

Final Submittal

V. C. SUMMER EXAM 50-39512004-301

**APRIL 19 - 23, 2004
April 28, 2004 (written)**

1. Administrative JPMs
2. In-plant JPMs
3. Control Room JPMs (simulator JPMs)

ADMINISTRATIVE JPMs

NRC-A-001	Shutdown Margin Verification STP-134.802 Attachment I for Mode 5 Entry
NRC-A-002	<i>Perform a QPTR Calculation</i> STP-908.001
N WC-A-003	Prepare a Tagout for Maintenance on the 'C' Charging Pump
NRC-A-004	Determine Dose Rates with Airborne Activity Present

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-A-001

***CALCULATE RCS BORON CONCENTRATION FOR COLD
SHUTDOWN, XENON FREE AT 68°F***

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

TASK:

TASK STANDARD:

Obtain required data from the Curve Book tables and **graphs**. Use obtained data to calculate required boron concentration, using Attachment IV of **STP-134.001**.

PREFERRED EVALUATION LOCATION

PREFERRED EVALUATION METHOD

SIMULATOR

PERFORM

REFERENCES:

TOOLS: GOP-5; **STP-234.001**, Station Curve Book

EVALUATION TIME

TIME CRITICAL **NO** **10CFR55: 45(a)8**

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT: UNSAT:

QUESTION GRADE.:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS **AS** DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE **THE** NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS: N/A

INITIAL CONDITION:

1. The reactor is being shutdown after several months operation at 100% power.
2. The initial conditions for entry into GOP-5, Reactor Shutdown from Startup to Hot Standby, have been met.
3. Reactor power has been reduced to 10E-1% and RCS temperature has been stabilized at 557°F using the steam dumps.
4. Current core burnup is 16,000MWD/MTU.
5. Current boron concentration is 1000 ppm.
6. All control rods are operable.
7. Shutdown and Control Rod Drop Testing is to be performed.

INITIATING CUES: In preparation for borating the RCS to shutdown the Reactor for this testing per Step 3.5 of GOP-5, you have been directed to calculate the boron concentration required for Cold Shutdown, Mode 5, Xenon Free, at 68°F using STP-234.001.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS: N/A

INITIAL CONDITION:

1. The reactor is being shutdown after several months operation at 100% power.
2. The initial conditions for entry into **GOQ-5**, Reactor Shutdown from Startup to Hot Standby, **have** been met.
3. Reactor power has been reduced to 10E-1% and RCS temperature has been stabilized at 557°F using the steam dumps.
4. Current core burnup is 16,000 MWD/MTU.
5. Current boron concentration is 1000 ppm.
6. All control rods are operable.
7. Shutdown and Control Rod Drop Testing is to be performed.

INITIATING CUES: In preparation for borating the RCS to shutdown the Reactor for this testing per Step 3.5 of GOQ-5, you **have** been directed to calculate the boron concentration required for Cold Shutdown, Mode 5, Xenon **Free**, at 68°F using STP-134.001.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
No Yes Review Precautions.

STEP STANDARD:

Reviews Precautions in front of
STP-134.001, Initials the top blank on
Page 1 of Attachment IV of STP-134.001.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 2
No Yes Review Initial Conditions

STEP STANDARD:

Reviews Initial Conditions for
STP-134.001.

Initials the second blank on Page 1 of
Attachment IV of STP-134.001.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 3
No Yes Record Cycle Burnup.

STEP STANDARD:

Enters "16,000 on Attachment IV, Page 1,
of STP-134.001.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 4
No Yes Record the present RCS temperature

STEP STANDARD:
Enters "557" on Attachment IV, Page 1 of STP-134.001

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 5
No Yes Record the desired temperature.

STEP STANDARD:
Enters "68" on Attachment IV, page 1 of STP134.001

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 6
Yes Yes Record the highest boron concentration within the desired temperature range to be maintained as **well** as the Curve **Book** Figure from which it was obtained.

STEP STANDARD:
Enters "**1319 ppm**" and Figure 11-94" on Attachment IV, Page 1 of STP-134.001.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 7
Yes No Contacts Reactor Engineering.

STEP STANDARD:
Contacts Reactor Engineering via phone or plant page system.

CUES: **SAT**
As the Reactor Engineering representative, the Evaluator should cue the examinee **UNSAT** to enter 200 pcm for Samarium.

Since this calculation is being performed for conditions other than the current conditions of this JPM, the examinee should apply "NOTE 2.1" and contact Reactor Engineering.

COMMENTS:

CR SEQ STEP: 8
Yes Yes Enter Samarium Worth

STEP STANDARD:
Enters "200 pcm" on Attachment IV, Page 1 of STP-134.001.

CUES: **SAT**
UNSAT

COMMENTS:

CR SEQ STEP: 9
Yes Yes Bounding Worth of one of more inoperable Control Rods.

STEP STANDARD:
Enters "0" pcm on Attachment IV, Page 2 of STP-134.001.

CUES: **SAT**
UNSAT

COMMENTS:

CR SEQ STEP: 10
Yes Yes Add lines 2.1 and 2.2 .

STEP STANDARD:
Enter "**-200 pcm**" on line 2.3 of Attachment IV, Page 2 of STP-134.001

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 11
Yes Yes Enter Differenhat Boron Worth for the boron concentration on line 1.4 (**Use Figure IJ-7.3 @ 557°F**).

STEP STANDARD:
Enters "**7.65 TO 7.15**" (ALLOWABLE RANGE) on line 2.4 of Attachment IV, Page 2 of STP-134.001.

CUES:

Examinee's answer between allowable range values is sufficient to satisfactorily complete this step **UNSAT**

COMMENTS:

CR SEQ STEP: 12
Yes Yes Divide line 2.3 by line 2.4.

STEP STANDARD:
Enters "**26 TO 2 8**" (ALLOWABLE RANGE) on line 2.5 of Attachment IV, Page 2 of STP-234.001.

CUES:

Examinee's answer between allowable range values is sufficient to satisfactorily complete **this** step **UNSAT**

COMMENTS:

Yes Yes

Minimum boron concentration to maintain Shutdown Margin (subtract line 2.5 from line 1.4).

STEP STANDARD:

Subtracts "26 TO 28"(allowable range) from "1319" and enters "1291 TO 1293" (allowable range) on line 3.1 of Attachment IV, Page 2 of STP-134.001.

CUES:

Examinee's answer between allowable range values is sufficient to satisfactorily **UNSAT** complete this step

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-A-001

DESCRIPTION: CALCULATE RCS BORON CONCENTRATION FOR COLD SHUTDOWN, XENON FREE AT 68°F

IC SET:

INSTRUCTIONS:

COMMENTS:

Thursday, April 08, 2004

KEY

STP-134.001
ATTACHMENT IV
PAGE 1 OF 2
REVISION 11
STTS # _____

SHUTDOWN MARGIN VERIFICATION FOR MODES 4 AND 5

6.1 PRECAUTIONS, Section 2.0 have been reviewed.

INITIALS

6.2 INITIAL CONDITIONS, Section 5.0 have been met.

INITIALS

1.1 Cycle Burn-up.

16.000 MWD/MTU

1.2 Present RCS temperature: 557 °F

1.3 Desired RCS temperature: 68 °F

CAUTION 1.4

- a. The RCS must be borated to a Cold Shutdown, Xenon-Free concentration prior to manually blocking either the Low Pressurizer Pressure SI below P-11 or the Low Steam Line Pressure SI below P-12.
- b. The Shutdown boron concentration requirements of some Mode 4 temperatures may be greater than the Cold Shutdown, Xenon-Free concentration required for Mode 5.

1.4 The highest boron concentration required to maintain Shutdown Margin for all Modes and temperatures between the present RCS temperature and the desired RCS temperature: 1319 ppm

1.5 The Curve Book Figure from which this boron concentration was obtained:

Curve Book Figure: 11-94
(Figure 11-9.2, 9.3, or 9.4)

NOTE 2.1

The IPCS (XENDISP or U1503) should be used. If the IPCS is not available, or if a calculation is desired for other than current conditions, Reactor Engineering should be contacted to obtain Samarium worth.

2.1 Record Samarium Worth using 2.1.a or 2.1.b:

- a. IPCS Samarium Worth (XENDISP or U1503). (-) N/A pcm
- b. Obtain Samarium Worth from Reactor Engineering (-) 200 pcm

KEY

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ATTACHMENT IV
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SHUTDOWN MARGIN VERIFICATION FOR MODES 4 AND 5 (Cont'd)

NOTE 2.2

In Mode 4 or 5 with one or more inoperable Control Rod(s), the RCS should be borated per the applicable Abnormal Operating Procedure. A value of 2200 pcm should be entered for one inoperable rod and 7000 pcm for more than one inoperable rod.

