to establish desired venting rate.

Standard:

Opens HDR Vent HCV-0900 to start venting Safety Injection Accumulator 1C.

Comment:

A considerable amount of time will be needed to completely vent Safety Injection Accumulator completely.

Cue:

When a pressure decrease begins on Safety Injection Accumulator 1C, as "Unit Supervisor", inform the applicant to continue with Step 5.37 of 0POP03-ZG-0007, Plant Cooldown Procedure while Safety Injection Accumulator 1C Vents.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8

OPEN accumulator discharge valve breakers using the power lockout switches:

- ACC 1A PWR LOCKOUT MOV-0039A
- ACC 1B PWR LOCKOUT MOV-0039B
- ACC 1C PWR LOCKOUT MOV-0039C

Standard:

Opens the Accumulator Discharge Valve Breakers by momentarily taking the Accumulator Power Lockout Switches to the Power Off position:

______ *ACC 1A PWR LOCKOUT MOV-0039A*
______ *ACC 1B PWR LOCKOUT MOV-0039B*
______ *ACC 1C PWR LOCKOUT MOV-0039C*

Comment:

This step may have been performed earlier

Cue:

If applicant questions whether he/she should de-energize 1C Accumulator Discharge Isolation Valve, as Unit Supervisor inform him/her to do so.

Notes:

- TERMINATE THE JPM -

JPM STOP TIME__________

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name: ____

Date Performed: ____________________________

Time to Complete: ___________________________

JPM Results: Sat / Unsat

Evaluator: ________________________ Signature: ___________________________

Date: ____________________________

JPM STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440ºF and 450ºF. RCS Pressure is between 900 and 1000 psig. Steps of 0POP03-ZG-0007, Plant Cooldown have been completed through Step 5.36.

INITIATING CUE:

The Unit Supervisor directs you to CLOSE Safety Injection Accumulator Discharge Valves in accordance with 0POP03-ZG-0007, Plant Cooldown, Step 5.37.

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE: **POWER RANGE NI FAILURE**

JPM NO.: **S5**

REVISION: **2**

LOCATION: **SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: POWER RANGE NI FAILURE

JPM No.: S5

Rev. No: 2

STP Task: T81650, Respond to a Loss of Power Range Instrument

STP Objective: CRO 81650, Respond to a Loss of Power Range Instrument per 0POP04-NI-0001.

Related K/A Reference: 015 A4.03, Ability to manually operate and/or monitor in the control room: Trip Bypasses, 3.8/3.9

References: 0POP04-NI-0001, Rev. 10, Nuclear Instrumentation Malfunction

0POP09-AN-05M3, Rev. 21, Annunciator Lampbox 5M03 Response Instructions

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: No

Alternate Path JPM: No

Validation Time: 15 min.

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

The Unit is at 49-50% power with all control systems in Automatic with the exception of Rod Control

INITIATING CUE:

You are the Primary Reactor Operator and you receive the following alarms:

- 5M03-A3, PR UPPER DET FLUX DEV HI/AUTO DEF
- 5M03-B3, PR LOWER DET FLUX DEV HI/AUTO DEF
- 5M03-C4, PR CHANNEL DEV

The Unit Supervisor directs you to investigate these alarms and take appropriate corrective action

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

The corrective actions for the Power Range Instrument malfunction have been completed in accordance with Off-Normal procedure 0POP04-NI-0001, Nuclear Instrumentation Malfunction.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS: Working copies of:

0POP04-NI-0001, Nuclear Instrumentation Malfunction

0POP09-AN-05M3, Annunciator Lampbox 5M03 Response Instructions

NOTES:

1. **0POP04-NI-0001, Nuclear Instrumentation Malfunction, contains possible actions if the unit is > 50% power. Based on plant indications available and information in the Initial Conditions, plant power is 49-50%, thus any actions related to >50% power do not apply.**
2. This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance (NO indication type cues are provided).
3. Use the Simulator Setup section below to prepare the simulator

SIMULATOR SETUP:

1) JPMs S2 and S5 are to run together. The following steps will set up the simulator for **BOTH** JPMs.

2) Ensure Radio volume for both stations are set to a reasonable level.

3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

4) Reset to IC # 135 and verify:
   - Step counter position annunciator light is out
   - Red light at the end of CP-010 is out

5) Check and clean the following procedures (JPM specific):

   - 0POP04-NI-0001, Nuclear Instrumentation Malfunction

   - 0POP09-AN-05M3, Annunciator Lampbox 5M03 Response Instructions

6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

7) Place the simulator in ‘FREEZE’ until the examiners are ready to proceed.

8) There is no simulator lesson plan for this pair of JPMs

JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Identify the failed Power Range Channel

Standard:

Identifies that Power Range Channel N-41 has failed low

Comment:

This is not a procedural step as such, but should be the student's first action based on alarms and indications present. The student may consult various alarm response instructions for existing alarms during this JPM step.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Place Rod Bank Selector Sw. in Manual

Standard:

Ensures the Rod Bank Selector Sw. is in Manual

Comment:

This step is an Immediate Action step of 0POP04-NI-0001, Nuclear Instrumentation Malfunction. The student may first go to this procedure because the alarm response instructions will direct him/her there.

At this power level the Rod Bank Selector Sw. is already in Manual so no action will be required except to check it's status.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 3

Control SG Levels 68-74%

Standard:

SG levels are controlled 68-74%

Comment:

This step is an Immediate Action step of 0POP04-NI-0001, Nuclear Instrumentation Malfunction. The student may first go to this procedure because the alarm response instructions will direct him/her there.

SG levels should be unaffected by the Power Range Instrument failure because only the Low Power Feedwater Reg. Valves receive an input from the Nuclear Instrumentation and they are not in service at this power level.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Obtain procedure 0POP04-NI-0001, Nuclear Instrumentation Malfunction

Standard:

Obtains copy of procedure 0POP04-NI-0001, Nuclear Instrumentation Malfunction

Comment:

The student may have already performed this JPM step per the comments on JPM steps 2 and 3.

Cue:

None

Notes:

SAT/UNSAT Performance Step: 5

Verifies procedure Step 1.0 including RNO actions (Immediate Actions) is complete.

Standard:

Verifies Immediate Actions have been completed (refer to JPM steps 2 and 3), then goes to procedure Addendum 3, Power Range Nuclear Instrumentation Malfunction

Comment:

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 6

Stop any Main Turbine load changes

Standard:

Verifies no load changes in progress

Comment:

No load changes will be in progress

Cue:

None

Notes:

SAT/UNSAT Performance Step: 7

Maintain RCS Tavg within 1.5 degrees F of Tref using Manual Control Rod motion

Standard:

Checks Tavg/Tref deviation to verify it's < 1.5 degrees F

Comment:

Tavg/Tref should be within 1.5 degrees F because there was no rod motion or turbine load changes occurring at the time of the event.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Bypass the malfunctioning Power Range Channel

Standard:

Bypasses N-41 at the Nuclear Instrumentation Panel by positioning the following switches:

- *Comparator Channel Defeat (Comparator and Rate Dwr.)*
- *Power Mismatch Bypass (Miscellaneous Control and Indication Panel)*
- *Rod Stop Bypass (Miscellaneous Control and Indication Panel)*
- *Detector Current Comparator – Upper Section (Detector Current Comparator)*
- *Detector Current Comparator – Lower Section (Detector Current Comparator)*

Comment:

1. All switches are positioned to the failed NI channel: N-41

2. Operations are done at NIS CONT PNL – PROT RACK IV

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 9 (C)

Ensure Permissives are in their correct state

Standard:

Checks the following Permissive Status Lampboxes on CP-005:

- *P-7 POWER OPER RX TRIPS BLKD (5M24-B-2) – NOT LIT*
- *P-8 THREE LOOP OPERATION PERMITTED (5M24-B-3)- NOT LIT*
- *P-9 RX/TURB TRIP BLOCKED (5M24-B-4) – LIT*
- *P-10 MAN BLOCK INT/LO PR RX TRIP PERM (5M24-A-2) - LIT*

Comment:

Cue:

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10

Select an operable Power Range Channel on Nuclear Recorder NI-NR-0045 on CP-018

Standard:

Ensures RED PEN SELECTOR switch is NOT selected to NI-41

Ensures BLUE PEN SELECTOR switch is NOT selected to NI-41

Comment:

Cue:

Notes:

- TERMINATE THE JPM -

JPM STOP TIME ________

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ______________________ **Signature**

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: **Do not operate or alter equipment configuration in the plant without proper authorization.**

INITIAL CONDITIONS:

The Unit is at 49-50% power with all control systems in Automatic with the exception of Rod Control

INITIATING CUE:

You are the Primary Reactor Operator and you receive the following alarms:

- 5M03-A3, PR UPPER DET FLUX DEV HI/AUTO DEF
- 5M03-B3, PR LOWER DET FLUX DEV HI/AUTO DEF
- 5M03-C4, PR CHANNEL DEV

The Unit Supervisor directs you to investigate these alarms and take appropriate corrective action

NUCLEAR TRAINING DEPARTMENT

OPERATING JOB PERFORMANCE MEASURE

TITLE: **ESTABLISH SUPPLEMENTARY PURGE**

JPM NO.: **S6**

REVISION: **2**

LOCATION: **SIMULATOR**

JOB PERFORMANCE MEASURE INFORMATION SHEET

JPM Title: ESTABLISH SUPPLEMENTARY PURGE

JPM No.: S6

Rev. No: 2

STP Task: T34350, Perform a Containment Supplemental Purge

STP Objective: CRO34350, Perform a Containment Supplemental Purge per 0POP02-HC-0003

Related K/A Reference:

029 A1.03, Ability to predict and/or monitor changes in parameters to prevent exceeding design limits associated with operating the Containment Purge System controls including: Containment pressure, temperature and humidity, 3.0/3.3

103 A4.01, Ability to manually operate and/or monitor in the control room: Flow control, pressure control, and temperature control, 3.2/3.3

References: 0POP02-HC-0003, Rev. 13, Supplementary Containment Purge

0PCP09-HC-0001, Rev. 1, Form 1, RCB Purge Notification Levels

Task Normally Completed By: RO

Method of Testing: Actual Performance

Location of Testing: Simulator

Time Critical Task: No

Alternate Path JPM: No

Validation Time: 25 min.

Required Materials (Tools/Equipment): None

JOB PERFORMANCE MEASURE INFORMATION SHEET

READ TO PERFORMER (a copy of this information is included at the end of the JPM as a tear-away sheet to be given to the student):

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440ºF and 450ºF. RCS Pressure is between 900 and 1000 psig.

Reactor Containment pressure is slightly elevated resulting in a CMTNT PRESS HI/LO annunciator on Control Room Panel CP-002. Tech Spec 3.6.1.4, Containment Systems – Internal Pressure, is in effect.

An active Form 1, RCB Purge Notification Levels, is available in the Control Room. RT-8011 is NOT operable. Tech Spec requirements have been met. RT-8012 and 8013 ARE operable and required by Tech Spec 3.3.2.

There is no Extended Allowed Outage Time (EAOT) in effect

INITIATING CUE:

The Unit Supervisor directs you to start the Supplementary Containment Purge System with one Exhaust Fan running (NO Supply Fans) AND reduce Containment pressure to within Tech Spec limits (-0.1 to +0.3).

- DO NOT DISCLOSE INFORMATION BELOW THIS LINE -

COMPLETION CRITERIA:

Supplementary Containment Purge has been started in accordance with 0POP02-HC-0003 and Containment pressure has been established at -0.1 to +0.3 psig to comply with Tech Spec requirements.

JOB PERFORMANCE MEASURE INFORMATION SHEET

HANDOUTS:

Working copies of:

- 0POP02, HC-0003, Supplementary Containment Purge
- 0PCP09-HC-0001, Form 1, RCB Purge Notification Levels (filled out)

NOTES:

1. This JPM is formatted for dynamic simulator performance only. The cues provided are related to communications and other general information needed for dynamic performance (NO indication type cues are provided).
2. Use the Simulator Setup section below to prepare the simulator

SIMULATOR SETUP:

1) JPM's S4 and S6 are to run together. The following steps will set up the simulator for **BOTH** JPM's.

2) Ensure Radio volume for both stations are set to a reasonable level.

3) Ensure the PA buttons on the communications consoles are taped to help eliminate usage.

4) Reset to IC # 136 and verify:
   - Step counter position annunciator light is out
   - Red light at the end of CP-010 is out

5) Check and clean the following procedures (JPM specific):
   - 0POP02-HC-0003, Supplementary Containment Purge

6) Place simulator in run. Silence/acknowledge/reset alarms as appropriate.

7) Place the simulator in 'FREEZE' until the examiners are ready to proceed.

8) There is no simulator lesson plan for this JPM

SEE NEXT PAGE FOR SPECIFIC INSTRUCTIONS FOR THIS JPM

INSTRUCTIONS SPECIFIC TO THIS JPM

1. Verify Rm-11 and Rm-23 operating properly. Verify that the 'GAS' pushbutton is illuminated on RM-23s for RT-8012 and RT-8013.

2. Ensure a CR tag is in place on monitor RI-8011 on the RM-23.

3. Ensure 0PCP09-HC-0001, Form 1, RCB Purge Notification Levels, is available prior to commencing (a filled out copy should accompany this JPM).

4. Ensure there is a pad of paper available for the student to use as the Control Room Log.

5. JOB PERFORMANCE MEASURE CHECK SHEET

NOTE:

- Critical steps are identified by (C).
- Sequenced steps are identified by (S_1, S_2, . . .).

JPM START TIME

SAT/UNSAT Performance Step: 1

Obtain a copy of 0POP02, HC-0003, Supplementary Containment Purge and 0PCP09-HC-0001, Form 1, RCB Purge Notification Levels

Standard:

Obtains a copy of 0POP02, HC-0003, Supplementary Containment Purge

Comment:

The applicant should use the simulator copy of 0POP02, HC-0003, Supplementary Containment Purge. No working copy is to be provided by the evaluator

Cue:

Provide the student with the attached copy of 0PCP09-HC-0001, Form 1, RCB Purge Notification Levels. The initial conditions indicated this form is available.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2

Checks Prerequisite conditions 3.1 and 3.2

Standard:

Determines Prerequisite conditions are met

Comment:

Cue:

Provide the following cues, as necessary, as the student checks Prerequisites:

1. Procedure step 3.1: An RCB Purge Notification Levels Form is to be provided to the student if not already done.

2. Procedure step 3.2: Initial conditions indicate RCB Monitor RT-8011 is inoperable and Tech Spec requirements have been satisfied.

Notes:

SAT/UNSAT Performance Step: 2A

Checks Prerequisite conditions 3.3.1

Standard:

Determines Prerequisite conditions are met

Comment:

Student will have to verify Rad Monitors are not in or near an alarm condition. Other pre-reqs in this step will be satisfied through cues.

Cue:

Provide the following cues:

- CVI is required
- Train R and S Master Relay Defeat Switches are in NORMAL
- A1RA-RI-8012B and A1RA-RI-8013B are operational (per the initial conditions)
- No testing or maintenance is being performed on RT-8012 or 8013

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2B

Checks Prerequisite conditions 3.3.2

Standard:

Determines Prerequisite conditions are met

Comment:

Student will check for ESF actuation signal at CP-005 and CP-006 Bistable Status Monitoring Panels

Cue:

Provide the following cue if necessary:
- Train R and S Master Relay Defeat Switches are in NORMAL (cue provided earlier)

Notes:

SAT/UNSAT Performance Step: 2C

Checks Prerequisite conditions 3.3.3

Standard:

Verifies ESFAS TRN 'A' and ESFAS TRN 'C' lights EXTINGUISHED on ESF STATUS MONITORING LAMPBOX 26M023

Comment:

This status monitoring panel is located at the RO station in front of the Control Room where the RO's can sit. Facing the back of the Control Room, the panel will be on the upper right side of the station.

Cue:

If the student attempts a Lamp Test of the status monitoring panel it will not work (simulator discrepancy). Inform the student that all lights tested satisfactory.

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 2D

Checks Prerequisite conditions 3.4 and 3.5

Standard:

Determines Prerequisite conditions are met

Comment:

Cue:

Provide the following cues:

- Instrument Air is available
- Lineups 1, 2 and 3 are completed

Notes:

SAT/UNSAT Performance Step: 3

Ensure PUMP ON/OFF light is ON for the following at Radiation Monitoring Panel, CP-023:

- RT-8012
- RT-8013

Standard:

Pump lights are verified to be ON for both Radiation Monitors

Comment:

The procedure indicates that this step only applies if these Rad Monitors are required to be operable by Tech Spec 3.3.2. For these plant conditions, these Rad Monitors ARE required to be operable. The initial conditions provided stipulate the operability of these Rad Monitors.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 4

Perform Channel Checks on RT-8012 and 8013

Standard:

Determines channel checks satisfactory for RT-8012 and 8013 by observing:

- *Less than a factor of 3 between readings of RT-8012 and 8013*
- *Readings are below the Alert alarm point (no Alert alarms present)*
- *OPER lights (Green lights) are illuminated*

Comment:

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 5

If noble gas activity is greater than 5.00E-4 uC/cc, Rad Monitor setpoints must be raised to prevent an unwanted purge isolation.

Standard:

Determines noble gas activity is less than 5.00E-4 uC/cc, thus Rad Monitor setpoints don't have to be increased.

Comment:

This information normally comes from RT-8011, which is inoperable. The alternate means would to obtain the information from grab samples that are being taken in lieu of RT-8011 operability. The grab sample information is on the RCB Purge Notification Levels Form

Cue:

If the student contacts chemistry for RCB atmosphere noble gas activity, inform him/her it is 5.96E-6 uC/cc

If the student requests to ask someone for the location of this information, inform him/her it is on Form 1, RCB Purge Notification Levels.

Notes:

SAT/UNSAT Performance Step: 6

Verify Rad Monitor RT-8012 and 8013 setpoints are 5.00E-4 uC/cc

Standard:

Verify Rad Monitor RT-8012 and 8013 setpoints are 5.00E-4 uC/cc by observing RM-11 displays

Comment:

These are the High Alarm setpoints
Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 7

Observe ventilation stack flow prior to initiating the purge (ERFDADS point HMFA9308, RM-11 or CP-023)

Standard:

Observes ventilation stack flow on ICS point HMFA9308, RM-11 or CP-023

Comment:

The procedure calls the computer point “ERFDADS point HMFA9308” however the current computer is the ICS (Integrated Computer System). The point numbers are identical between the two systems.

The flow indication ‘bounces’ around somewhat making it difficult to get a ‘steady-state’ reading

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 8 (C)

Open the following valves AND verify they are open:

- SPLY OCIV FV-9776
- SPLY ICIV MOV-0003
- EXH ICIV MOV-0005
- EXH OCIV FV-9777

Standard:

Opens the valves specified above and verifies they are open.

Comment:

There are actually separate procedure steps to open the valves and then verify they are open

Cue:

None

Notes:

SAT/UNSAT Performance Step: 9

Observe INTK DMPR FV-9594 for OPEN or intermediate position

Standard:

Observes Interlock Damper FV-9594 is either open or in the intermediate position

Comment:

Intermediate position is shown by both lights being lit.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 10 (C)

If desired, then start one Purge Exhaust Fan

Standard:

Starts Supplementary EXH FAN 11A OR 11B (one Supplementary Purge Exhaust Fan)

Comment:

The procedure allows for purging without fan operation, however, the Initiating Cue specifies that a Purge Exhaust Fan will be operated, but no Supply Fan

Cue:

None

Notes:

SAT/UNSAT Performance Step: 11

Monitor ventilation stack flow for an increase of approximately 4500 cfm

Standard:

Monitors ventilation stack flow for an increase of approximately 4500 cfm (ERFDADS point HMFA9308, RM-11 or CP-023)

Comment:

Flowrate in the simulator will not increase as much as needed because of a modeling problem.

Cue:

Once the student begins monitoring the flow change, inform him/her they observe the appropriate increase in ventilation stack flow

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

<u>SAT/UNSAT</u> Performance Step: 12

Record specified information in the Control Room Log

Standard:

Records the following in the Control Room Log:

- *Date/time purge initiated*
- *Purge type (Supplementary)*
- *Purge flow rate*
- *Reason for purge (pressure control)*

Comment:

There is no Control Room Logbook per se in the simulator. The student can record this information on any available paper or in the procedure he/she is using.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 13

Compare RT-8012 and 8013 gas channel readings to the notification levels on the RCB Purge Levels Notification Form

Standard:

Compares RT-8012 and 8013 gas channel readings to the notification levels on the RCB Purge Levels Notification Form.

Comment:

As long as Rad Monitors are within the notification levels then no further action is required. This is the expected condition.

Cue:

None

Notes:

SAT/UNSAT Performance Step: 14

Continues purge. Periodically monitors RT-8012 and 8013 as before.

Standard:

Continues purge until Containment pressure is within Tech Spec range of –0.1 to +0.3 psig

Comment:

Containment pressure will be within Tech Spec range when the CMTNT PRESS HI/LO Annunciator (Window A-2) on Control Room Panel CP-002 clears.

Cue:

None

Notes:

JOB PERFORMANCE MEASURE CHECK SHEET

SAT/UNSAT Performance Step: 15 (C)

When Containment pressure is within Tech Spec range, secure the purge

Standard:

Determines Containment pressure is within Tech Spec range

Comment:

Containment pressure will be within Tech Spec range when the CMTNT PRESS HI/LO annunciator (Window A-2) on Control Room Panel CP-002 clears.

The student may want to continue the purge even after the alarm is cleared. If so, ask “At what point do you intend to secure the purge?”

Cue:

Terminate the JPM when the student starts to secure the purge

Notes:

- TERMINATE THE JPM -

JPM STOP TIME

VERIFICATION OF COMPLETION

Job Performance Measure:

Applicant's Name:

Date Performed:

Time to Complete:

JPM Results: **Sat / Unsat**

Evaluator: ______________________ **Signature**

Date

JPM – STUDENT HANDOUT

READ TO PERFORMER:

The evaluator will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

YOU ARE TO INFORM THE EVALUATOR WHEN YOU'VE COMPLETED THE TASK.

CAUTION: Do not operate or alter equipment configuration in the plant without proper authorization.

INITIAL CONDITIONS:

A plant cooldown is in progress. The Unit is in Mode 3 with RCS Temperature between 440ºF and 450ºF. RCS Pressure is between 900 and 1000 psig.

Reactor Containment pressure is slightly elevated resulting in a CMTNT PRESS HI/LO annunciator on Control Room Panel CP-002. Tech Spec 3.6.1.4, Containment Systems – Internal Pressure, is in effect.

An active Form 1, RCB Purge Notification Levels, is available in the Control Room. RT-8011 is NOT operable. Tech Spec requirements have been met. RT-8012 and 8013 ARE operable and required by Tech Spec 3.3.2.

There is no Extended Allowed Outage Time (EAOT) in effect

INITIATING CUE:

The Unit Supervisor directs you to start the Supplementary Containment Purge System with one Exhaust Fan running (NO Supply Fans) AND reduce Containment pressure to within Tech Spec limits (-0.1 to +0.3).

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Reactor Containment Purge			
Form 1	RCB Purge Notification Levels (Sample)		Page 1 of 1

Unit: 1

RT-8011 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8011 Particulate 1111/2111	Inoperable	1.5 x	Inoperable
RT-8011 Iodine 1211/2211	Inoperable	≤ 1.0 E-10 = 1.5 E-10 >1.0 E-10 = 1.5 x	Inoperable
RT-8011 Noble Gas 1311/2311	Inoperable*	≤ 1.25 E-05 = 2.0 x >1.25 E-05 = 1.5 x	Inoperable

***RCB Noble Gas activity is 5.96 E –6 uCi/cc by grab sample results.**

RT-8012 and RT-8013 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8012 Noble Gas 1012/2012 & RT-8013 Noble Gas 1013/2013		≤ 1.25 E-05 = 2.0 x RT-8011 NG Activity** > 1.25 E-05 = 1.5 x RT-8011 NG Activity**	1.19E -5

* - If notification levels are exceeded, inform Chemistry that RCB purge criteria may require reevaluation.