2.2 Bounding Worth of one or more inoperable Control Rods. (+) 0 pcm

2.3 Add lines 2.1 and 2.2:

(-) 200 + (+) 0 = (-) 200 pcm
Step 2.1 Samarium Worth Step 2.2 Inoperable Control Rods Bounding Worth

2.4 Enter the Differential Boron Worth for the boron concentration on line 1.4 (Use Figure II-7.3 at 557°F). (-) 7.65 to 7.15 pcm/ppm

2.5 Divide line 2.3 by line 2.4:

(-) 200 pcm ÷ (-) 7.65 to 7.15 pcm/ppm = (c) 26 to 28 ppm
Step 2.3 Step 2.4

3.1 Minimum boron concentration to maintain Shutdown Margin (Subtract line 2.5 from line 1.4):

1319 - (+) 26 to 28 = 1291 to 1293 ppm
Step 1.4 Required Shutdown Margin Boron Concentration Step 2.5

3.2 Present boron concentration: _____ ppm

8.3 Shutdown Margin is satisfied if line 3.2 is greater than line 3.1.

INITIALS

Calculated By: _____

DATE

Verified By: _____

DATE

***** V. C. SUMMER NUCLEAR STATION SURVEILLANCE TEST TASK SHEET *****
INFORMATION COPY
PROC NO: STP0134.001 TEST FREQ:D01 STTS NO: 0404808 DUE DATE: 04/21/04
SERIAL, NO:
SHIP ID: RC SYSTEM: RC TRAIN: N END DATE: 04/21/04
EQUIPMENT NAME: REACTOR COOLANT SYSTEM
TSK DSC: SHUTDOWN MARGIN VERIFICATION DEPT: 527
INSTR: %
LST
REV
COM

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USE ONLY

***** * INITIAL TEST * ***** * * ***** * RETEST * *****
P R SIGNATURE / DATE * SIGNATURE / DATE
R E N/A ST1 / / / *
E V / / / *
T I N/A ST2 / / / *
E E / / / *
S W N/A ST3 / / / *
T S S/S SS_PRENOTF / / / *

DESCRIPTION: *
D INITIAL/DATE / *
E INITIAL/DATE / *
F TEST FAILURE YES / NO *
T I ACTION TAKEN: *
E C *
C I *
N RESP. SUPVR. / *
C TEST FAILURE YES / NO * YES / NO
Y T/S FAILURE YES / NO R&R NO: * YES / NO R&R NO.
SHIFT SUPVR. *

P TEST PERF S/U / * S/U /
O R S/S SS_PSTAUTH S/U / * S/U /
S E / / *
T V / / *
I RESP SUPVR. S/U / * S/U /
T E / / *
E W N/A ST6 S/U / * S/U /
S S / / *
T N/A ST7 S/U / * S/U /
COORD I&C P&S S/U / * S/U /

RWP REQUIRED: N RAD WORK PERMIT: NO
RED TAG REQUIRED: N RED TAG NUMBER:
R&R REQUIRED: R&R NUMBER:
RETEST INFORMATION:

STP NUMBER STTS NUMBER

COMMENTS: *
*
*
*
*

STEP DESCRIPTION
000 001 SHUTDOWN MARGIN CALCULATION
TRADE QC DEPT
OFS 527

SCHEDULE START: __/__/__

SCHEDULE COMPLETE: __/__/__

QC INSP NUM:

NEED DATE: 04/21/04

STEP INSTRUCTIONS

SHUTDOWN MARGIN CALCULATION
ALL TASK SHEETS ISSUED FOR PERFORMANCE OF THIS TASK ARE MANUALLY GEN

ADDITIONAL TEXT: N

TOTAL STEPS: 1

MR EXISTS: N

PR EXISTS: N

PO EXISTS: N

SAFETY REQ:

EQUIP REF:

PLANNEC BY: MB13046

__/__/__

CALLBACK REQUIRED: __

REP-TAG REMOVED: __

DATE STARTED: __/__/__ TIME: __:__

DATE COMPLETED: __/__/__ TIME: __:__

COMPLETION REMARKS

TRADE	BADGE	DATE	REG HRS	OT HRS	OT CODE	DIFF CODE
_____	_____	__/__/__	__:__	__:__	_____	_____
_____	_____	__/__/__	__:__	__:__	_____	_____
_____	_____	__/__/__	__:__	__:__	_____	_____
_____	_____	__/__/__	__:__	__:__	_____	_____

COMPLETED BY: _____

HISTORY DATE: __/__/__ TIME: __:__

<barcode face=a39r p

STTS: 0404808 EQUIP: RC

PROCEDURE: STP0134.001

SAP-134
ATTACHMENT I
REV. 10
PAGE 3 OF 3
INFORMATION CODY

I. TEST PARTICIPANT CONTINUATION SHEET

TEST PARTICIPANT	TEST PARTICIPANT INVOLVEMENT	DATE
SIGNATURE	[PROCEDURE STEP, DATA POINT, OR AREA(S)]	PERFORMED
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__
_____	_____	__/__/__

Indicate your involvement in the test by listing, as applicable:

- 1) the procedure steps you completed
- 2) the data you observed
- 3) the completed test procedures attachments
- 4) the plant area(s) which you were assigned to observe
- 5) the date upon which you completed your portion of the test

II. PARTS/MATERIALS ISSUED BY STORES REQ NO.

III. ADDITIONAL COMMENTS

SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
NUCLEAR OPERATIONS

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USE ONLY

NUCLEAR OPERATIONS
COPY NO. _____

SURVEILLANCE TEST PROCEDURE
STP-134.001
SHUTDOWN MARGIN VERIFICATION
REVISION 11

SAFETY RELATED

ORIGINAL SIGNED BY: D. A. BAKER 08/27/03
DISCIPLINE SUPERVISOR DATE

ORIGINAL SIGNED BY: G. A. LIPPARD 09/08/03
APPROVAL AUTHORITY DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	03/03/04					

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior To Performing.

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ATTACHMENTS

- | | | |
|----------------|---|-----------------------------------------------------------------------------------------------|
| Attachment I | - | Shutdown Margin Verification For Mode 3 |
| Attachment II | - | Shutdown Margin Verification For Mode 3 Using The IPCS During Xenon Decay |
| Attachment III | - | Required RCS Boron Determination For Maintaining Shutdown Margin In Mode 3 During Xenon Decay |
| Attachment IV | - | Shutdown Margin Verification For Modes 4 and 5 |
| Attachment V | - | Boron Concentration verification For Mode 6 |
| Attachment VI | - | Shutdown Margin Verification Prior To Initial Entry Into Mode 1 Following Refueling |

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1.0 PURPOSE/SCOPE

- 1.1 This procedure determines if the Limiting Condition For Operation requirements for Reactor Shutdown Margin found in Sections 3.1.1.1 and 3.1.1.2 of Technical Specifications are satisfactorily met by performing Surveillance Requirements 4.1.1.1.1.a, 4.1.1.1.1.d, or 4.1.1.2, as appropriate for the Operational Mode.
- 1.2 When in Mode 6, this procedure determines if the Limiting Condition For Operation requirement for Reactor Shutdown Margin found in Section 3.9.1 of Technical Specifications is satisfactorily met by performing Surveillance Requirements 4.9.1.1 and 4.9.1.2.
- 1.3 The SAP-107 Applicability Determination established that 10CFR50.59 Screening is not required as this procedure is classified as a maintenance activity which restores SSCs to their original condition.
- 1.4 Changes to this procedure that have been determined to comply with the Scope of this procedure will not require screening per 10CFR50.59. However, the following processes will apply:
 - a. 10CFR50.65a(4).
 - b. SAP-139 (10CFR50, Appendix B).

2.0 PRECAUTIONS

- 2.1 Following a plant shutdown, Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.

3.0 TEST EQUIPMENT

- 3.1 None.

4.0 TEST FREQUENCY

- 4.1 Normal Operations:
- a. In Mode 1 or 2, at least once every 12 hours (see NROATC Operating **Logs**).
 - b. Upon initial entry into Mode 3 from Modes 1 or 2. A Shutdown Margin calculation shall be performed on demand thereafter to ensure Shutdown Margin is maintained.
 - c. In Modes 4 and 5, at least once every 24 hours
 - d. Prior to entering Mode 6.
 - e. In Mode 6, at least once every 72 hours.
 - f. After each fuel loading, prior to exceeding five percent power.
- 4.2 While in Modes 1, 2, 3, 4, or 5, during operation with inoperable Control Rod(s), Shutdown Margin should be verified within one hour after detection of the inoperable Control Rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable.
-

5.0 INITIAL CONDITIONS

- 5.1 The plant is in any of the Operational Modes as defined in Technical Specifications Section 1.0, Table 1-1.

NOTE 6.0 through 8.0

An asterisk (*) preceding a step indicates that data or a signoff is required on the attachment identified within the step.

6.0 PROCEDURE

- *6.1 Review the PRECAUTIONS of Section 2.0 and record on the appropriate Attachment.
- *6.2 Ensure the INITIAL CONDITIONS as stated in Section 5.0 have been met and record on the appropriate Attachment.

6.3 Normal Operation:

- a. For Mode 1 or 2, verify that all Control Rods are above the Rod Insertion Limit (see NROATC Operating bogs).

*b. For Mode 3, perform one of the following:

- 1) Perform a Shutdown Margin calculation using Attachment I for either of the following conditions:

- a) The RCS is or has transitioned from Mode 4 to Mode 3.

CAUTION 6.3.b.1)b)

If a delay in blocking the Low Pressurizer Pressure or Low Steam Line Pressure SI occurs, Shutdown Margin should be maintained using the IPCS Shutdown Margin Program (XENON) or manually per Attachment II.

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- b) The RCS has transitioned from Mode 2 to Mode 3 and RCS temperature or pressure reduction will require blocking the Low Pressurizer Pressure SI below P-11 or the Low Steam Line Pressure SI below P-12.

- 2) Perform a Shutdown Margin calculation using the IPCS Shutdown Margin Program (XENON) per Attachment II or manually per Attachment II if the RCS has transitioned from Mode 2 to Mode 3 and the following apply:

- a) A Mode 2 re-entry is expected.
- b) Transitioning the RCS from Mode 3 to below the Low Pressurizer Pressure and Low Steam Line Pressure SI block setpoints is to be delayed and Xenon decay is occurring.