** - If RT-8011 is inoperable, use containment gas grab sample result.

Completed By: BT Washington
Technician

Date/Time: Today / 1200

Unit: 1

RT-8011 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8011 Particulate 1111/2111	Inoperable	1.5 x	Inoperable
RT-8011 Iodine 1211/2211	Inoperable	≤ 1.0 E-10 = 1.5 E-10 >1.0 E-10 = 1.5 x	Inoperable
RT-8011 Noble Gas 1311/2311	Inoperable*	≤ 1.25 E-05 = 2.0 x >1.25 E-05 = 1.5 x	Inoperable

***RCB Noble Gas activity is 5.96 E –6 uCi/cc by grab sample results.**

RT-8012 and RT-8013 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8012 Noble Gas 1012/2012 & RT-8013 Noble Gas 1013/2013		≤ 1.25 E-05 = 2.0 x RT-8011 NG Activity** > 1.25 E-05 = 1.5 x RT-8011 NG Activity**	1.19E -5

* - If notification levels are exceeded, inform Chemistry that RCB purge criteria may require reevaluation.

** - If RT-8011 is inoperable, use containment gas grab sample result.

Completed By: BT Washington
Technician

Date/Time: Today / 1200

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Reactor Containment Purge			
Quality	Non Safety-Related	Usage: **Referenced**	Effective Date: 10/28/02

J. King	J. Tirado	C. Clinton	Chemistry
PREPARER	TECHNICAL	USER	COGNIZANT DEPT

Table of Contents Page

1.0 Purpose and Scope

1.1 This procedure provides a method of accounting for activity released from the Reactor Containment Building (RCB).

1.2 This procedure satisfies the requirement of Reg Guide 1.21 for monitoring the major input source (RCB Purges) to multi-source effluent pathways (Unit Vent).

1.3 This procedure is applicable in all modes and shall be used for both supplementary and normal RCB purges.

2.0 Definitions

2.1 NORMAL PURGE: A purge of containment performed only in Mode 5, 6, or with the core off-loaded to the Spent Fuel Pool to reduce activity to permit continuous personnel access during a plant shut-down. Normal Purge rate is nominally 40,000 scfm.

2.2 SUPPLEMENTARY PURGE: A purge of containment performed for either pressure control, ALARA purposes, or respirable air quality (RAQ) considerations for personnel entry into the RCB. Supplementary Purges may be performed in any mode. Supplementary Purge rate is nominally 4500 scfm.

2.3 BATCH RELEASE (as defined in ODCM Part B section 2.1): A planned release that may be greater than 1 hour duration and may exceed 10 times the average 1- hour activity release rate.

2.3.1 For the purposes of this procedure, purges performed for ALARA purposes or respirable air quality considerations are batch releases. Purges performed for pressure control are not batch releases.

2.4 CONTINUOUS RELEASE (as defined in ODCM Part B section 2.1): A release which is intermittent in nature and usually of relatively short duration (minutes to hours).

3.0 Responsibilities

3.1 Plant Operations is responsible for:

3.1.1 Monitoring RT-8011 Noble Gas, Particulate, and Iodine values (or RT-8012 and RT-8013 Noble Gas values when RT-8011 is inoperable) during RCB purges and for notifying Chemistry if notification levels listed on Form 1, RCB Purge Notification Levels, are exceeded.

3.1.2 Performing monitoring as specified in an alternate monitoring plan if RT-8011, RT-8012 and RT-8013 are all inoperable.

3.1.3 Recording in the Control Room Log, purge types, reasons, flow rates, and durations.

3.1.4 Notifying Chemistry to evaluate the need for additional monitoring based upon changing plant conditions described in Addendum 1, RCB Purge Evaluation Criteria.

3.2 Chemistry is responsible for:

3.2.1 Sampling and analyzing the RCB atmosphere for radioactivity.

3.2.2 Generating an updated Form 1 when required.

3.2.3 Evaluation of additional monitoring based upon changing plant conditions described in Addendum 1, RCB Purge Evaluation Criteria.

4.0 Notes and Precautions

4.1 Regulatory Guide 1.21 requires that for discharge points having input from two or more sources, monitoring of the major contributing source is preferable when dilution with other less concentrated effluent streams renders the resultant effluent concentrations too low for accurate measurements. The RCB is being considered as a major source of radioactivity being released from the Unit Vent.

4.2 IF the RT-8011 Noble Gas Channel is inoperable, THEN use RT-8012 or RT-8013 while a containment purge is in progress to obtain noble gas values. Iodine and particulate activity monitoring is not required.

4.3 If RT-8011, RT-8012, and RT-8013 are all inoperable, THEN purges of the containment may continue as this effluent pathway is continuously monitored by the Plant vent. With RT-8011, RT-8012, and RT-8013 all inoperable, an alternate method of assessing RCB atmospheric conditions will typically be used (e.g., grab samples, portable monitors, Unit Vent monitors, etc.)

5.0 Procedure

NOTE

- Data entries associated with RT-8011, RT-8012 and RT-8013 may be "N/A'd" if these monitors are inoperable.
- IF all monitors are inoperable, THEN contact Chemistry Supervision for guidance on establishing a plan for monitoring the RCB purge. This will typically be accomplished with the Unit Vent monitor.
- IF RT-8011 is inoperable, THEN the containment gas grab sample performed to meet LCO requirements may be used to complete Form 1 for RT-8012 and RT-8013 notification levels.

5.1 Record the Unit number on Form 1, RCB Purge Notification Levels.

5.2 IF operable, THEN obtain the current RT-8011 particulate, iodine, and noble gas channel hourly readings in uCi/cc. Record on Form 1.

5.3 Determine the notification levels for particulate, iodine, and noble gas as required and record them on Form 1.

5.4 Exchange the new Form 1 for the current Form 1 in the Control Room.

6.0 References

6.1 Offsite Dose Calculation Manual

6.2 Nuclear Regulatory Guide 1.21

6.3 0PCP07-ZS-0016, Continuous Atmospheric Monitors

6.4 0POP02-HC-0002, Normal Containment Purge

6.5 0POP02-HC-0003, Supplementary Containment Purge

7.0 Support Documents

7.1 Addendum 1, RCB Purge Evaluation Criteria

7.2 Form 1, RCB Purge Notification Levels

1.0 Containment atmosphere should be sampled when any of the following conditions occur:

NOTE

It is acknowledged that monitor readings may change for a variety of reasons not associated with actual activity of sample. The intent of this procedure is to track the activity of actual releases. If a monitor's apparent activity change is known to be from causes other than activity changes, sampling may not be required and shall be evaluated on a case-by-case basis.

1.1 Noble Gas Activity indicated on the RM-11 hourly trend is **less than** 1.25E-05 uCi/cc AND the hourly Noble Gas Value has changed by more than a factor of 2 from the noble gas value used to establish notification levels for the monitor.

1.2 Noble Gas Activity indicated on the RM-11 hourly trend is greater than 1.25E-05 uCi/cc AND the hourly Noble Gas Value has changed by more than a factor of 1.5 from the noble gas value used to establish notification levels for the monitor.

1.3 Iodine activity indicated on the RM-11 hourly trend is greater than 1.0E-10 uCi/cc AND has changed by more than a factor of 1.5 from the Iodine value used to establish notification levels for the monitor.

1.4 Particulate activity indicated on the RM-11 hourly trend has changed by **greater than** a factor of 1.5 times the particulate value used to establish notification levels for the monitor.

2.0 A new Form 1 should be initiated when:

2.1 A grab sample confirms an activity change as described above.

2.2 A significant decrease in activity has occurred. If the decrease in activity is temporary and expected to return to normal values within approximately 1 day, a new Form 1 would not normally be required. If projected releases from containment may represent a significant fraction of the monthly/quarterly activity released (such as during an outage), initiation of a Form 1 would be desired.

3.0 Conditions requiring frequent updating of Form 1:

3.1 Outage conditions during evolutions that may cause particulate activity to increase (such as cavity decontamination, draining and filling of the reactor cavity).

3.2 Other plant conditions deemed necessary by Chemistry Supervision.

Unit: ____1_____

RT-8011 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8011 Particulate 1111/2111	Inoperable	1.5 x	Inoperable
RT-8011 Iodine 1211/2211	Inoperable	≤ 1.0 E-10 = 1.5 E-10 >1.0 E-10 = 1.5 x	Inoperable
RT-8011 Noble Gas 1311/2311	Inoperable*	≤ 1.25 E-05 = 2.0 x >1.25 E-05 = 1.5 x	Inoperable

*RCB Noble Gas activity is 5.96 E –6 uCi/cc by grab sample results.

RT-8012 and RT-8013 Notification Levels

Monitor Channel	Activity (uCi/cc)	Multiplication Factor or Value	Notification Level* (uCi/cc)
RT-8012 Noble Gas 1012/2012 & RT-8013 Noble Gas 1013/2013		≤ 1.25 E-05 = 2.0 x RT-8011 NG Activity** > 1.25 E-05 = 1.5 x RT-8011 NG Activity**	1.19E -5

* - If notification levels are exceeded, inform Chemistry that RCB purge criteria may require reevaluation.

** - If RT-8011 is inoperable, use containment gas grab sample result.

Completed By: ________________________________ Date/Time: ____________________

Technician

This form, when superseded, is not required to be retained

INITIAL LICENSE EXAM

OPERATING TEST #1

SCENARIO #1

Revision 2

Week of August 18, 2003

Facility: South Texas Project NRC Scenario No.: 1 Op-Test No.: 1

Source:
New ____ Bank - Significantly Modified __X__ Bank - Initial Condition Change __X

See page 3 for Examiner/student assignments

Initial Conditions: 100% power, BOL

Turnover: Maintain current power. Shift Centrifugal Charging Pumps for upcoming maintenance.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	N/A	RO (N) SRO (N)	Shift Centrifugal Charging Pumps.
2 (10 min)	03-09-02 (True)	RO (C) SRO (C)	1B Centrifugal Charging Pump trips – after CCP's are swapped (should be within 10 min.)
3 (20 min)	08-15-03 (True)	BOP (I) SRO (I)	1C Steam Generator controlling Feedwater flow channel fails low – after TRM is addressed for CCP failure or 10 minutes
4 (30 min)	50-BM-01 (1.0)	RO (I) SRO (I)	VCT level transmitter LT-113 fails high – after 1C MFRV in auto or 10 min.
5 (37 min)	05-03-02 (0.1)	ALL (M)	1B Steam Generator Tube Rupture (15 min. ramp) – after LD Divert Valve is re-positioned to the VCT or 7 minutes
6 (67 min)	05-07-02 (True)	BOP (C) SRO (C)	Steam Generator 1B Main Steam Isolation Valve fails to close. Can be closed locally – integral to scenario. Apparent approx. 20-25 min after reactor trip
7 (67 min)	08-03-01 (True)	BOP (C) SRO (C)	Aux Feedpump #11 trips – occurs automatically 20 min after reactor trip
8 (57 min)	01-35-02 (True)	RO (C) SRO (C)	Intermediate Range Channel N36 failure of compensating voltage – integral to scenario, will be apparent approx. 10-15 minutes after reactor trip

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

Scenario # 1 Crew Assignments

SESSION 1 – CREW A

Examiners:	Greg Werner	Operators:	SRO - Bob Galiley
	Mark Haire		RO - Jeremy Webb
	Gary Johnson		BOP - Bob Worley

SESSION 2 – CREW B

Examiners:	Gary Johnson	Operators:	SRO - Kurt Moorefield
	Greg Werner		RO - Richard Schulz
	Tom Stetka		BOP - Phil Stone

SESSION 3 – CREW C

Examiners:	Tom Stetka	Operators:	SRO - Bobby Lane
	Gary Johnson		RO - Alicia Tatham
	Mark Haire		BOP - Robert Butler

SESSION 4 – CREW D

Examiners:	Tom Stetka	Operators:	SRO - Jamie Paul
	Mark Haire		RO - Marc Hill
			BOP - Billy Herzog (Surrogate)

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

Refer to the Instructor Notes file for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

$ SG B Wide Range Level
$ SG A, B, C, D Pressures
$ SG B AFW Flow
$ SG C Narrow Range Level
$ RCS Wide Range Pressure

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.

2. Actions required throughout the event are indicated as "(continuous)" in the position column.

3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 1

Event Description: Shift Centrifugal Charging Pumps

Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Directs the RO to Start Centrifugal Charging Pump 1B and Secure Centrifugal Charging Pump 1A per POP02-CV-0004, Chemical and Volume Control System Subsystem.	
	RO	Ensures CVCS System is prepared for Centrifugal Charging Pump 1B start. $ Ensures discharge valve open $ Charging flow control valve in manual $ CCP Aux lube oil pump running	
	RO/BOP	Announces intention to start CCP 1B over the plant page and dispatches operator to check locally.	
	RO	Starts CCP 1B and monitors the following: $ Charging flow $ RCP Seal injection flows	
	RO	Stops CCP 1A • Opens Recirc valve • Closes Discharge Valve • Stops pump	*May re-open discharge valve once pump is secured*
	RO	Places charging flow control valve in auto and monitors the following while adjusting seal injection flow control valve as necessary: $ Charging flow $ RCP Seal injection flows $ Pressurizer level	
	RO	Ensure cooling fan starts for CCP 1B and secures cooling fan for CCP 1A	
	RO	Reports to the SRO that CCPs have been shifted.	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 2

Event Description: 1B Centrifugal Charging Pump trips

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports all (4) RCP SEAL WATER INJ FLOW LO annunciators and CHG FLOW HI/LO annunciator on Control Panel CP004.	
	SRO/RO	Recognizes and reports that CCP 1B has tripped.	
	SRO	Directs/ensures 0POP09-AN-04M8-F3 annunciator response actions to manually start CCP 1A.	
	RO	Ensures the following: $ FCV-0205, CHG FLOW CONT VLV is closed $ MOV-8377A, CCP 1A DISCH ISOL is open $ FCV-0201, CCP 1A RECIRC is open $ CCP 1A white L.O. AVAILABLE light is lit	
	RO	Start Centrifugal Charging Pump 1A.	
	RO	Adjusts charging flow and seal injection flow as necessary.	
	RO	Performs the following: $ Closes FCV-0201, CCP 1A RECIRC $ Returns FCV-0205, CHG FLOW CONT to AUTO.	
	SRO	Declares CCP 1B inoperable and refers to Technical Requirement Manual 3.1.2.2, <u>Charging Pumps and Flowpaths Operating</u>, and enters Action statement to restore CCP 1B to operable status within 7 days.	*Event # 3 will occur here*

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 3

Event Description: 1C Steam Generator controlling feedwater flow channel fails low.

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciators on Control Panel CP006: • SG 1C LVL DEV HI/LO • SG 1C STM/FW FLOW MSMTCH	
	SRO/BOP C	Performs immediate actions of 0POP04-FW-0001: • **PLACES SG 1C FEEDWATER MAIN FEED REG. VALVE (MFRV) CONTROLLER IN MANUAL** • **ADJUSTS CONTROLLER OUTPUT TO MATCH FEED/STEAM FLOW AND RESTORE SG 1C LEVEL TO PROGRAM**	
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-0001, Loss of Steam Generator Level Control.	
	SRO/BOP	Check Feed Control and SG Feedpump Control systems for status • SG 1C MFRV responds in manual • SG Feedpump controllers are responding in auto	
	SRO/BOP	Ensure appropriate Feed to steam DP	
	BOP	Restores SG 1C NR level 68-74%	
	SRO/BOP	Ensure all SG levels 22-85%	
	BOP	Identifies that feedwater flow channel FT-530 for SG 1C has failed low.	
	BOP	Selects FT-531 for SG 1C level control.	

	BOP	Performs the following: $ Places LK-7406 DA Storage Tank Level Controller in Manual $ Maintains DA Storage Tank level between 65% and 80%	
	BOP	Performs the following: $ Verifies SG 1C level between 68% and 74% $ Places SG 1C Feed Regulating Valve in AUTO	*Event #4 will occur here*
	SRO	Checks Tech Specs 3.3.1, 3.3.2, 3.3.3.6 and determines that a Tech Spec LCO is not entered.	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 4

Event Description: VCT level transmitter LT-113 fails high.

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports annunciator VCT LEVEL HI/LO on Control Panel CP004	
	RO	Performs the following actions of 0POP09-AN-04M8-E2: • Determines LT-113 is failed using ICS computer • Monitors computer points and or LT-112 indication on CP-004 to control VCT level	*The control board indication is still available; from a different transmitter.*
	SRO	Directs LCV-0112A, Divert Valve, be placed in the VCT position.	*Preferred to be done immediately; must be done if VCT level is <28%*
	RO	Places LCV-0112A handswitch to the VCT position and ensures valve position changes	*Event #5 will occur here*
	SRO	Ensures RO initiates VCT makeup if VCT level goes <28%	
	SRO/RO/ BOP	Contacts I&C to investigate failure	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 5

Event Description: 1B Steam Generator Tube Rupture (~300 gpm ramped over 5 minutes).

Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Acknowledges and announces radiation monitoring alarms and begins an investigation into possible tube leak.	
	SRO	Begins investigation of SG tube leakage by directing RO/BOP to monitor RCS leakage and identify the affected SG.	
	RO/BOP	Identifies the affected SG.	
	SRO (continuous)	Directs/ensures operator actions of 0POP04-RC-0004, Steam Generator Tube Leakage.	*Some actions of 0POP04-RC-0004 may not be performed depending on how quickly the leak is diagnosed and leak rate estimated.*
	SRO/BOP	Verify affected SG is SG 1B	
	SRO	Notes procedure requirement to maintain contact with HP prior to performing local operator actions	
	SRO	Notifies Chemistry to sample SG's	
	SRO/BOP	Ensures blowdown is aligned to demins	
	SRO	Ensures that RO monitor and report status of pressurizer level and VCT level.	
	RO	Control and monitor CVCS charging and letdown to maintain VCT level greater than 15% and pressurizer level greater than 17%	
	SRO	Direct performance of 0POP04-TM-0005, Fast Load Reduction	
	ALL	Reactor Trip and SI initiated	*Crew may or may not have opportunity to manually actuate before auto occurs*
	SRO	Directs/ensures crew enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	*Event #7 will occur 20 minutes following the reactor trip. Refer to Event #7 for action description.*

	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: • Reactor tripped • Turbine tripped • AC ESF Busses energized • SI actuated or required	*Event # 8 occurs at this point, however, Event #8 will not be apparent until Source Range Inst. Try to energize (approx. 15 min. from now)*
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	SRO/BOP (continuous)	Ensures that AFW flow is isolated to SG B when level is >14% narrow range.	*Normal method at this point is to place AFW Pump # 12 in PTL*
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is not required.	
	SRO/RO	Check plant status: • RCP Seal cooling • RCS cooldown • Pzr valve status • RCP trip criteria • Selected Containment Isol. Valves	
	ALL	Determines SG 1B is ruptured.	
	SRO	Transitions to EO30, SGTR based on SG radiation abnormal.	
	ALL (continuous)	Monitors the status of Critical Safety Functions when the crew transitions to 0POP05-EO-EO30.	
	SRO/RO (continuous)	Checks RCP trip criteria. Ensures RCPs are tripped if RCS pressure drops to less than 1460 psig	
	BOP	Identifies Ruptured SG as SG 1B.	
	SRO/BOP	Isolates feedwater flow into and steam flow from SG 1B by: • Adjusting SG 1B PORV setpoint to between 1260 and 1265 psig • Isolating Blowdown • Closing SG 1B MSIV • Isolating AFW to SG 1B	*Event #6 occurs at this point. Refer to Event #6 for actions for failed MSIV*

	SRO/BOP	Verifies ruptured SG level is >14% then isolates AFW to ruptured SG	
	SRO/BOP	Determines SG B pressure is > 468 psig	
	SRO/RO	Checks Pzr PORV availability	
	SRO/BOP **C** ***denotes critical portion**	**INITIATES RCS COOLDOWN** • **DETERMINES TARGET TEMPERATURE*** • **COOLS DOWN TO TARGET TEMPERATURE*** • Blocks Low Steamline Pressure SI when RCS pressure <1985 psig • Determines condenser is available • Places Steam Dumps in Steam Pressure Mode • Dumps steam to condenser at max rate. • Stops cooldown when target temp reached.	*Determining target temperature should be done after MSIV is closed. Doing it before will result in a lower target temperature than necessary (but is conservative)* *Will have to bypass Lo-Lo-Tave interlock when RCS temp goes below 563 Deg F*
	RO	Reset actuation systems for SI, SI Auto Recirc, Sequencers and Phase 'A' and 'B' Isolations	*These steps can be done concurrent with the cooldown*
	RO/BOP	Restores IA to containment when directed by verifying IA pressure is >95 psig and opening the IA OCIV.	*These steps can be done concurrent with the cooldown*
	SRO/BOP	Ensures Intact SG levels are 22-50%	*These steps can be done concurrent with the cooldown*
	SRO/RO	Establish maximum charging flow	*These steps can be done concurrent with the cooldown Maximum charging flow should be £ 200 gpm indicated charging flow (depending on seal injection)*
	SRO/BOP	Determines Ruptured SG pressure is stable or increasing	
	SRO/RO	Determines subcooling >55 Deg F	

	SRO/RO	Depressurize RCS to minimize break flow: • Determines whether normal spray is available. If not, uses Aux. Spray • Turns off Pressurizer Heaters • Initiates max spray • Stops De-pressurization when any of the following occur: - RCS press < ruptured SG press AND Pzr Level > 8% - Pzr Level > 70% - RCS Subcooling < 35 Deg F	*Normal Spray is available if RCPs are running*
	SRO/RO	Determines if HHSI and/or LHSI can be secured	
	SRO/RO	Secures HHSI if: • Subcooling >35 deg • Heat sink available (SG heat sink) • RCS pressure stable or increasing	
	SRO/RO	Secures LHSI pumps if RCS pressure > 415 psig.	*Terminate the scenario*

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** 1 **Event No.:** 6

Event Description: Steam Generator 1B Main Steam Isolation Valve fails to close when actions are taken to isolate the steam generator during the tube rupture.

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Determines SG B MSIV fails to close from the Control Room. Reports status to SRO	
	SRO	Directs that MSIV be closed locally.	
	BOP	Dispatches a PO to locally close SG B MSIV using Addendum 1.	
	BOP	Once closed, the BOP reports status to the SRO.	

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 **Scenario No.:** 1 **Event No.:** 7

Event Description: AFW Pump #11 trips

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Determines AFW Pump #11 has tripped, informs SRO	
	SRO	Directs BOP to dispatch a PO to investigate the cause of the trip and to cross-connect with an operating AFWP to feed SG 1A	*SRO may have AFWP #11 control placed in PTL*
	BOP	Dispatches a PO to investigate the cause of the trip.	
	BOP	Cross-connects with either AFWP #13 or 14 to feed SG 1A: • Closes AFW Reg. valve to SG 1A. • Throttles AFW flow from #13 or 14 AFWP (prevent runout) • Opens x-tie valves between SG 1A and either C or D. • Re-opens AFW Reg. Valve to SG 1A to control level	*May not do immediately because some actuation systems have to be reset first*

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 **Scenario No.:** # 1 **Event No.:** 8

Event Description: Intermediate Range Channel N36 failure of compensating voltage

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Determines IR Channel N36 has failed in high direction, informs SRO	
	SRO	Directs RO to manually energize Source Range Instruments	
	RO	Manually energizes Source Range Instruments with the SR TRN R and S BLOCK/UNBLOCK sw. on CP-005.	
	RO	Determines both Source Range Instruments are reading properly, reports status to SRO	

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
BOP	**MANUALLY CONTROLS SG LEVEL**	Manually controls SG level such that a manual or automatic reactor trip is not required.	
SRO/BOP	**PROPERLY SELECT AND MAINTAIN TEMPERATURE FOR COOLDOWN**	Cooldown is performed to the correct target temperature such that a transition to EC31 does not occur due to loss of subcooling (<55 Deg F) during cooldown (Step 18 of EO30) OR a transition to either a Subcriticality FRG or Integrity FRG does not occur due to overcooling.	