*c. For Mode 4 or 5 complete Attachment IV, referring to the appropriate figures in the Station Curve Book.

- d. For Mode 6, perform the following:
 - *1) Request a calculation from Reactor Engineering of the boron concentration sufficient to ensure that the more restrictive of the following is met, and record on Attachment V:
 - a) The required boron concentration which will ensure a K_{eff} of 0.95 or less.
 - b) A boron concentration of greater than or equal to 2000 ppm.
 - *2) Record the present boron concentration on Attachment V
 - *3) Verify the present boron concentration *is* greater than the Reactor Engineering calculated minimum value, and record on Attachment V.
- e. Prior to the initial entry into Mode 1 after completion of physics testing, perform the following:
 - *1) Verify all BOL startup testing acceptance criteria have been met, and record on Attachment VI.
 - *2) Verify all Rods are above the Rod Insertion Limit and record on Attachment VI.

NOTE 6.4

In Mode 1, 2, 3, 4, or 5 with one or more untrippable rod(s), the RCS should be bled per the applicable Abnormal Operating Procedure.

6.4 Operation with one or more inoperable rod(s):

- a. For Mode 1 or 2:
 - 1) With one or more inoperable rods due to an electrical malfunction (not misaligned, dropped, or untrippable), Shutdown Margin requirements are satisfied by verification of rods above their Rod Insertion Limit.
 - 2) With one or more untrippable rods, Shutdown Margin requirements can not be verified per this procedure and AOP-483.5, Stuck Or Misaligned Control Rod. must be implemented.

- 3) With one misaligned or dropped rod, Shutdown Margin requirements are met by limiting cycle design calculations, and a Shutdown Margin calculation is not required.
- *b. For Mode 3 complete Attachment I, Attachment II, ~~or~~ Attachment III, referring to the appropriate figures in the Station Curve Book.
- *c. For Mode 4 or 5 complete Attachment IV, referring to the appropriate figures in the Station Curve Book.

7.0 DATA REQUIREMENTS

- 7.1 All required data will be entered on the applicable Attachment.
- 7.2 IPCS Shutdown Margin Program printout

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8.0 ACCEPTANCE CRITERIA

- 8.1 In Mode 1 or 2, all Control Rods are above the Rod Insertion Limit.
- *8.2 Prior to initial Mode 1 entry after Refueling, all BOL startup testing acceptance criteria have been met, and Control Rods are above the Rod Insertion Limit.
- *8.3 In Mode 3, 4, or 5, Shutdown Margin is above the limits of Technical Specification 3.1.1.2.
- *8.4 In Mode 6, the boron concentration is sufficient to ensure the more limiting of:
 - a. A boron concentration greater than or equal to 2000 ppm, or
 - b. The boron concentration required to maintain a K_{eff} of 0.95 or less
- 8.5 if any Acceptance Criteria is not met, Emergency Borate per AOP-106.1, Emergency Boration.

9.0 REFERENCES

- 9.1 AOP-106.1, Emergency Boration.
- 9.2 AOP-403.5, Stuck Or Misaligned Control Rod
- 9.3 CGSS-97-547, Cycle 11 N-2 Stuck Rod Worth.
- 9.4 NROATC Operating **Logs**,
- 9.5 V.C. Summer Station Curve Book.
- 9.6 V.C. Summer Tech Specs, Section 1.0, Table 1-1 and Sections 3.1.1.1, 3.1.1.2, and 3.9.1.

10.0 REVISION SUMMARY

- 10.1 Created Attachment covering Mode 3 conditions only. Added Caution 2.1 to Attachment I regarding the effects of Xenon decay upon Shutdown Margin.
- 10.2 Changed Attachment I into Attachment II. Modified the attachment to ensure that the maximum required boron Concentration to ensure Shutdown Margin is evaluated for all temperatures and Modes covering the indicated RCS temperature change. Added a Xenon and Samarium Correction Factor of 0.9 to ensure that inaccuracies known to be present in the point Xenon model on the IPCS will be accounted for. This is per CER-03-1848, Action # 3.
- 10.3 Deleted Enclosure A as it is replaced by the Xenon/Samarium Correction Factor found on Attachment I. This correction factor is not required for Attachment II (Modes 4 and 5) as the RCS must be borated to a Cold Shutdown, Xenon-Free concentration per NSAL-02-14, Steam Line Break During Mode 3, prior to manually blocking either the Low Pressurizer Pressure SI below P-11 or the bow Steam line Pressure SI below P-12.
- 10.4 Changed the Test Frequency performance for Shutdown Margin for Mode 3 to upon entry into the Mode from Modes 1 or 2 and to on demand thereafter.
- 10.5 Reformatted the procedure to incorporate sign-offs for having reviewed Precautions and for having established Initial Conditions.

10.6 Change A Summary:

- a. Created Attachment II for determining Shutdown Margin during Mode 3 during Xenon decay using the IPCS Shutdown Margin Verification program.
- b. Created Attachment III for the determination of Shutdown Margin in Mode 3 when the Shutdown Margin Program (XENON) is not available and Xenon decay is occurring. This is in response to CER-03-1848 Action #6 which provides Operations with a forward looking Xenon decay Shutdown Margin Program which may be used without Reactor engineering support.
- c. Brought actions from GOP-5 regarding Xenon decay into Attachment III so as to ensure STP-134.001 is the determining procedure for Shutdown Margin control.

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FOR TRAINING USE ONLY

STP-134.001
ATTACHMENT IV
PAGE 1 OF 2
REVISION 11
STTS# _____

SHUTDOWN MARGIN VERIFICATION FOR MODES 4 AND 5

6.1 PRECAUTIONS, Section 2.0 have been reviewed.

INITIALS

6.2 INITIAL CONDITIONS, Section 5.0 have been met.

INITIALS

1.1 Cycle Burn-up.

MWD/MTU

1.2 Present RCS temperature: _____ °F

1.3 Desired RCS temperature: _____ °F

CAUTION 1.4

- a. The RCS must be borated to a Cold Shutdown, Xenon-Free concentration prior to manually blocking either the Low Pressurizer Pressure SI below P-1 or the Low Steam Line Pressure SI below P-12.
- b. The Shutdown boron concentration requirements of some Mode 4 temperatures may be greater than the Cold Shutdown, Xenon-Free Concentration required for Mode 5.

1.4 The highest boron Concentration required to maintain Shutdown Margin for all Modes and temperatures between the present RCS temperature and the desired RCS temperature: _____ ppm

1.5 The Curve Book Figure from which this boron concentration was obtained:

Curve Book Figure: _____
(Figure 11-9.2, 9.3, or 9.4)

NOTE 2.1

The IPCS (XENDISP or U1503) should be used. If the IPCS is not available, or if a calculation is desired for other than current conditions, Reactor Engineering should be contacted to obtain Samarium worth.

2.1 Record Samarium Worth using 2.1.a or 2.1.b:

a. IPCS Samarium Worth (XENDISP or U1503). (-) _____ pcm

b. Obtain Samarium Worth from Reactor Engineering. (-) _____ pcm

FOR TRAINING USE ONLY

STP-I34.001
ATTACHMENT IV
PAGE 2 OF 2
REVISION 11
STTS # _____

SHUTDOWN MARGIN VERIFICATION FOR MODES 4 AND 5 (Cont'd)

NOTE 2.2

In Mode 4 or 5 with one or more inoperable Control Rod(s), the RCS should be borated per the applicable Abnormal Operating Procedure. A value of 2200 pcm should be entered for one inoperable rod and 7000 pcm for more than one inoperable rod.

2.2 Bounding Worth of one or more inoperable Control Rods. (+) _____ pcm

2.3 Add lines 2.1 and 2.2:

(-) _____ + (+) _____ = () _____ pcm
Step 2.1 Samarium Worth Step 2.2 Inoperable Control Rods Bounding Worth

2.4 Enter the Differential Boron Worth for the boron concentration on line 1.4 (Use Figure I-7.3 at 557°F). (-) _____ pcm/ppm

2.5 Divide line 2.3 by line 2.4:

() _____ pcm ÷ (-) _____ pcm/ppm = () _____ ppm
Step 2.3 Step 2.4

3.1 Minimum boron concentration to maintain Shutdown Margin (Subtract line 2.5 from line 1.4):

_____ () _____ = _____ ppm
Step 1.4 Required Shutdown Margin Boron Concentration Step 2.5

3.2 Present boron Concentration: _____ ppm

8.3 Shutdown Margin is satisfied if line 3.2 is greater than line 3.1.

INITIALS

Calculated By: _____

DATE

Verified By: _____

DATE

SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
NUCLEAR OPERATIONS

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USE ONLY

NUCLEAR OPERATIONS

COPY NO. _____

GENERAL OPERATING PROCEDURE

GOQ-5

REACTOR SHUTDOWN
FROM STARTUP TO HOT STANDBY
(MODE 2 TO MODE 3)

REVISION 11

SAFETY BELATED

Original Signed By: D. A. Baker
DISCIPLINE SUPERVISOR

10/23/02
DATE

Original Signed By: S. M. Zarandi
APPROVAL AUTHORITY

10/27/02
DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	02/06/03					
B	P	09/10/03					
C	P	03/03/04					

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

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<u>SECTION</u>	<u>PAGE</u>
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Attachment I -	Sign-off Identification List

1.0 PURPOSE/SCOPE

- 1.1 This procedure describes those actions required to be performed by Operations' personnel, which are necessary to take the Reactor from a critical condition at the point of adding heat to a shutdown condition.
- 1.2 The scope of this procedure encompasses the activities performed using referenced procedures that will bring the Reactor from a startup (Mode 2) condition to Hot Standby (Mode 3).
- 1.3 The following governing regulations apply to this procedure:
 - a. 10CFR50.59.
 - b. 10CFR50, Appendix B.
 - c. SAP-630, Procedure/Commitment Accountability Program.

NOTE 2.0 through 4.0

- a. Each step should be initiated and dated when all its substeps are either completed and checked-off or marked N/A and initialed.
- b. All personnel who sign off steps in this procedure must enter their names and initials on Attachment 1.

CHG
C

NOTE 2.0

If this procedure must be initiated under conditions other than those in Section 2.0, INITIAL CONDITIONS, the Shift Supervisor or Control Room Supervisor will review Sections 2.0, INITIAL CONDITIONS, and 3.0, INSTRUCTIONS. Steps that are not applicable due to plant conditions will be marked N/A and initialed by the Shift Supervisor or Control Room Supervisor. All other items will require sign-off or check-off.

2.0 INITIAL CONDITIONS

INITIALS/DATE

- | | | |
|-----|----------------------------------------------------------------------------------------------------------------|--------------------------|
| 2.1 | RCS status is as follows: | <u>1</u> |
| a. | System temperature is being maintained between 555°F and 559°F using the Steam Dump System or Steamline PORVs. | <input type="checkbox"/> |
| b. | System pressure is being maintained between 2220 psig and 2250 psig in AUTO control. | <input type="checkbox"/> |
| c. | All Reactor Coolant Pumps are in operation. | <input type="checkbox"/> |
| d. | Pressurizer level is being maintained at 25% in AUTO control. | <input type="checkbox"/> |
| 2.2 | All Safety Injection Systems are aligned and operable. | <u>1</u> |
| 2.3 | Excore NIs are aligned for power operation per SOP-404, Excore Nuclear Instrumentation System. | <u>1</u> |
| 2.4 | Reactor Power is being maintained between 1% and 3%. | <u>1</u> |

INITIALS/DATE

- 2.5

For Mode 2, with no untrippable or dropped rods, Shutdown Margin requirements are satisfied once per 12 hours by verification of rods above the Rod Insertion Limit.
- 2.6

Reactor Makeup Control is in AUTO and set for blended flow equal to existing boron concentration.

/
- 2.7

The Rod Control and Position Indicating Systems are in operation per SOP-403.

/
- 2.8

Secondary Plant status ~~is~~ as follows:

/
- a.

The Main Turbine ~~is~~ on the Turning Gear per SOP-215, Main Turbine Lube Oil Supply System.

☐
- b.

The Main Feedwater Pumps are on their Turning Gears per SOP-209, Feedwater Turbine Lube Oil System.

☐
- c.

Narrow Range Steam Generator levels are being maintained between 60% and 65% with chemistry within specification using the following:
- 1)

Blowdown per SOP-212.

☐
- 2)

Emergency Feedwater per SOP-211

☐
- 2.9

GOQAppendix A review is completed.

CHG
B

3.0 INSTRUCTIONS

INITIALS/DATE

3.1 Complete GTP-702 Attachment II.K, Operational Mode Change Plant Shutdown - Entering Mode 3 Or Plant Trip To Mode 3 From Modes 1 Or 2.

_____/____

3.2 Select both Intermediate Range Channels on NR-45, NIS RECORDER.

_____/____

CHG
B

NOTE 3.3 through 3.4

Control Rods are inserted using Step 3.3 or Step 3.4.
Step 3.3 inserts Control Rods via a Manual Reactor Trip.
Step 3.4 manually inserts Control Rods.

4.3 Insert Control Rods with a manual Reactor trip as follows:

_____/____

- a. Perform a Pre-job brief per OAP-100.3, Human Performance Tools.
- b. Select one Intermediate Range and one Source Range Channel on NR-45, NIS RECORDER.
- c. Ensure both Motor Driven Emergency Feedwater Pumps are running.

☐☐☐

INITIALS/DATE

NOTE 3.3.d and e

Emergency boration to the STP-134.001, Shutdown Margin Verification, determined Required Boron concentration *is* not required prior to tripping the Reactor *per* Step 3.3.e. The expectation **is** to trip the Reactor following verification of greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM.

CHG
C

d. Perform the following if the commencement of RCS boration prior to performing a manual Reactor trip *is* desired:

- 1)

Perform STP-134.001, Shutdown Margin Verification, to determine the required boron concentration for the Required Mode and temperature:
- Required Mode:
- Required Boron:

ppm
- STTS#
- 2)

Open MVT-8104, EMERG BORATE.
- 3)

Ensure XPP-13A(B), BA XFER PP A(B), is running.
- 4)

Verify greater than 30 gpm flow on FI-110, EMERGBORATE FLOW GPM.
- 5)

When boration **is** no longer required, **perform the** following:

a)

Close MVT-8104, EMERG BORATE.

63

b)

Verify no flow on FI-110, EMERG BORATE FLOW GPM.
- CHG
B
- PAGE 5 OF 20

		<u>INITIALS/DATE</u>	
e.	Place RX TRIP Switch CS-CR01 in TRIP.	<input type="checkbox"/>	
f.	Verify all Reactor Trip and Bypass Breakers are open.	<input type="checkbox"/>	CHG A
g.	Verify all Rod Bottom lights are lit	<input type="checkbox"/>	
h.	if two or more Control Rods are not fully inserted, then emergency borate as follows:		CHG C
	1) Open MVT-8104, EMERG BORATE..	<input type="checkbox"/>	
	2) Verify greater than 30 gpm flow on FI-110, EMERG BORATE FLOW GPM	<input type="checkbox"/>	
	3) If required, refer to AOP-106.1, Emergency Boration, to establish greater than 30 gpm flow.	<input type="checkbox"/>	
	4) Borate 2500 gallons if two Control Rods are not fully inserted.	<input type="checkbox"/>	CHG A
	5) Borate 5800 gallons if greater than two Control Rods are not fully inserted.	<input type="checkbox"/>	
i.	Verify Reactor Power level is decreasing.	<input type="checkbox"/>	
j.	Ensure RCS temperature is being maintained between 555°F and 559°F using the Steam Dump System or Steamline PORVs.	<input type="checkbox"/>	
k.	Place both SOURCE RANGE HIGH FLUX AT SHUTDOWN Switches in BLOCK.	<input type="checkbox"/>	CHG B
l.	When Reactor Power decreases below $7.5 \times 10^{-6}\%$, complete the following:		
	1) Verify P6 Permissive de-energizes to dim.	<input type="checkbox"/>	
	2) When on scale indication is observed, select both Source Range Channels on NR-45, NIS RECORDER.	<input type="checkbox"/>	CHG A
m.	Proceed to Step 3.5.	<input type="checkbox"/>	

INITIALS/DATE

CAUTION 3.4

The RCS lowest operating loop temperature should be monitored closely during power reduction to $10^{-1}\%$ to ensure temperature remains greater than or equal to 551°F while in Mode 2. Power reduction should be accomplished slswly while system temperature is maintained between 555°F and 559°F using the Steam Dump System, Steamline PORVs, and Steamline drains, as required.

3.4 Insert all Control Bank Rods as follows:

_____ / _____

- a. Using Manual Rod Control decrease Reactor Power to $10^{-1}\%$ and verify RCS temperature control is stable. ☐
- b. Ensure the ROD CNTRL BANK SEL Switch is in MAN. ☐
- c. Begin Control Bank insertion as follows:
 - 1) Move the ROD CONTROL ROD MOTION lever in the IN direction. ☐
 - 2) As the rods are driven in, observe that Step Counters and DRPI position indications read within 22 steps. ☐
 - 3) As the rods are driven in, observe proper bank sequence. ☐
 - 4) Verify a 102 step Bank Overlap between Control Banks. ☐

CHG
C

INITIALS/DATE

CAUTION 3.4.c.5)

To minimize the possibility of binding at the full in position. rods should not be driven below 000 indication on the Group Demand Step Counters.

5) Release the ROD CONTROL ROD MOTION Lever when Control Bank A Step Counters indicate zero (000) steps.

☐

d. When all Control Bank Rods have been inserted, verify the following;

2) All Step Counters for Control Banks indicate zero (000) steps.

☐

2) DRPI for the Control Banks indicates RB (Rod Bottom).

☐

e. When Reactor Power decreases below $7.5 \times 10^{-6}\%$, complete the following:

1) Verify P6 Permissive de-energizes to dim.

☐

2) When on scale indication is observed. select both Source Range Channels on NR-45, NIS RECORDER.

☐

c03→3.5

Monitor Source Range counts per SOP-404, Excore Nuclear Instrumentation System.

_____ / _____

CHG
C

INITIALS/DATE

CAUTION 3.6 and 3.7

Shutdown Margin may decrease by as much as 3000 pcm due to Xenon decay over a 24 hour period. Any deviation from the conditions used in the Shutdown Margin calculation requires reverification of adequate Shutdown Margin.