TURNOVER INFORMATION

- Reactor power is 100%
- Cycle burnup is 150 MWD/MTU
- RCS Boron Concentration is 1436 ppm.
- Hourly dilutions to maintain current power are approximately 10 gallons. Total Batch Integrator set at 10 gallons, getting 16. Xenon is at equilibrium conditions.
- Boric Acid Tanks A and B are at 7300 ppm.
- Start Charging Pump 1B and secure Charging Pump 1A for upcoming maintenance. The MAB watch is standing by for the pump start.
- No liquid waste discharges are in progress or planned.
- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc

SIMULATOR SETUP

1. Check and Clean the following procedures:
   - $ 0POP02-CV-0004, Chemical and Volume Control Subsystem
   - $ 0POP04-FW-0001, Loss of Steam Generator Level Control
   - $ 0POP04-RC-0004, Steam Generator Tube Rupture
   - $ 0POP05-EO-EO00, Reactor Trip or Safety Injection
   - $ 0POP05-EO-EO30, SGTR

2. Reset to IC # 130 and verify:
   - $ Step Counter positions (CP-005 annunciator window cleared)
   - $ Red light on end of CP-010 off

3. Go to RUN and perform the following:

   - $ Annunciators are acknowledged, reset, silenced.
   - $ Reset Shutdown Monitors on CP-005
   - $ RM-11 is functional, alarms are acknowledged (stop flashing) and audible alarm is enabled in the instructor booth
   - $ Control Switch FLAGS aligned appropriately to breaker position on CP-003 and CP-010.
   - $ If there are BYP/INOP lights on ‘C’ Train equipment on various Control Room Panels, they are due to the ‘B’ SFP Cooling Pump being in PTL with it’s ICS point on scan. To correct this perform the following:

     a) Ensure the simulator is running
     b) Take ‘B’ SFP Cooling Pump out of PTL
     c) Remove ICS point FCUD1408A from scan
     d) Place ‘B’ SFP Cooling Pump in PTL

4. Execute Lesson Plan # 1 in lesson plan Group “nrc2003”, then select ‘Start Lesson’. These actions will set up any initial conditions for the scenario. This section of these instructions may contain additional instructor actions necessary to prepare the simulator for the scenario.

5. Set ATOTAL M/U BATCH@ integrator to 10 gallons.

6. Place the simulator in FREEZE (XE is burning out).

SCENARIO INSTRUCTIONS

1. Provide Shift Turnover sheets to the crew and review the information.

2. Review the Simulator Differences list with the crew.

3. Have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.

4. Note START TIME when the crew takes the watch and place the simulator in RUN. Verify simulator clock is set correctly.

START TIME: **________** (time crew takes the watch)

ALWAYS 'TRIGGER' EVENTS IN THE SIMULATOR SCENARIO LESSON PLANS. THIS WAY, ANY TIME DELAYS ASSOCIATED WITH EVENTS WILL TAKE PLACE AS INTENDED.

REFER TO 'EXPECTED BOOTH COMMUNCATIONS' AND 'EXPECTED BOOTH ACTIONS' SECTIONS FOR INSTRUCTOR ACTIONS DURING THE SCENARIO.

5. Trigger **STEP #** 1 to load Autograph File.

   - Ensure Autograph File has loaded from the simulator lesson plan.
   - The Autograph File should automatically start when loaded.

6. The following lesson plan steps do not need to be manually triggered, but should be verified to occur when planned:

   - Step 2, MSIV 'B' fails to close (already triggered, will be evident when MSIV is closed during SGTR.

   - Step 3, AFP #11 fails to start (will occur 20 minutes after the reactor trip breakers open)

   - Step 8, IR Channel N36 failure of compensating voltage (already triggered, will be evident after reactor trip, SRHV will fail to automatically energize.

NOTE: ***Events (Lesson Plan Steps) are triggered upon the Lead Examiners cues or at the times listed below (time from last event).***

7. Time **+ 10 MIN**. -Trigger **STEP 4** (CCP 'B) *after charging pumps have been shifted*. Since this malfunction is a trip of 'B' CCP, it cannot be triggered until 'B' CCP is in service.

8. Time **+ 10 MIN**. - Trigger **STEP 5** (Feedflow failure) *after TRM addressed for CCP failure.* ***Co-ordinate with Lead Evaluator to ensure sufficient time has been allowed for TRM determination.***

SCENARIO INSTRUCTIONS

9. Time **+ 10 MIN**. - Trigger **STEP 6** (VCT level xmtr. failure) *after 'C' SG MFRV returned to Auto.*

10. Time **+ 7 MIN**. - Trigger **STEP** 7 (SGTR) *after LD Divert valve re-positioned to the VCT.*

11. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.

12. DO NOT RESET simulator until all Examiners have completed Follow-Up Questioning.

13. Ensure the following prior to printing out the Autograph File:

    - Each parameter is labeled with its descriptive name (e.g. 'RCS Subcooling').
    - The time range is set to the period indicated on the time scale of the Autograph file. Select 'View', Select 'Page', change 'Time Range' to desired time period.
    - Each parameter has an appropriate range to facilitate a display of variation during the scenario. If the range has to be adjusted, go to 'View', Select 'Variables', then change the range of the desired parameter.

14. After Autograph File printout has been retrieved and verified as satisfactory, perform the following:

    - Clear Autograph File trend data for this simulator session by selecting ACommand@, then AClear@, then AData@.
    - Label the printout with the Scenario # and Crew #.

EXPECTED BOOTH COMMUNCATIONS

<u>Events 1 and 2, Shift CCP's and Loss of 'B' CCP</u>

1. As Plant Operator, if asked to check Charging Pump 1B for a start, report that the pump is ready for a start (you are already in place per the turnover). After pump is started, report the pump running satisfactorily.

1. As Plant Operator, if asked to investigate CCP 1B trip, after 5 minutes report that the 50/51 relay is tripped locally.

2. As Plant Operator, if asked to investigate CCP 1B locally, report the motor is hot; there seems to be an acrid smell in the room.

3. As Plant Operator, if asked to check CCP 1A following its start, report that the pump is running satisfactorily.

<u>Event 3, 1C SG Feedflow fails low</u>

As I&C, if asked to investigate failed feedflow channel, report that a crew will be sent to the Control Room to troubleshoot. Further action is not required.

<u>Event 4, VCT Level transmitter LT-113 fails high</u>

As I&C, if asked to investigate failed VCT level channel, report that a crew will be sent to the control room to troubleshoot. Further action is not required.

EXPECTED BOOTH COMMUNCATIONS

Event 5, 1B SGTR

1. As Health Physics, when contacted, inform the Control Room you'll provide monitoring escorts to PO's that have to perform local actions in the IVC or TGB. Recommend limiting access to 'B' IVC.

2. As TGB, if contacted to determine SG Blowdown Demineralizer status, inform the Control Room no Demineralizers are in service. If Control Room directs you to place Blowdown Demins in service, acknowledge the order. No simulator action is required. (Note: When Demins are placed in service, they are both put in service in a series configuration).

Event 6, SG 1B MSIV fails to close

When directed to locally close SG 1B MSIV, you'll have to go to the Control Room or Emergency Locker to get Addendum 1. Inform the Control Room you'll get with HP to go the IVC. See instructions under 'EXPECTED BOOTH OPERATIONS', Event #6, for closing the 'B' MSIV.

Event 7, AFW Pump # 11 trips

As Plant Operator, if asked to investigate AFWP #11 trip, after 5 minutes report that the 50/51 relay is tripped locally.

EXPECTED BOOTH ACTIONS

DA High Level Dump Valves

If asked to open the DA High Level Dump Valves, perform the following:

- Select ‘Remotes’
- Select ‘Condensate System’
- Select ‘Page 1 of 2’
- Scroll down to locate remotes CD-27 and CD-28
- Insert a value of 0.3 for each valve
- Report to the Control Room that the DA High Level Dump Bypass Valves are open X turns (# of turns requested).

Event # 6, MSIV Fails to Close

When directed to locally close SG 1B MSIV, WAIT 1 MINUTE, then remove malfunction “MSIV B Fails to operate” from the Active Page.

End of Scenario

Once the scenario is terminated and the simulator placed in FREEZE, Admin JPM A8, Declare an Emergency Action Level is to be performed. As such, ensure the simulator is left in the post-scenario FREEZE condition until Admin JPM A8 has been completed for the applicable candidates. On some crews, this JPM will have to be done twice because those crews have two SRO candidates.

INITIAL LICENSE EXAM

OPERATING TEST # 1

SCENARIO # 2

Revision 2

Week of 18 August, 2003

Facility: South Texas Project NRC Scenario No.: 2 Op-Test No.: 1

Source:
New __X__ Bank - Significantly Modified ____Bank - Initial Condition Change

See page 3 for Examiner/student assignments

Initial Conditions: 80% power at BOL, power escalation in progress following a shutdown for turbine blade inspection.

Turnover: 80% power, power escalation in progress. Currently at step 7.33 of 0POP03-ZG-0005. Boric Acid Tanks are at 7300 ppm

Event No.	Malf. No.	Event Type*	Event Description
1 (2 min)	05-17-01 (1.0)	BOP (I) SRO (I)	1A SG PORV Pressure Transmitter PT-7411 fails high – 2 minutes after crew assumes watch
2 (11 min)	08-23-01 (True)	BOP (C) SRO (C)	Loss of Condensate Pump 11 – after T.S. addressed for PORV or after 9 minutes
3 (22 min)	01-07-01 (True)	RO (C) SRO (C)	Dropped Control Rod C9 – after DA Level Control returned to Auto. or after 11 min.
4 (32 min)	NA	RO (R) BOP (R) SRO (R)	Power Reduction due to dropped rod – crew should begin power reduction approx. 10 min following dropped rod.
5 (42 min)	50-LI-53 (True)	BOP (C) RO (C) SRO (C)	Second Dropped Control Rod G3, Manual Reactor– after power reduction of 2-3% (approx. 10 minutes after power reduction started).
6 (NA)	01-12-01 01-12-02 (True)	RO (C) BOP (C) SRO (C)	ATWS-reactor fails to trip automatically or manually. Can be tripped by opening LC breakers from the control room – integral to scenario
7 (54 min)	02-01-01 (1.0)	All (M)	RCS break develops into a LBLOCA (upon ES01 entry) – 5 min. ramp – after ES01 entered or 12 minutes after EO00 entered.

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

Note: Once SI is initiated it will take approximately 23 minutes to reach the point of swapover to SI recirculation

Scenario # Crew Assignments

SESSION 1 - CREW

Examiners:		Operators:	
	Greg Werner	SRO -	Bob Galiley
	Gary Johnson	RO -	Bob Worley
	Mark Haire	BOP -	Jeremy Webb

SESSION 2 - CREW

Examiners:		Operators:	
	Gary Johnson	SRO -	Kurt Moorefield
	Tom Stetka	RO -	Phil Stone
	Greg Werner	BOP -	Richard Schulz

SESSION 3 - CREW

Examiners:		Operators:	
	Gary Johnson	SRO -	Alicia Tatham
	Mark Haire	RO -	Robert Butler
	Tom Stetka	BOP -	Bobby Lane

SESSION 4 - CREW

Examiners:		Operators:	
	Mark Haire	SRO -	Marc Hill
	Tom Stetka	RO -	Jamie Paul
	NA	BOP -	Billy Herzog (Surrogate)

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

Refer to the Instructor Notes file for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

$ RCS Wide Range Pressure
$ SG 'A' Pressure
$ Reactor Power
$ Containment Pressure
$ RCS Wide Range Temperature

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.

2. Actions required throughout the event are indicated as "(continuous)" in the position column.

3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 1

Event Description: Steam Generator 1A PORV Pressure Transmitter Fails High

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciator SG PORV NOT CLOSE on Control Panel CP006.	
	BOP	Performs the following actions of 0POP09-AN-06M3-A1: ▸ Identifies that SG 1APORV has lifted ▸ Verifies SG 1A pressure is <1225 psig ▸ Manually closes SG 1A PORV	
	SRO	Ensures SG 1A PORV has been closed manually	
	BOP	Identifies SG 1A Pressure Transmitter PT-7411 has failed high.	
	SRO	Determines Tech Specs 3.7.1.6, 3.3.3.5 and 3.3.5.1 (action 2) apply. Most restrictive are 3.7.1.6 and 3.3.5.1 to restore SG PORV 1A to operable status within 7 days.	*Event 2 will occur here after T.S. are consulted*

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 2

Event Description: Condensate Pump #11 Trips.