3.6 Complete STP-134.001, Shutdown Margin Verification, for current conditions and record:

Required Boron: _____ ppm

T_{avg} _____ / _____ °F

STTS # _____

/

CHG
C

CHG
A

c02→ 3.7 Complete STP-134.001, Shutdown Margin Verification, for anticipated conditions and record:

/

a. If a return to power from the present condition is anticipated, perform STP-134.001, Shutdown Margin Verification, for maintaining Shutdown Margin In Mode 3 during Xenon decay and record:

☐

Expected Startup: _____ / _____
Date Time

Required Boron at Expected Startup: _____ ppm

STTS # _____

CHG
C

b. If a return to power from present conditions is not desired, perform STP-134.001, Shutdown Margin Verification, for the desired Mode and temperature:

☐

Required Mode: _____

Required Boron: _____ ppm

STTS # _____

INITIALS/DATE

NOTE 3.8

- a) If boration to a Mode 5, Xenon Free condition is required, boration via MVT-8104, EMERG BORATE, per SOP-106, Reactor Makeup Water System, will provide the quickest method of borating the RCS prior to allowing Plant cooldown.
- b) An increased frequency of RCS sampling will be required when emergency boration is used in order to determine when the required Shutdown boron concentration has been reached and cooldown can commence.

3.8 Borate the RCS to the Required Boron concentration:

CHG
C

- a. Initiate continuous Pressurizer Spray flow by energizing Backup Group Heaters, as required ☐
- b. Borate the RCS per SOP-106, Reactor Makeup Water System, to the required boron concentration. ☐
- c. Direct chemistry to sample the RCS and the Pressurizer to verify the following: ☐
 - 1) Boron concentration is as required.
Record results below:

RCS Boron: _____ ppm

Pressurizer Boron: _____ ppm
 - 2) Pressurizer versus RCS differential boron concentration.

Differential Boron: _____ ppm
- d. Beenergize Backup Group Heaters started in Step 3.8.a. ☐
- e. Reset Reactor Makeup to the current boron concentration and return to automatic makeup per SOP-106, Reactor Makeup Water System. ☐

INITIALS/DATE

NOTE 3.9

Insertion of the Shutdown Banks is optional at this time.
Leaving the Shutdown Banks withdrawn is preferred.

3.9 (Optional) If desired, insert the Shutdown Banks as follows:

/

- a. Borate the **RCS** to a Hot, Xenon-Free concentration verified by sample prior to inserting Shutdown Banks if either of the following conditions exist:

1) IPCS current Xenon (XENDISP or U1500) values indicates that Xenon is beginning to add positive reactivity. ☐

2) Neither the IPCS nor Reactor Engineering are available to provide Xenon reactivity values. ☐

- b. Place both SOURCE RANGE HIGH FLUX AT SHUTDOWN Switches in BLOCK. ☐

- c. Insert Shutdown Bank B as follows:

1) Place the ROD CNTRL BANK SEL Switch in SBB. ☐

2) Begin Shutdown Bank B insertion by moving the ROD CONTROL ROD MOTION Lever in the IN direction. ☐

3) As the rods are driven in, observe Step Counters and DRPI position indications read within 12 steps. ☐

CHG
C

INITIALS/DATE

CAUTION 3.9.c.4)

To minimize the possibility of binding **at** the full in position, rods should not be driven below 000 indication on the Group Demand Step Counters.

4) Release the ROB CONTROL ROB MOTION Lever when Shutdown Bank B Step Counters indicate zero (000) steps. ☐

5) Verify Shutdown Bank B DRPI indicates RB (Rod Bottom). ☐

d. Insert Shutdown Bank A as follows:

1) Place the ROD CNTRL BANK SEL Switch in SBA. ☐

2) Begin Shutdown Bank A insertion **by** moving the ROD CONTROL ROD MOTION Lever in the IN direction. ☐

3) **As** the rods are driven in, observe that Step Counters and DRPI position indications read within 12 steps. ☐

4) Release the ROD CONTROL ROD MOTION Lever when Shutdown Bank A **Step** Counters indicate zero (000) steps. ☐

5) Verify Shutdown Bank A BRPI indicates WB (Rod Bottom). ☐

e. Place RX TRIP Switch CS-CR01 in TRIP and verify Reactor Trip Breakers open. ☐

c03→ f. Monitor Source Range counts per SOP-404, Excore Nuclear instrumentation System. ☐

CHG
C

INITIALS/DATE

3.10 Proceed as follows:

 /

- a. If a return to power from the present plant condition is desired. proceed to **GOP-3, REACTOR STARTUP FROM HOT STANDBY TO STARTUP (MODE 3 TO MODE 2)**. ☐

- b. If plant shutdown is desired, proceed to **GOP-6, PLANT SHUTDOWN FROM HOT STANDBY TO COLD SHUTDOWN (MODE 3 TO MODE 5)**. ☐

4.0 FINAL CONDITIONS

INITIALS/DATE

- 4.1 RCS status is as follows: _____
- a. System temperature is being maintained between 555°F and 559°F using the Steam Bump System or Steamline PORVs. ☐
- b. System Pressure is being maintained between 2220 psig and 2250 psig in AUTO control. ☐
- c. All Reactor Coolant Pumps are in operation. ☐
- d. Pressurizer level is being maintained at 25% in AUTO control. ☐
- 4.2 GTP-702 Attachment II.K, Operational Mode Change Plant Shutdown - Entering Mode 3 Or Plant Trip To Mode 3 From Modes 1 Or 2, is complete. _____
- 4.3 All Safety Injection Systems are aligned and operable. _____
- 4.4 GTP-702 Attachment VI.KK, High **Flux** At Shutdown - Post Trip/Reactor Shutdown, has been initiated. _____
- 4.5 The Reactor is shutdown with at least all Control Bank Rods fully inserted. _____
- 4.6 Shutdown Margin *is* being maintained for Mode 3 or Mode 5 per STP-134.801, Shutdown Margin Verification. _____
- 4.7 Reactor Makeup Control is in AUTO and **set** for blended flow equal to existing boron concentration. /
- 4.8 The Rod Control and Position Indicating Systems are in operation per SOP-483. _____
- 4.9 Secondary Plant Status is as follows: _____
- a. The Main Turbine is on the Turning Gear per SOP-215, Main Turbine Lube Oil Supply System. ☐

INITIALS/DATE

CHG
B



b. The Main Feedwater Pumps are on their Turning Gears per SOP-209, Feedwater Turbine Lube Oil System.

c. Narrow Range Steam Generator levels are being maintained between 60% and 65% with chemistry within specification using the following:

1) Blowdown per SOP-212.

2) Emergency Feedwater per SOP-211.

d. Main Steam is in operation per SOP-201.

e. Condensate is in operation per SOP-208.

f. Circulating Water is in operation per SOP-207.

g. Condenser Vacuum is established per SOP-205, Turbine Sealing Steam System, and SOP-206, Main and Auxiliary Condenser Air Removal System, for the following:

1) Main Condenser.

2) Auxiliary Condensers.

5.0 REFERENCES

5.1	AOP-106.1, Emergency Boration.	CHG A
5.2	AOP-403.5, Stuck or Misaligned Control Rod.	
5.3	FSAR Section 13.5	
5.4		
5.5	GOP-3, Reactor Startup From Hot Standby To Startup (Mode 3 To Mode 2).	CHG B
5.6	GOP-6, Plant Shutdown From Hot Standby To Cold Shutdown (Mode 3 To Mode 5).	
5.7		
5.8		CHG A
5.9		
5.10		
5.11		
5.12		
5.13		
5.14		
5.15	SOP-209, Feedwater Turbine Lube Oil System.	
5.16	SOP-211, Emergency Feedwater System.	
5.17	SOP-212, Steam Generator Blowdown.	
5.18	SOP-215, Main Turbine Lube Oil Supply System.	
5.19	SOP-403, Rod Control And Position Indicating System	
5.20	SOP-404, Excore Nuclear Instrumentation System.	
5.21	STP-134.001, Shutdown Margin Verification.	

- 5.22 V.C. Summer Precautions, Limitations and Setpoints.
- 5.23 V.C. Summer Tech Specs, Section 6.8.1.

6.0 REVISION SUMMARY

- 6.q Added Scope statement and references to the governing regulations.
- 6.2 Corrected typographical errors.
- 6.3 Amended Reference Section to include all appropriately referenced procedures.
- 6.4 In Steps 3.5.a, 3.6.b, and 4.6, referenced Shutdown Margin being maintained for a specific Mode per STP-134.001. This STP determines the required boron concentration needed to transfer from one mode to another.
- 6.5 Removed reference to the use of AOP-106.1 for boration. The AOP entry conditions do not accommodate this and SOP-106 now includes a section describing use of the emergency boration valve.
- 6.6 Changed Step 2.8.c and Step 4.9.b Steam Generator control band to match the GOP-4 final condition of 55% to 65%.
- 6.7 Added Note 3 to Attachment II pages 3 and 4 to indicate that by the time these pages are to be used, greater than ten hours of monitoring of Source Range counts is complete and I&C should be resetting the High Flux At Shutdown Alarm.
- 6.8 Removed references to Feedwater Pump Turbines on their Turning Gears per SOP-210 and reference to SOP-210. Replaced referenced procedure with SOP-209.
- 6.9 At steps where the Audio Multiplier is adjusted, added note indicating that the Audio Count Rate is not required to be operable and added step to select the highest Source Range Channel indication. This direction provides consistency with the direction provided in GOP-3. Audible indication is not required until Mode 6 per Technical Specification 3.9.2.
- 6.10 Removed Step 3.5 describing the performance of Rod Drop Testing. This is done per Reactor Engineering review comment indicating that this data collected for incomplete rod insertion is no longer required. Removed reference to REP-107.017.

6.11	<p>Change A summary:</p> <ul style="list-style-type: none">a. Incorporated steps to perform a manual Reactor Trip to insert Control Rods as an option for Rod insertion.b. Added AQP-106.1 and QAP-100.3 to Keference Section.c. Added Caution 3.7 concerning Shutdown Banks.d. In Step 3.6:<ul style="list-style-type: none">1) Amended 3.6.b to specify required Mode vice Mode 3.2) In Step 3.6.c, added Note regarding the use of emergency boration per SOP-106 to expedite achieving the required boron concentration for Shutdown Margin and, thereby, allow Plant cooldown.e. Based on procedure review comment, added Cautions to Steps 3.5 and 3.7 concerning overdriving rods.	CHG A
6.12	<p>Revision 11 Change B summary:</p> <ul style="list-style-type: none">a. Changed Steam Generator level band found in Initial Condition 2.8.c to 60% to 65%. Per our response to TWR 227-68-1864, MCN-901028, SG LEVEL CONTROL SETPOINT (Lou Cartin 1996), the maintained level band should be 60% to 65%.b. Per CER 0-C-03-1848 Action #2, required boration of the RCS following a shutdown when Xenon decay occurs and a Shutdown Margin calculation using forward looking Xenon worth values is unavailable. Also, required the performance of a Shutdown Margin verification every four hours when forward looking Xenon worth values are unobtainable. Required boration of the RCS to 120 ppn greater than the STP-134.001 calculated value will ensure that Shutdown Margin is maintained during the time between the performance of the next Shutdown Margin verification. Per Reactor Engineering? a 30ppm/hr change in RCS boron concentration will accommodate the greatest decay rate of Xenon possible. If Shutdown Margin verification is performed every four hours and it is known that Xenon worth is decreasing, then boration of the RCS by 120 ppm will ensure that Shutdown Margin is maintained over the next four hours. Boration in this manner is to occur until forward looking Xenon worth values are available or until the RCS is borated to Xenon-free.	CHG B

- e. Added steps for beginning emergency boration of the RCS prior to opening the Reactor Trip breakers. *This* step is to be used when it is known that the plant is to be shutdown and borating to the required RCS boron concentration as quickly as possible is desired. It is intended that the opening and verification of emergency boration flow should be immediately followed by tripping of the Reactor.
- d. Modified the method of verifying Source Range counts to be consistent with the wording as found in GOP-6 with the creation of Step 3.9. Having a stand-alone step for monitoring Source Range Counts ensures that following a trip of all rods, boration of the RCS, or following the optional insertion of Shutdown banks, monitoring of the Source Range counts can be performed using this one step.
- e. Created new Step 3.10 for directing the performer to either GOP-3 or GOP-6.
- f. Corrected Attachment II to remove specific steps referenced from the text of GOP-5. With the potential for tripping the Reactor with all rods out or tripping the Reactor with only Shutdown banks withdrawn now available, the performance of this attachment should be event related. This is stated in the attachment. Steps have been added in the text directing when to perform this attachment.
- g. The following changes were performed based on procedure review comments:
 - 1) Removed word "emergency" from description of borating using MVT-8104. This is considered a normal boration using the emergency borate valve. The use of this valve here is not due to an emergency.
 - 2) Added new step to require borating to Mode 3 Xenon-Free when Xenon values indicate Xenon is beginning to add positive reactivity or if Xenon values cannot be obtained and the Shutdown Banks are inserted.
 - 3) Added note for step requiring expected Xenon values directing the reader to perform Step 3.7.b.2) if these values cannot be obtained from Reactor Engineering.
 - 4) Amended step where expected values for Xenon are unknown and the existing value is diminishing to verify Shutdown Banks are withdrawn. If Shutdown banks are inserted at this point, it would be expected to borate to Mode 3 Xenon-free.

CHG
B

- | | | |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 5) | Added step to require the Operator to borate the RCS to Mode 3 Xenon-free should existing values for Xenon used to determine Shutdown Margin become unavailable. | CHG
B |
| 6) | Placed the caution concerning Shutdown Banks being withdrawn when xenon decay is occurring on the Reference page. Removed this caution from the text. | |
| 7) | Added step to block both Source Range High FLux At Shutdown Alarms following the trip of all rods performed in Step 3.3 | |

6.13 Revision 11, Change C summary:

- | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| a. | Deleted Attachment II for monitoring Source Range counts prior to the resetting of the Hi Flux at Shutdown Alarm. Changed Step 3.9 into monitor Source Range Counts per SOP-404 Excore Nuclear Instrumentation System. | CHG
C |
| b. | Per procedure feedback, changed Note 2.0 into two notes, Note 2.0 and Note 2.0 through 4.0. The purpose of this division is to make the portions of the note applicable to the correct steps. | |
| c. | Reworded Note 3.3.d and e to remove ambiguity concerning the expectation for when to trip the Reactor should boration prior to the trip be desired. | |
| d. | Changed Bank Overlap in Step 3.5.b.4) from 100 Steps to 102 Steps due to ECR70370. | |
| e. | Removed directions for maintaining shutdown margin in Mode 3 during Xenon decay from this GOP as they are incorporated in STP-134.001. | |

SIGN-OFF IDENTIFICATION LIST

[illegible]

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-A-002

PERFORM A QPTR CALCULATION

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

TASK:

TASK STANDARD:

QPTR has been calculated within 0.01 of actual QPTR value and identified as within Technical Specifications (<1.02) per STP-108.001.

PREFERRED EVALUATION LOCATION	PREFERRED EVALUATION METHOD
CLASSROOM	PERFORM

REFERENCES:

TOOLS: CALCULATOR
STP-108.001
DETECTOR CURRENT VALUES HANDOUT

EVALUATION TIME 20 TIME CRITICAL No 10CFR55: 41(b)2

CANDIDATE: TIME START
TIME FINISH

PERFORMANCE RATING: SAT LNSAT:
QUESTION GRADE PERFORMANCE

EXAMINER: SIGNATURE DATE
COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power.

INITIATING CUES: The Shift Supervisor **directs a Licensed** Operator to perform a QPTR surveillance test, per STP-108 001. Due to IPCS being out of service.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 200% power.

INITIATING CUES: The Shift Supervisor directs a Licensed Operator to perform a QPTR surveillance test, per STP-108.004. Due to IPCS being out of service.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
No **No** Review Precautions of STP-108.001

STEP STANDARD:

Operator reviews precautions and initials the first blank on page 1 of Attachment I, STP-108.001

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 2
No No Reviews initial conditions of STP-108.001

STEP STANDARD:

Operator reviews precautions section of STP-108 001 and initials the second blank on page 1 of Attachment I STP-108.001.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 3
No No Determine method of QPTR calculation to be used.

STEP STAXDARD:

Operator determines Manual calculation per step 6.2 will be used, due to IPCS not being available. Operator circles "Step 5.2 on page 1 of Attachment I, STP-108.001.

CUES:

Cue operator if asked: All Power Range Instruments are operational.

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 4

Yes No Record the expected detector current for 100% power for each excore detector using VCS curve book Figure V-3A.

STEP STANDARD:

Records the detector current values for 100% power from VCS curve book Figure V-3A

CUES:

If the JPM is being performed in the plant control room, after the student has satisfactorily demonstrated that they knew where to obtain the values the evaluator should give the student the handout sheet for FIGURE V-3A with the expected detector currents for 100% power.

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 5

No No At the NI panel: ensure all detector's range selector switches are in the same scale.

STEP STANDARD:

Verifies all detector range selector switches are selected to 4000 micro amps/slow

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 6

Yes Yes Read the actual excore detector readings and record on Attachment II of STP-108.001.

STEP STANDARD:

Reads actual excore detector readings for all NIs and records on Attachment I of STP-708.004

CUES:

If the JPM is being performed in the plant control room, after the student has satisfactorily demonstrated that they know where to obtain the values the evaluator should give the student a handout sheet with detector current values.

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 7

No No Read reactor power and control bank "D" position and record on Attachment II of STP-108.001.

STEP STANDARD:

Reads reactor power and control rod bank "D" position, records on Attachment II of STP-108.001

CUES:

If JPM is performed in classroom. Cue operator when asked: Reactor power as read on NI's =100% Control Bank D position = 230 steps

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 8

Yes Yes Calculate maximum QPTR per Attachment I and record data on Attachment II.

STEP STANDARD:

Calculates maximum QPTR "1.00 to 1.09" (allowable range for handout values) per STP-108.001, Attachment II and records QPTR for upper and lower core sections.

CUES:

Calculation that falls within allowable range is required to satisfy this step

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 9

Yes Yes Determines if the QPTR is within specifications.

STEP STANDARD:

Determines calculated QPTR to be within T.S. limit of 1.02. Operator initials Acceptance criteria met on page 1 of Attachment I, STP-108.001

CUES:

If necessary, prompt the operator to state whether or not the QPTR is acceptable.

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-A-002

DESCRIPTION: PERFORM A QPTR CALCULATION

IC SET: 173

INSTRUCTIONS:

1. Insert the following overrides:

IND-NI048	Analog Value=310	N-41 Detector A (set up 312 for indicated 310)
IND-NI049	Analog Value=331	N-41 Detector B

IND-NI084	Analog Value=335	N-42 Detector A
IND-NI 085	Analog Value=364	N-42 Detector B (set up 397 for indicated 364)

IND-NI099	Analog Value=317	N-43 Detector A
IND-NI100	Analog Value=347	N-43 Detector 5

IND-NI135	Analog Value=389	N-44 Detector A
IND-NI 136	Analog Value=377	N-44 Detector E (set up 378 for indicated 377)

2. Check that NI's all indicate 100%, adjust pets as required

Note: Due to power supply noise N-42 detector B (right side) might be fluctuating between 363-365.