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and announces annunciator 9M01-A1, COND PMP TRIP.	
	BOP	Reports that condensate pump #11 has tripped. Refers to Annunciator Response.	
	SRO	Enters 0POP04-CD-0001, Loss of Condensate Flow.	
	SRO	Determines that an additional condensate pump is required based on current plant conditions and directs the BOP to start Condensate pump # 13 per Addendum 1.	
	BOP	Throttles DA condensate flow to clear SFFP Seal Water Low Flow alarms.	*Seal alarms will not come in immediately.*
	RO/BOP	Dependent on plant conditions, may make a plant announcement based on condensate pump start.	
	BOP (C)	**STARTS CONDENSATE PUMP #13 AND OPENS THE CONDENSATE PUMP DISCHARGE VALVE**	*The Control Room operator will also have a Plant Operator vent the Condensate Mini-flow line before starting the pump.*
	SRO/BOP	Monitors Deaerator Level >40%	
	BOP	Returns DA Level Control to Auto when DA level is 60-70%.	*Event #3 will occur here*

OPERATOR ACTIONS

Op-Test No.: # 1 **Scenario No.:** # 2 **Event No.:** 3

Event Description: Dropped Control Rod C9

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and responds to the following annunciators: • ROD BOTTOM • ROD SUPV MNTR ROD POSITION TRBL	*There will be others, but these are the main ones*
	RO	Diagnoses Rod C9 has dropped fully into the core, informs the SRO.	
	RO	Performs immediate actions • Ensures Rod Control in Manual • Ensures no rod motion • Checks for dropped rods	
	SRO	Enters 0POP04-RS-0001, Control Rod Malfunction.	
	SRO/RO	Verify Immediate Actions complete	
	SRO/RO	Determine no more than one rod is dropped.	
	SRO	Notes entry into T.S. 3.1.3.1.b.3	
	SRO	Determines Power reduction to < 75% is required. Directs crew to reduce power per 0POP03-ZG-0006 or ZG-0008	
	RO/BOP	Co-ordinate to reduce power to < 75%	*Event # 5 will occur once evidence of the power reduction is seen.*

OPERATOR ACTIONS (Cont')

Op-Test No.: 1 **Scenario No.:** 2 **Event No.:** 4

Event Description: Power Reduction

Time	Position	Applicant's Actions or Behavior	Notes
	SRO	Determines a power reduction to <75% is necessary to comply with 0POP04-RS-0001, Control Rod Malfunction	
	SRO	Directs/ensures the actions of 0POP03-ZG-0006, Plant Shutdown from 100% to Hot Standby, OR 0POP03-ZG-0008, Power Operations.	
	RO/BOP	Co-ordinate to lower power level to <75% while maintaining parameters within prescribed limits.	
	RO	Borates and/or uses control rods to maintain Tavg within 1.5 Deg F of Tref during load change.	
	BOP	Reduces Turbine Load using the Turbine EHC Panel.	
	RO/BOP	Monitor parameters for power increase, maintain parameters within prescribed limits.	

Op-Test No.: # 1 **Scenario No.:** # 2 **Event No.:** 5

Event Description: Second Dropped Rod, Reactor Trip

Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Diagnose a second rod has dropped into the core	There will be no Annunciators alarming directly from the second dropped rod. Crew will have to diagnose based on plant response and ICS computer displays.
	SRO	Directs a manual Reactor Trip and for crew to perform immediate actions of 0POP05-EO-EO00, Reactor Trip or SI	
	RO/BOP	Determine a manual reactor trip using the reactor trip sw. cannot be done, inform SRO	*This is Event # 6*
	BOP	**TRIPS REACTOR BY OPENING LC BREAKERS 1L1 AND 1K1.**	*Breakers will be re-closed subsequent to Reactor Trip.*
	ANY	Dispatch an operator to locally open the Reactor Trip Breakers.	
	BOP	Manually trips Turbine once Reactor trip is verified	
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: • Reactor tripped • Turbine tripped • AC ESF Busses energized • SI actuated or required	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	SRO	Directs the crew to transition to 0POP05-EO-ES01, Reactor Trip Response, and to monitor Critical Safety Functions	*Event # 7 will occur here*

OPERATOR ACTIONS (Cont')

Op-Test No.: # 1 **Scenario No.:** # 2 **Event No.:** 7

Event Description: RCS Break develops into LBLOCA

Time	Position	Applicant's Actions or Behavior	Notes
	RO/BOP	Determine RCS Pressure and Pressurizer level are decreasing.	
	SRO	Directs SI actuation. Directs the crew to re-enter 0POP05 EO EO00, Reactor Trip or SI.	*Crew may not have time for manual SI actuation before it automatically occurs.*
	RO/BOP	Performs the immediate actions of EO00, Reactor Trip or Safety Injection	
	ALL (continuous)	Monitor for RCP trip criteria (RCS pressure < 1460 psig and at least 1 HHSI Pump operating) or Containment Phase ‘B’ Isolation occurs, and trip RCPs as required.	
	ALL (continuous)	Monitor/apply adverse containment values when containment pressure is ≥ 5 psig.	
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is operating correctly	*If RCB pressure ³ 9.5 psig at this time*
	SRO/RO	Check plant status: 1. RCP Seal cooling 2. RCS cooldown 3. Pzr valve status 4. RCP trip criteria 5. Selected Containment Isol. Valves	
	ALL	Determine RCS isn’t intact	
	SRO	Informs crew of transition to 0POP05-EO-E010, Loss of Reactor or Secondary Coolant and to monitor Critical Safety Functions	
	ALL	Determine there’s a Orange or Red Path on Containment Integrity.	*Can be either one depending on plant conditions at the time.*

	SRO	Transitions to FRP1, Response to Imminent Pressurized Thermal Shock	*Conditions for entry into this procedure may or may not exist at this point. They should occur sometime during the scenario though.*
	SRO/RO	Exits FRP1 at Step 1 (RNO) based on LHSI flow being > 500 gpm.	
	SRO	Transitions to FRZ1, Response to Containment High Pressure and directs operator actions based on ORANGE Path on Containment CSF.	
	SRO/RO	Verifies Containment Isolation Phase ‘A’ and Containment Ventilation Isolation.	
	SRO/RO	Determines Containment Spray is required and in service. • Stops RCPs if not already done. • Verifies Containment Phase ‘B’ Isolation	
	SRO/RO	Checks Reactor Containment Fan Cooler (RCFC) status.	
	SRO/BOP	Checks SG MSIVs/MSIBs closed and that no faulted SG exist.	
	SRO	Transitions to EO10, Loss of Reactor or Secondary Coolant.	
	ALL	Determine if RCPs should be stopped	*Should be stopped by this time*
	SRO/BOP	Determines RCS pressure is < 415 psig and bypasses step to de-pressurize intact SG’s.	
	SRO/BOP	Verifies no SG’s are faulted	
	SRO/RO	Reset actuation systems for SI, Sequencers and Phase ‘A’ and ‘B’ Isolations	
	SRO/BOP	Controls intact SG levels 34-50%	
	ALL	Checks Secondary Radiation (for SGTR)	
	SRO/RO	Checks Pressurizer PORV availability	

	RO/BOP	Restores IA to containment when directed by verifying IA pressure is >95 psig and opening the IA OCIV.	
	SRO/RO	Place Containment H2 Monitors in service.	
	SRO/RO	Place SFPC in service	*Has 2.5 hr. to do this.*
	SRO/RO	Checks if Charging flow is established	
	SRO/RO	Determines Safety Injection cannot be stopped.	
	SRO/RO	Checks if Containment Spray can be stopped.	
	SRO/RO	Checks if LHSI Pumps can be stopped.	
	SRO (continuous)	Transitions to 0POP05-EO-ES13, Transfer to Cold Leg Recirculation, when RWST level decreases to less than 75,000 gallons.	
	RO	Resets SI and ESF Sequencers	
	RO	Verifies CCW flow to RHR Hx's	
	RO	Secures any running Charging Pumps	
		Verifies HHSI/LHSI lineup for recirculation: • Cold Leg Injection Valves open • Recirc valves closed • Containment Sump to SI Pump Suction valves open	
	RO	Closes RWST to SI Pump Suction valves	
	SRO/RO C	**VERIFIES AT LEAST ONE TRAIN OF HHSI, LHSI AND CONTAINMENT SPRAY ALIGNED FOR RECIRCULATION WITH PUMP/S RUNNING.**	*Terminate Scenario*

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
ALL	**MANUALLY TRIP THE REACTOR FROM THE CONTROL ROOM**	Before leaving Step 1.0 of EO00	
SRO/BOP	**STARTS CONDENSATE PUMP #13 AND OPENS THE CONDENSATE PUMP DISCHARGE VALVE**	Prior to Deaerator level decreasing to ≤ 30% (requires a manual Reactor trip)	
SRO/BOP	**TRANSFER TO COLD LEG RE-CIRCULATION**	Before RWST Tank EMPTY alarm (32,500 gal)	

TURNOVER INFORMATION

$ 80% power with power increase in progress. Currently at Step 7.33 of 0POP03-ZG-0005, Plant Startup to 100%. Continue the power increase once the watch is assumed.

$ Cycle burnup is 150 MWD/MTU, fuel is conditioned to 100% power.

$ RCS Boron Concentration is 1520 ppm

- Xe is building in. Dilutions required will be based on maintaining Tavg within band to account for Xe and power changes. Have been diluting 20 gallons every half hr. Total Batch Integrator is set at 10 gallons, getting 16.

$ Boric Acid Tanks A and B are at 7300 ppm.

- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc

SIMULATOR SETUP

1. Check and Clean the following procedures:
   - $ 0POP02-CD-0001, Condensate System
   - $ 0POP03-ZG-0005, Plant Startup to 100%
   - $ 0POP03-ZG-0008, Power Operations
   - $ 0POP04-RS-0001, Control Rod Malfunction
   - $ 0POP04-CD-0001, Loss of Condensate Flow
   - $ 0POP05-EO-EO00, Reactor Trip or Safety Injection
   - $ 0POP05-EO-ES01, Reactor Trip Response
   - $ 0POP05-EO-FRZ1, Response to High Containment Pressure
   - $ 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant
   - $ 0POP05-EO-ES13, Transfer to Cold Leg Recirculation

2. Reset to IC # 131 and verify:
   - $ Step Counter positions (CP-005 annunciator window cleared)
   - $ Red light on end of CP-010 off

3. Go to RUN and perform the following:

   - $ Annunciators are acknowledged, reset, silenced.
   - $ Reset Shutdown Monitors on CP-005
   - $ RM-11 is functional, alarms are acknowledged (stop flashing) and audible alarm is enabled in the instructor booth
   - $ Control Switch FLAGS aligned appropriately to breaker position on CP-003 and CP-010.
   - $ If there are BYP/INOP lights on ‘C’ Train equipment on various Control Room Panels, they are due to the ‘B’ SFP Cooling Pump being in PTL with it’s ICS point on scan. To correct this perform the following:

     a) Ensure the simulator is running
     b) Take ‘B’ SFP Cooling Pump out of PTL
     c) Remove ICS point FCUD1408A from scan
     d) Place ‘B’ SFP Cooling Pump in PTL

4. Execute Lesson Plan # 2 in lesson plan Group “nrc2003”, then select ‘Start Lesson’. These actions will set up any initial conditions for the scenario. This section of these instructions may contain additional instructor actions necessary to prepare the simulator for the scenario.

5. Set ATOTAL M/U BATCH@ integrator to 10 gallons.

6. Place the simulator in FREEZE

SCENARIO INSTRUCTIONS

1. Provide Shift Turnover sheets to the crew and review the information.

2. Review the Simulator Differences list with the crew.

3. Have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.

4. Note START TIME when the crew takes the watch and place the simulator in RUN. Verify simulator clock is set correctly.

START TIME: **________** (time crew takes the watch)

ALWAYS 'TRIGGER' EVENTS IN THE SIMULATOR SCENARIO LESSON PLANS. THIS WAY, ANY TIME DELAYS ASSOCIATED WITH EVENTS WILL TAKE PLACE AS INTENDED.

REFER TO 'EXPECTED BOOTH COMMUNCATIONS' AND 'EXPECTED BOOTH ACTIONS' SECTIONS FOR INSTRUCTOR ACTIONS DURING THE SCENARIO.

5. Trigger **STEP** # 1 to load Autograph File.

   - Ensure Autograph File has loaded from the simulator lesson plan.
   - The Autograph File should automatically start when loaded.

NOTE: ***Events (Lesson Plan Steps) are triggered upon the Lead Examiners cues or at the times listed below (time from last event).***

6. Time **+ 2 MIN**. -Trigger **STEP 3** (SG 'A' PORV xmtr. Fails high).

7. Time **+ 9 MIN**. - Trigger **STEP 4** (Cond Pump #11 trip) *after Tech Specs addressed for SG 'A' PORV Transmitter failure.*

8. Time **+ 11 MIN**. - Trigger **STEP 5** (Dropped Control Rod) *after DA Level Control returned to Auto.*

9. Time approx. **+ 20 MIN**. - Trigger **STEP 6** (Second Dropped Rod) *after evidence of power reduction (power decreases 2-3 %).* **There is no firm time requirement as a power reduction is a required evolution for the crew. Co-ordinate with the Lead Evaluator to determine when the power change is adequate.**

10. Time **+ 12 MIN**. - Trigger **STEP 8** (LBLOCA) *after crew enters ES01.*

SCENARIO INSTRUCTIONS

11. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.