COMMENTS:

Thursday, April 08, 2004

Page 8 of 8

KEY

N-41	DETECTOR A	CURRENT	1.02	310	302.39	1.03	EXPECTED UPPER CURRENT AT 100%
	DETECTOR A	CURRENT	1.025				
N-42	DETECTOR A	CURRENT	1.02	335	326.60	1.03	EXPECTED UPPER CURRENT AT 100%
	DETECTOR A	CURRENT	1.026				
N-43	DETECTOR A	CURRENT	1.01	317	311.63	1.02	EXPECTED UPPER CURRENT AT 100%
	DETECTOR A	CURRENT	1.017				
N-44	DETECTOR A	CURRENT	1.02	389	380.88	1.03	EXPECTED UPPER CURRENT AT 100%
	DETECTOR A	CURRENT	1.021				
SUM OF NORMALIZED UPPER READINGS			1.018	4.07	TO 4.11	=	TO
NO OF DETECTORS			4				
HIGHEST NORMALIZED UPPER READING			1.02	1.03	TO		
AVERAGE NORMALIZED UPPER READING			1.018	TO	1.028	=	1.01

MAXIMUM QUADRANT POWER TILT RATIO: 1.00 TO 1.01

(The Quadrant Power Tilt Ratio shall not exceed 1.02)

PERFORMED BY: _____

Date/Time _____

BANK D POSITION: _____

(IPCS equivalent if U9005 unavailable or NI's if IPCS unavailable)

U9005 Rx PWR ROLLING 15 MIN. AVERAGE: _____

N-41	DETECTOR B	CURRENT	1.03	331	320.21	1.04	EXPECTED LOWER CURRENT AT 100%
	DETECTOR B	CURRENT	1.034				
N-42	DETECTOR B	CURRENT	1.03	364	352.12	1.04	EXPECTED LOWER CURRENT AT 100%
	DETECTOR B	CURRENT	1.034				
N-43	DETECTOR B	CURRENT	1.02	347	338.74	1.03	EXPECTED LOWER CURRENT AT 100%
	DETECTOR B	CURRENT	1.024				
N-44	DETECTOR B	CURRENT	1.03	377	365.76	1.04	EXPECTED LOWER CURRENT AT 100%
	DETECTOR B	CURRENT	1.031				
SUM OF NORMALIZED LOWER READINGS			1.028	4.11	TO 4.15	=	TO
NO OF DETECTORS			4				
HIGHEST NORMALIZED LOWER READING			1.03	1.04	TO		
AVERAGE NORMALIZED LOWER READING			1.028	TO	1.038	=	1.01

JIP ID: NI SYSTEM: NI TRAIN: END DATE: 04/21/04
EQUIPMENT NAME: NUCLEAR INSTRUMENTATION
TSK DSC: QPTR CALCULATION DEPT: 527
INSTR: %
LST
REV
COM

***** * INITIAL TEST * *****
P R SIGNATURE / DATE * SIGNATURE / DATE
R E N/A ST1 / / / *
E V N/A ST2 / / / *
T I N/A ST3 / / / *
E E S/S SS_PRENOTF / / / *
S W
T S

***** * RETEST * *****
D DESCRIPTION: *
E INITIAL/DATE / * INITIAL/DATE /
F TEST FAILURE YES / NO *
T ACTION TAKEN: *
E *
C *
I RESP. SUPVR. / *
C TEST FAILURE YES / NO * YES / NO
Y T/S FAILURE YES / NO R&R NO: * YES / NO R&R NO.
SHIFT SUPVR. *

P TEST PERF S/U / * S/U /
O R S/S SS_PSTAUTH S/U / * S/U /
S E RESP SUPVR. S/U / * S/U /
T V N/A ST6 S/U / * S/U /
E W N/A ST7 S/U / * S/U /
S S COORD I&C P&S S/U / * S/U /
T

RWP REQUIRED: N RAD WORK PERMIT: NO
RED TAG REQUIRED: N RED TAG NUMBER:
R&R REQUIRED: R&R NUMBER:
RETEST INFORMATION:

STP NUMBER STTS NUMBER

COMMENTS: *
*
*
*
*

STEP DESCRIPTION
000 001 QPTR CALCULATION

TRADE QC DEPT
OPS 527

SCHEDULE START: __/__/__

SCHEDULE COMPLETE: __/__/__

QC INSP NUM:

NEED DATE: 04/21/04

STEP INSTRUCTIONS

QPTR CALCULATION
DAY SHIFT

ADDITIONAL TEXT: N

TOTAL STEPS: -

MR EXISTS: N

PR EXISTS: N

PO EXISTS: N

SAFETY REQ:

EQUIP REF:

PLANNED BY: MB13046

__/_/___

CALLBACK REQUIRED: __

REP-TAG REMOVED: __

DATE STARTED: __/__/__ TIME: __:__

DATE COMPLETED: __/__/__ TIME: __:__

COMPLETION REMARKS

TRADE	BADGE	DATE	REG HRS	OT HRS	OT CODE	DIFF CODE
_____	_____	__/__/__	__:__	__:__	____	____
_____	_____	__/__/__	__:__	__:__	____	____
_____	_____	__/__/__	__:__	__:__	____	____
_____	_____	__/__/__	__:__	__:__	____	____

COMPLETED BY: _____

HISTORY DATE: __/__/__ TIME: __:__

<barcode face=a39r p

III. ADDITIONAL COMMENTS

SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
NUCLEAR OPERATIONS

FOR TRAINING
USE ONLY.

NUCLEAR OPERATIONS
COPY NO. _____

SURVEILLANCE TEST PROCEDURE
STP-108.001
QUADRANT POWER TILT RATIO
REVISION 7

SAFETY RELATED

Original signed by D. A. Baker 11-26-01
DISCIPLINE SUPERVISOR DATE

Original signed by S. Zarandi 11-29-01
APPROVAL AUTHORITY DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	04/29/02					

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
1.0 <u>PURPOSE/SCOPE</u>	1
2.0 <u>PRECAUTIONS</u>	1
3.0 <u>TEST EQUIPMENT</u>	1
4.0 <u>TEST FREQUENCY</u>	1
5.0 <u>INITIAL CONDITIONS</u>	2
6.0 <u>PROCEDURE</u>	2
7.0 <u>DATA REQUIREMENTS</u>	5
8.0 <u>ACCEPTANCE CRITERIA</u>	5
9.0 <u>REFERENCES</u>	5
20.0 <u>REVISION SUMMARY</u>	5

ATTACHMENTS

- Attachment I - Test Data Sheet
- Attachment II - Step 6.2 Test Data Sheet
- Attachment III - Step 6.3 Test Data Sheet

CHG
A

1.0 PURPOSE/SCOPE

- 1.1 This procedure defines methodology to calculate Quadrant Power Tilt Ratio and to verify that Quadrant Power Tilt Ratio meets Technical Specification Surveillance Requirements 4.2.4.1 and 4.2.4.2.
- 4.2 This procedure is controlled by 10CFR50.65a(4) and 10CFR50, Appendix B. A 10CFR50.59 review is not required.

NOTE 2.0 through 8.0

An asterisk (*) preceding a step or section indicates that data or a signoff is required on the attachment identified within that step or section.

***2.0 PRECAUTIONS**

- 2.1 Caution should be used whenever a NIS drawer is opened, especially when one channel is out of service.
- 2.2 If Nuclear Instrumentation calibration is in progress, it may be necessary to use the manual method due to IPCS not being updated.

3.0 TEST EQUIPMENT

- 3.1 Digital Voltmeter (optional).

4.0 TEST FREQUENCY

- 4.1 At least once every seven days when operating above 50% Rated Thermal Power with QPTR alarm operable.
- 4.2 At least once every 12 hours during steady state operation when operating above 50% Rated Thermal Power with QPTR alarm inoperable.
- 4.3 At least once per 12 hours when operating above 75% Rated Thermal Power with one Power Range channel inoperable.

***5.0 INITIAL CONDITIONS**

- 5.1 The plant is in Mode 1 operation above 50% Rated Thermal Power
- 5.2 At least three excore Power Range detectors are operable.

NOTE 6.0

- a. The preferred method of determining the Quadrant Power Tilt Ratio is by obtaining **a** Tilting Factors review from the Integrated Plant Computer System (IPCS) per Step 6.1. If the IPCS is not available, then the Power Range Channels should be used per Step 6.2.
- b. If one of the Power Range Channels is inoperable, perform Step 6.3. Reactor Engineering will confirm that the normalized symmetric power distribution is consistent with the indicated QPTR per Step 6.3.

6.0 PROCEDURE

- 6.1 Obtain a printout of Tilting Factors excore data from the Integrated Plant Computer System **as** follows:
 - a. Enter turn-on-code **TFMMI** at the computer console.
 - b. Depress RETURN.
 - c. Depress function key **F3** to display **REVIEW/PRINT**
STP-108.001 EXCORE/INCORE INSTRUMENTATION
 - d. Depress function key **F2** to select the **PRT EXCORE** function.
 - e. Select the desired printer location for printout.
 - *f. Complete Attachment I and attach to the STTS sheet.
 - g. Attach the printout to the STTS sheet.
- 6.2 Determine Quadrant Power Tilt Ratio using Power Range Channels as follows:
 - *a. Record the expected detector current for 100% power for each excore detector on Attachment II, from V.C. Station Curve Book Figure V-3A. (Detector A is the upper detector; Detector B is the lower detector.)