12. DO NOT RESET simulator until <u>all</u> Examiners have completed Follow-Up Questioning.

13. Ensure the following prior to printing out the Autograph File:

    - Each parameter is labeled with it's descriptive name (e.g. 'RCS Subcooling').
    - The time range is set to the period indicated on the time scale of the Autograph file. Select 'View', Select 'Page', change 'Time Range' to desired time period.
    - Each parameter has an appropriate range to facilitate a display of variation during the scenario. If the range has to be adjusted, go to 'View', Select 'Variables', then change the range of the desired parameter.

14. After Autograph File printout has been retrieved and verified as satisfactory, perform the following:

    - Clear Autograph File trend data for this simulator session by selecting ACommand@, then AClear@, then AData@.
    - Label the printout with the Scenario # and Crew #.

EXPECTED BOOTH COMMUNCATIONS

Event 2, Loss of Condensate Pump #11

1. As TGB, when contacted by the Control Room prior to Condensate Pump # 13 (the alternate Condensate Pump), you'll be asked to do the following from 0POP04-CD-0001, Addendum 1: No simulator actions are required

   - Open Condensate Pump # 13 Miniflow line vent valve CD-0786 to ensure the pump miniflow line is full – (29' TGB)

   - Ensure CD-0801 is open to vent common Condensate Pump discharge vent line (Cond Pump Pit, West, Overhead)

   - Open Condensate Pump # 13 discharge vent valve CD-0802 to common vent header.

   - After the Condensate Pump is started you'll be asked to close Condensate Pump discharge vent valve CD-0802 to common vent header.

2. If asked to check Condensate Pump #11, report that there are no apparent signs of damage at the pump, however there is an overcurrent flag (50/51) at the pump's breaker.

EXPECTED BOOTH ACTIONS

DA High Level Dump Valves

If asked to open the DA High Level Dump Valves, perform the following:

- Select ‘Remotes’
- Select ‘Condensate System’
- Select ‘Page 1 of 2’
- Scroll down to locate remotes CD-27 and CD-28
- Insert a value of 0.3 for each valve
- Report to the Control Room that the DA High Level Dump Bypass Valves are open X turns (# of turns requested).

Event 6, ATWS

When contacted by the Control Room to open the Reactor Trip breakers, trigger Step 7 of the Lesson Plan (Local trip of Reactor Trip Breakers)

INITIAL LICENSE EXAM

OPERATING TEST #1

SCENARIO #3

Week of August 18, 2003

Revision 2

SCENARIO OUTLINE

Facility: South Texas Project   NRC Scenario 3   Op-Test No.: 1

Source:
New _____ Bank - Significantly Modified __X__ Bank - Initial Condition Change __X__

See page 3 for Examiner/student assignments

Initial Conditions: 60% power. Power decrease is on hold to allow a SG Feedpump to be secured.

Turnover: 60% power. Power decrease is on hold to allow SG Feedpump # 12 to be secured. Maintain current power level.

Event No.	Malf. No.	Event Type*	Event Description
1 (0 min)	NA	BOP (N) SRO (N)	Secure SGFPT # 12
2 (12 min)	02-26-02 (1.0)	RO (I) SRO (I)	Loop 'B' T-Cold TT-420B fails high – after SUFP returned to Auto or after 12 minutes.
3 (22 min)	05-12-03 (0.0)	BOP (I) SRO (I)	1C Steam Generator level transmitter LT-539 fails low - after T.S. addressed for TT-420B or after 10 minutes
4 (32 min)	08-16-03 (0.0)	BOP (C) SRO (C)	SG 1C Feedwater Regulating Valve (FCV-553) fails closed resulting in a reactor trip - after Feedwater regulating valve is returned to auto or after 10 minutes
5 (47 min)	02-12-01 (0.8) 02-04-01 (0.1)	All (M)	Pzr Steam Space Break (after entry into ES01) – at step 6 of ES01 or after 15 minutes. Note: 02-04-01 will be removed after 6 min.
6 (72 min)	10-02-01 LA10M1-D-3	RO (C) SRO (C)	Loss of power to ESF Bus '1A', ESF DG #11 fails to load – at EO10 Step 3 or 5 minutes after entering EO10.

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

Scenario #3 Crew Assignments

This is an extra scenario. If used, crew and evaluator assignments will be determined at that time.

SCENARIO MISCELLANEOUS INFORMATION

INSTRUCTOR NOTES:

Refer to the Instructor Notes file for directions on Simulator Setup, Expected Booth Communications, and Expected Booth Actions.

CRITICAL PARAMETERS:

The following parameters may be of value in evaluating crew performance and should be placed in an Autograph file for recall when the scenario is completed:

- Reactor Power
- SG C Narrow Range Level
- Total AFW Flow
- RCS Wide Range Pressure
- Pressurizer Level
- ESF DG #11 Lube oil temperature

OPERATOR ACTIONS TABLE NOTES:

1. Critical Tasks are indicated by "C" in the position column and indicated in bold type.

2. Actions required throughout the event are indicated as "(continuous)" in the position column.

3. Shaded cells indicate procedural entry points.

OPERATOR ACTIONS

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 1

Event Description: Secure SGFPT #12

Time	Position	Applicant's Actions or Behavior	Notes
	SRO (continuous)	Direct the BOP to secure SGFPT # 12 per 0POP02-FW-0002, S.G.F.P. Turbine.	
	BOP	Ensures steamline drain sw. in AUTO	
	BOP	Ensures SGFPT # 12 speed controller is in manual	
	BOP	Places the S/U SGFP in PTL	
	BOP	Slowly lowers SGFPT # 12 speed while monitoring operating Feedpumps and SG levels until 3300 rpm reached.	
	BOP	Closes discharge valve MOV-0072	
	BOP	Trips SGFPT # 12 and verifies • Trip light • No 'Latch/Alm Reset' light • HP & LP Governor Valves closed	
	BOP	Re-latches SGFPT # 12 and verifies: • Trip light out, Latch light on • Recirc valve open	
	BOP	Trips SGFPT # 12 and verifies trip indications as before.	
	BOP	Ensures the S/U SGFP control is in AUTO	*Event # 2 will occur here*
	BOP	Ensures the steamline drain valves are open for SGFPT # 12	
	BOP	Informs the TGB to ensure SGFPT # 12 goes on the Turning Gear after coastdown.	

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 2

Event Description: Loop 1B T-Cold TT-420B fails high

Time	Position	Applicant's Actions or Behavior	Notes
	RO	Acknowledges and reports annunciators on Control Panel CP005 which are indicative of a RTD failure.	
	SRO (continuous)	Directs/ensures actions of 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel.	
	RO	Verifies rod control is in manual.	
	RO	Identifies/reports the failed channel as TI-420B.	
	RO	Selects Loop 2 Defeat on the following switches: • BYP SEL ? T • BYP SEL T AVG	
	RO	Ensures Tavg is maintained within 1.5°F of Tref.	
	RO	Takes manual control of FCV-0205, CHG FLOW CONT, to maintain pressurizer level at program.	
	SRO/RO	Determine whether to restore Rod Control to Auto	
	RO	Ensures ? T and ? T Setpoints Recorder selected to an operable channel.	
	SRO	Initiates actions per Tech Spec 3.3.1 (action 6) and 3.3.2 (Action 20) to trip bistables within 72 hour and Action 21 to verify P-12 state within 1hr.)	*Event # 3 to occur here*
	SRO	Notifies I & C to trip Bistables per 0PSP02-RC-0410.	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 3

Event Description: Steam Generator level transmitter LT-539 fails low

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciators on Control Panel CP006: • SG 1C LVL DEV HI/LO • SG 1C LVL LO • SG 1C LVL LO-LO ALERT	
	SRO/BOP C	Performs immediate actions of 0POP04-FW-001: • **PLACES SG 1C FEEDWATER REGULATING VALVE CONTROLLER IN MANUAL** • **ADJUSTS CONTROLLER OUTPUT TO MATCH FEED/STEAM FLOW AND RESTORE SG 1C LEVEL TO PROGRAM**	
	SRO (continuous)	Directs/ensures actions of 0POP04-FW-001, Loss of Steam Generator Level Control.	
	SRO/BOP	Check Feed Control and SG Feedpump Control systems for status • SG 1C MFRV responds in manual • SG Feedpump controllers are responding in auto	
	SRO/BOP	Ensure appropriate Feed to steam DP	
	BOP (continuous)	Restores affected level to 68-74%. Ensures all levels 22-85%.	
	BOP	Identifies that SG 1C level channel LT-539 has failed low. Selects alternate channel for SG 1C level control.	
	SRO/BOP	Checks SGWLCS instrument inputs: • Feedflows • Steamflows • SG Pressures	

	BOP	Performs the following: • Checks Main Reg Valve Auto controls are operable. • Places SG 1C Feed Regulating Valve in AUTO	*Event # 4 will occur here*
	SRO/BOP	Checks SGFP Master Controller in Auto	
	SRO	Refers to Tech Specs 3.3.1 and 3.3.2 (72 hour action to trip bistables for both sections).	

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 4

Event Description: Steam Generator 1C Main Feed Reg. Valve fails closed necessitating a reactor trip

Time	Position	Applicant's Actions or Behavior	Notes
	BOP	Acknowledges and reports annunciators on Control Panel CP006: • SG 1C LVL DEV HI/LO • SG 1C STM/FW FLOW MSMTCH	
	BOP	Takes manual control of SG 1C Main Feed Reg. Valve and attempts to increase feedflow to restore SG level.	
	BOP	Determines SG 1C Main Feed Reg. Valve does not respond, reports status to SRO.	
	SRO	Directs a manual reactor trip based on decreasing level in SG 1C.	
	RO/BOP	Manually trip the reactor and carry out their immediate actions of 0POP05 EO EO00, Reactor Trip or SI	
	SRO	Ensures that the crew enters 0POP05-EO-EO00, Reactor Trip or Safety Injection.	
	RO/BOP	Completes immediate actions of EO00, Reactor Trip/SI: • Reactor tripped • Turbine tripped • AC ESF Busses energized • SI actuated or required	
	SRO	Directs/ensures the immediate actions of EO00, Reactor Trip/SI have been completed.	
	SRO	Transitions to 0POP05 EO ES01, Reactor Trip Response	
	ALL	Monitor Critical Safety Functions	

	ALL	Monitor RCS for cooldown, take appropriate action to stabilize RCS temperature.	
	SRO/BOP	Ensure FW Isolation and SGFPT's tripped	
	SRO/BOP	Ensure Feed to SG's	
	SRO/RO	Verifies Control Rods fully inserted	
	SRO/RO	Checks ESF DG status	
	SRO/RO	Checks Pressurizer level control • Pressurizer level • Charging flow • Seal Injection • Letdown flow	*Event # 5 will occur here*

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 5

Event Description: Pressurizer steam space break.

Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Identify/report an excessive RCS leak as indicated by the following: • Lowering RCS pressure • Increasing containment pressure • Increasing containment sump level	
	SRO	Directs the crew to re-enter 0POP05 EO EO00, Reactor Trip or SI.	*SRO may order a manual SI and/or manual Main Steam Isol if time available.*
	RO/BOP	Performs the immediate actions of EO00, Reactor Trip or Safety Injection	
	ALL (continuous)	Monitor for RCP trip criteria (RCS pressure < 1460 psig and at least 1 HHSI Pump operating) and trip RCPs as required.	
	SRO/BOP	Directs BOP to perform Addendum 5, Verification of SI Equipment Operation	
	SRO/RO	Determines Containment Spray is not required.	*RCB pressure will continue to increase. At some point Containment Spray will be needed.*
	SRO/RO	Check plant status: • RCP Seal cooling • RCS cooldown • Pzr valve status • RCP trip criteria • Selected Containment Isol. Valves	
	ALL	Determine RCS isn't intact	
	SRO	Informs crew of transition to 0POP05-EO-E010, Loss of Reactor or Secondary Coolant and to monitor Critical Safety Functions	
	SRO	Due to Orange Path on Containment CSF, informs crew of transition to 0POP05-EO-FRZ1, Response to High Containment Pressure.	*Due to actual timing of crew actions, entry into FRZ1 may not occur immediately after exiting EO00*
	SRO/RO	Verifies Containment Isolation Phase 'A' and Containment Ventilation Isolation.	

	SRO/RO	Determines Containment Spray is required and in service. • Stops RCPs if not already done. • Verifies Containment Phase 'B' Isolation	
	SRO/RO	Checks Reactor Containment Fan Cooler (RCFC) status.	
	SRO/BOP	Checks SG MSIVs/MSIBs closed and that no faulted SG exist.	
	SRO	Transitions to EO10, Loss of Reactor or Secondary Coolant.	
	ALL	Determine if RCPs should be stopped	
	SRO/BOP	De-pressurize intact SG's to 1000 psig • Determines condenser unavailable • De-pressurizes using SG PORVs Places PORV controllers in Auto with setpoint of 990-1000 psig.	
	SRO/BOP	Verifies no SGs are faulted	*Event # 6 to occur here. Scenario termination point is in Event #6 description.*
	SRO/RO	Reset actuation systems for SI, Sequencers and Phase 'A' and 'B' Isolations	
	SRO/BOP	Controls intact SG levels 34-50%	
	ALL	Checks Secondary Radiation (for SGTR)	
	SRO/RO	Checks Pressurizer PORV availability	
	RO/BOP	Restores IA to containment when directed by verifying IA pressure is >95 psig and opening the IA OCIV.	
	SRO/RO	Place Containment H2 Monitors in service.	
	SRO/RO	Restore SFPC	*SRO may elect not to do this. Has 2.5 hrs.*
	SRO/RO	Ensures Charging Flow is in service	
	SRO	Determines if SI can be terminated	

<u>NOTE:</u> THE CREW MAY RECEIVE A RED PATH ON INTEGRITY TOWARDS THE END OF THE SCENARIO. THEY SHOULD ENTER 0POP05-EO-FRP1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION, HOWEVER THE SCENARIO TERMINATION PATH IS THROUGH THE ACTIONS ASSOCIATED WITH EVENT # 6, LOSS OF POWER TO ESF BUS 1A. BECAUSE OF THIS THERE ARE NO OPERATOR ACTIONS LISTED FOR 0POP05-EO-FRP1.

OPERATOR ACTIONS (Cont')

Op-Test No.: #1 **Scenario No.:** #3 **Event No.:** 6

Event Description: Loss of power to ESF Bus 1A, ESF DG fails to load

Time	Position	Applicant's Actions or Behavior	Notes
	ALL	Determine power has been lost to 4160v Bus 1A	
	RO	Determines ESF Bus 1A has been energized by it's respective ESF DG.	
	RO	Determines Sequencer loading is not occurring on ESF Bus 1A, reports status to SRO	
	SRO	Directs RO to manually start ESF equipment per EO10, Addendum 4 OR orders the ESF DG placed in Emergency Stop*	*SRO may direct RO to immediately close 480v LC bkrs. and start 1A ECW Pump to provide ESF DG cooling.*
	RO	Closes 480v LC breakers (if DG not ordered tripped.	
	RO C	**STARTS ECW PUMP 1A, VERIFIES DISCHARGE VALVE OPENS (if DG not ordered tripped)***	*Terminate Scenario*
	RO C	**Places the ESF DG in Emergency Stop (if ordered to trip the DG)***	*Terminate Scenario*

***The Unit Supervisor can take either action. The critical task is dependent on what action is taken.**

<u>NOTE:</u> THE CREW MAY RECEIVE A RED PATH ON INTEGRITY TOWARDS THE END OF THE SCENARIO. THEY SHOULD ENTER 0POP05-EO-FRP1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION, HOWEVER THE SCENARIO TERMINATION PATH IS THROUGH THE ACTIONS ASSOCIATED WITH EVENT # 6, LOSS OF POWER TO ESF BUS 1A. BECAUSE OF THIS THERE ARE NO OPERATOR ACTIONS LISTED FOR 0POP05-EO-FRP1.

CRITICAL TASK SUMMARY

POSITION	EXPECTED RESPONSE	ACCEPTANCE CRITERIA	SAT/ UNSAT
BOP	**MANUALLY CONTROLS SG LEVEL**	Manually controls SG level such that a manual or automatic reactor trip is not required.	
RO	**MANUALLY STARTS 'A' ECW PUMP and VERIFIES DISCHARGE VALVE IS OPEN***	Prior to reaching the lube oil high temperature trip (195 Deg F).**	
RO	**PLACES THE ESF DG IN EMERGENCY STOP***	Prior to reaching the lube oil high temperature trip (195 Deg F).**	

* Only one of these critical steps will apply depending on the direction given by the Unit Supervisor.

** This criteria will be evaluated using the AutoGraph file which automatically records lube oil temperature.

TURNOVER INFORMATION

- Reactor power is 60% with a shutdown in progress for control rod drop testing. Current procedure step is 5.13 of 0POP03-ZG-0006.
- Shutdown is on hold for SGFPT #12 shutdown. The Mechanical Overspeed test, SGFPT Stop Valves test and the Main Oil Pump test have been waived by the Shift Supervisor. TGB watch is standing by for SGFPT # 12 shutdown
- Cycle burnup is 150 MWD/MTU
- RCS Boron Concentration is 1607 ppm.
- Maintain current power level until SGFPT #12 is shutdown
- Xenon is building up due to the power increase. Borating 5 gallons every half hour.
- Total Batch Integrator is set at 10 gallons, getting 16.
- Boric Acid Tanks A and B are at 7300 ppm.
- No personnel are in containment
- FHB Truck Bay doors are closed
- No ESF DG FOST's are on recirc

SIMULATOR SETUP

1. Check and Clean the following procedures:

    $ 0POP02-FW-0002, S.G.F.P. Turbine
    $ 0POP02-ZG-0006, Plant Shutdown from 100% to Hot Standby
    $ 0POP04-RP-0004, Failure of RCS Loop RTD Protection Channel
    $ 0POP04-FW-0001, Loss of Steam Generator Level Control
    $ 0POP05-EO-EO00, Reactor Trip or Safety Injection
    $ 0POP05-EO-ES01, Reactor Trip Response
    $ 0POP05-EO-FRZ1, Response to High Containment Pressure
    $ 0POP05-EO-EO10, Loss of Reactor or Secondary Coolant

2. Reset to IC # 132 and verify:
    $ Step Counter positions (CP-005 annunciator window cleared)
    $ Red light on end of CP-010 off

3. Go to RUN and perform the following:

    $ Annunciators are acknowledged, reset, silenced.
    $ Reset Shutdown Monitors on CP-005
    $ RM-11 is functional, alarms are acknowledged (stop flashing) and audible alarm is enabled in the instructor booth
    $ Control Switch FLAGS aligned appropriately to breaker position on CP-003 and CP-010.
    $ Perform a light test on the SGFPT # 12 Control Panel.
    $ If there are BYP/INOP lights on 'C' Train equipment on various Control Room Panels, they are due to the 'B' SFP Cooling Pump being in PTL with it's ICS point on scan. To correct this perform the following:

        a) Ensure the simulator is running
        b) Take 'B' SFP Cooling Pump out of PTL
        c) Remove ICS point FCUD1408A from scan
        d) Place 'B' SFP Cooling Pump in PTL

4. Execute Lesson Plan # 3 in lesson plan Group "nrc2003" then select 'Start Lesson'. These actions will set up any initial conditions for the scenario. This section of these instructions may contain additional instructor actions necessary to prepare the simulator for the scenario.

5. Set ATOTAL M/U BATCH@ integrator to 10 gallons.

6. Place the simulator in FREEZE

SCENARIO INSTRUCTIONS

1. Provide Shift Turnover sheets to the crew and review the information.

2. Review the Simulator Differences list with the crew.

3. Have the crew perform their board walkdown and inform the floor instructor when ready to take the watch.

4. Note START TIME when the crew takes the watch and place the simulator in RUN. Verify simulator clock is set correctly.

***START TIME:* ________** (time crew takes the watch)

ALWAYS 'TRIGGER' EVENTS IN THE SIMULATOR SCENARIO LESSON PLANS. THIS WAY, ANY TIME DELAYS ASSOCIATED WITH EVENTS WILL TAKE PLACE AS INTENDED.

REFER TO 'EXPECTED BOOTH COMMUNCATIONS' AND 'EXPECTED BOOTH ACTIONS' SECTIONS FOR INSTRUCTOR ACTIONS DURING THE SCENARIO.

5. Trigger **STEP # 1** to load Autograph File.

   - Ensure Autograph File has loaded from the simulator lesson plan.
   - The Autograph File should automatically start when loaded.

NOTE: ***Events (Lesson Plan Steps) are triggered upon the Lead Examiners cues or at the times listed below (time from last event).***

6. Time **+ 12 MIN**. -Trigger **STEP 2** (Loop 'B' Cold Leg RTD Failure) *after SUFP returned to Auto.*

7. Time **+ 10 MIN**. - Trigger **STEP 3** (SG 'C' level xmtr failure) *after Tech Specs addressed for Tcold RTD failure.*

8. Time **+ 10 MIN**. - Trigger **STEP 4** (SG 'C' MFRV fails closed) *after MFRV returned to Auto.*

9. Time **+ 15 MIN**. - Trigger **STEP 5** (Pzr Steam Space Break) *at step 6 of ES01 (Check Pzr. Level control, level >17%)*

10. Time **+ 15 MIN**. - Trigger **STEP 6** (Loss of ESF Bus 'A') *at EO10 step 3 (Monitor if SG Secondary Pressure Boundary Intact).* ***CAUTION: Don't trigger this step prematurely. This can occur if the US transitions to EO10 following E0 because Addendum 5 isn't yet completed. The E010 entry for triggering this step should be after FRZ1 has been completed.***

SCENARIO INSTRUCTIONS

11. Place simulator in FREEZE when cued by the Lead Examiner to terminate scenario.

12. DO NOT RESET simulator until <u>all</u> Examiners have completed Follow-Up Questioning.

13. Ensure the following prior to printing out the Autograph File:

    - Each parameter is labeled with it’s descriptive name (e.g. ‘RCS Subcooling’).
    - The time range is set to the period indicated on the time scale of the Autograph file. Select ‘View’, Select ‘Page’, change ‘Time Range’ to desired time period.
    - Each parameter has an appropriate range to facilitate a display of variation during the scenario. If the range has to be adjusted, go to ‘View’, Select ‘Variables’, then change the range of the desired parameter.

14. After Autograph File printout has been retrieved and verified as satisfactory, perform the following:

    - Clear Autograph File trend data for this simulator session by selecting ACommand@, then AClear@, then AData@.
    - Label the printout with the Scenario # and Crew #.

EXPECTED BOOTH COMMUNCATIONS

<u>Event 1, Secure SGFPT #12</u>

1. Per the turnover, the TGB watch is standing by SGFPT # 12 ready for shutdown of the pump.

2. As TGB Operator, when asked to verify SGFPT # 12 is on the turning gear wait until indicated RPM on CP-006 is '0' before reporting turning gear status.

<u>Event 2, Loop 'B' Cold Leg Instrument fails high</u>

1. When called as I&C to trip bistables for TT-420B, report that I&C Technicians will report to the control room in 30 minutes to trip bistables. (It will <u>NOT</u> be necessary to trip bistables in this scenario.)

<u>Event 3, 1C SG level fails low</u>

1. When called as I&C to trip bistables for LT-539, report that I&C Technicians will report to the control room in 30 minutes to trip bistables. (It will <u>NOT</u> be necessary to trip bistables in this scenario.)

<u>Event 6, Loss of Power to ESF Bus 1A</u>

1. As TGB operator, if contacted to investigate the 'Basement Shelter Trouble' alarm, report

<u>General</u>

1. As TGB operator, if asked to investigate the 'Basement Shelter Trouble' alarm, clear the alarm in the Control Room and report it's due to Hi-Hi level in TGB Sump #1 (level sw. was hung up, but is now working properly. You'll write a CR).

EXPECTED BOOTH ACTIONS

<u>DA High Level Dump Valves</u>

If asked to open the DA High Level Dump Valves, perform the following:

- Select ‘Remotes’
- Select ‘Condensate System’
- Select ‘Page 1 of 2’
- Scroll down to locate remotes CD-27 and CD-28
- Insert a value of 0.3 for each valve
- Report to the Control Room that the DA High Level Dump Bypass Valves are open X turns (# of turns requested).