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CHG
A

- b. Perform the following at the Nuclear instrumentation Panel:
- 1)** Ensure that all detector range selector switches are selected to 4000 μ A/SLOW.

NOTE 6.2.b.2)

If the digital meter reading is unavailable or unreliable, then the test points inside the drawer can be read using a DVM.

- *2)** Record the actual excore current readings from the digital meters on Attachment II.
 - *3)** Record Reactor Power on Attachment II.
 - *c.** Record Control Bank D rod position on Attachment II.
 - d.** Perform the following calculations for upper and lower detectors on Attachment II:
 - 1)** Divide actual readings by expected currents to get normalized readings.
 - 2)** Divide the sum of the normalized readings by the number of detectors to obtain average normalized reading.
 - 3)** Divide the highest normalized reading by the average normalized reading to obtain quadrant power tilt ratio.
 - *4)** Record the larger of the upper and lower quadrant power tilt ratio.
- *e.** Complete Attachment I and attach Attachments I and II to the STTS sheet.

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NOTE 6.3

Step 6.3 is performed when one Power Range Channel is inoperable. Reactor Engineering personnel will assist in completion of Steps 6.3.a through 6.3.f. All data is entered on Attachment III.

CHG
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- 6.3 If one Power Range Channel is inoperable, verify the Quadrant Power Tilt Ratio indication is consistent with the measured Incore Tilt as follows:
- a. If the IPCS is available, perform the following:
 - 1) Delete from processing the following computer points associated with the failed Power Range Channel:
 - a) N41: N0041A, N0042A, N0049A.
 - b) N42: N0043A, N0044A, N0050A.
 - c) N43: N0045A, N0046A, N0051A.
 - d) N44: N0047A, N0048A, N0052A.
 - 2) Obtain a printout of Tilting Factors excore data from the Integrated Plant Computer System per Step 6.1.
 - 3) When the inoperable Power Range Channel is restored, restore to processing the computer points deleted from processing in Step 6.3.a.1).
 - b. If the IPCS is not available, determine Quadrant Power Tilt Ratio using Power Range Channels per Step 6.2.
 - c. Perform a partial flux map using two sets of four symmetric thimbles or a core power distribution measurement per STP-212.001.
 - *d. Enter the maximum Incore Tilt value and core power distribution measurement number.
 - *e. Enter the maximum Incore Tilt value and core power distribution measurement number from the calibration power distribution measurement (i.e., the measurement used to develop the present excore calibration currents).

- *f. Verify the difference between incore tilts in d. and e. above is similar in magnitude to the current indicated QPTR.
- *g. Complete Attachment I and attach Attachments I and III to the STTS sheet.

CHG
A

7.0 DATA REQUIREMENTS

- 7.1 All required data will be entered on applicable Test Data Sheets.
- 7.2 All Pest Data Sheets and/or Computer printouts will be attached to the STTS

***8.0 ACCEPTANCE CRITERIA**

- 8.1 The Quadrant Power Tilt Ratio shall not exceed 1.02.

9.0 REFERENCES

- 9.1 V.C. Summer Technical Specification 3/4.2.4.
- 3.2 1MS-94B-016-1. Westinghouse: Nuclear Instrumentation System.
- 9.3 STP-212.001, Core Power Distribution Measurement.
- 9.4 V.C. Summer Station Curve Book.

10.0 REVISION SUMMARY

- 10.1 Incorporated Changes A and B of Revision 6.
- 10.2 Updated format.
- 10.3 Incorporated new computer addresses for N41, N42, N43, and N44.

FOR TRAINING
USE ONLY

STP-108.001
ATTACHMENT I
PAGE 1 OF 1
REVISION 7
STTS NO. _____
CHANGE A

TESTDATASHEET

2.0 PRECAUTIONS reviewed: _____
Initials

5.0 INITIAL CONDITIONS met: _____
Initials

6.0 Method used (circle one):
Step 6.1 Step 6.2 Step 6.3

8.0 ACCEPTANCE CRITERIA met: _____
Initials

PERFORMED BY: _____ DATE/TIME: _____

FOR TRAINING USE ONLY

STP-108.001
ATTACHMENT II
PAGE 1 OF 1
REVISION 7
STTS NO. _____
CHANGEA .

STEP 6.2 TEST DATA SHEET

N-41	DETECTOR A CURRENT	_____ =
	EXPECTED UPPER CURRENT AT 100%	_____ =
N-42	DETECTOR A CURRENT	_____ =
	EXPECTED UPPER CURRENT AT 100%	_____ =
N-43	DETECTOR A CURRENT	_____ =
	EXPECTEDUPPEW CURRENT AT 100%	_____ =
N-44	DETECTOR A CURRENT	_____ =
	EXPECTED UPPER READING AT 100%	_____ =
SUM OF NORMALIZED UPPER READINGS		_____ =
NO. OF DETECTORS		_____ =
HIGHEST NORMALIZED UPPER READING		_____ =
AVERAGE NORMALIZED UPPER READING		_____ =

N-41	DETECTOR B CURRENT	_____ =
	EXPECTED LOWER CURRENT AT 100%	_____ =
N-42	DETECTOR B CURRENT	_____ =
	EXPECTED LOWER CURRENT AT 100%	_____ =
N-43	DETECTOR B CURRENT	_____ =
	EXPECTED LOWER CURRENT AT 100%	_____ =
N-44	DETECTOR B CURRENT	_____ =
	EXPECTED LOWER CURRENT AT 100%	_____ =
SUM OF NORMALIZED LOWER READINGS		_____ =
NO. OF DETECTORS		_____ =
HIGHEST NORMALIZED LOWER READING		_____ =
AVERAGE NORMALIZED LOWER READING		_____ =

MAXIMUM QUADRANT POWER TILT RATIO: _____
(The Quadrant Power Tilt Ratio shall not exceed 1.02)

PERFORMED BY: _____
Date/Time

U9005, Rx PWR ROLLING 15 MIN. AVERAGE: _____
(IPCS equivalent if U9005 unavailable or NI's if IPCS unavailable)

BANK D POSITION: _____

100-290000-003

DESIGN DATA									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

ESSENTIAL

NUCLEAR SAFETY RELATED
INFORMATION
DO NOT REMOVE
OR DESTROY
THIS INFORMATION

PLANT FLOOR 2.0-10 UNIT 2

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

CLASS 1

- NOTES:
1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1.
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 6. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1.
 7. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1.
 8. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1. THE DRAWING IS BASED UPON THE ELECTRICAL SCHEMATIC OF THE PLANT FLOOR 2.0-10 UNIT 2, SHEET 3 OF 3, REVISION 1.
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V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-A-003

TAGOUT "C" CHARGING PUMP

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 8

TASK:

TASK STANDARD:

'C' CHG/SI Pump is tagged out IAW SAP-201. The pump is hydraulically isolated from the CVCS system, electrical power is removed from pump and valve motors, and pump is vented and drained. The correct tag hang sequence is identified. The use of Human Performance Tools (3-way communications, self-checking, peer checking, phenetic alphabet, etc.) and industrial safety practices.

PREFERRED EVALUATION LOCATION

CLASSROOM

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

TOOLS: SAP-201
SAP-201, ATTATCHMENT IA
SAP-201, ATTATCHMENT IB
SAP-201, ATTATCHMENT IC
D-302-675, Chemical and Volume Control
ELECTRICAL FEEDER LIST FOR 1DA, 1DB, and 1DB2Y
SOP-102 VALVE LINEUPS
HIGHLIGHTER

EVALUATION TIME 30 **TIME CRITICAL** NO **10CFR55:** 45.13

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT: UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I **WILL** EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in Mode 1. "C" CHG/SI PUMP (XPP0043C) has developed a significant leak from the flex gasket on the pumps balancing line. Mechanical Maintenance has requested an "Emergency Repair" tagout, under MWR 041234, to replace flex gasket.

INITIATING CUES: Shift Supervisor directs you to generate a tagout for the 'C' CHG/SI Pump to facilitate flex gasket replacement. **"Fill in" the portion(s)** of the Component Log necessary to prepare this system for the mechanical maintenance repair.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 8

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is in Mode 1. "C CHG/SI PUMP (XPP0043C) has developed a significant leak from the flex gasket on the pumps balancing line. Mechanical Maintenance has requested an "Emergency Repair" tagout, under MWR 541234, to replace flex gasket.

INITIATING CUES: Shift Supervisor directs you to generate a tagout for the 'C CHG/SI Pump to facilitate flex gasket replacement. "Fill in" the portion(s) of the Component Log necessary to prepare this system for the mechanical maintenance repair.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ

STEP: 1

STEP STANDARD:

No No TAG - Enter the sequential tag number.

See completed Attachment IC.

CUES:

Tag number is not critical, only the sequence is.

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 2

STEP STANDARD:

No No **ISSUED TO** - Check blocks for which discipline each component is tagged.

See completed Attachment IC.

cum:

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 3

STEP STANDARD:

No No **HOLD TAG INST** - Enter a check mark if a Hold **Tag** is to be placed on a control panel component.

See completed Attachment IC.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 4

Yes No

COMPONENT I.D. - Enter the complete CHAMPS identification number of the component being tagged.

STEP STANDARD:

See completed Attachment IC.

CUES:

SAT

If operator wants to include nomenclature in addition to the valve number, examiner should ask "Where can you obtain the nomenclature?" Operator should answer "CHAMPS. If so, examiner should say, "CHAMPS is unavailable, where else can you find the nomenclature?" Operator should answer "SOP valve lineups." When examinee volunteers "valve lineups" examiner should hand the operator SOP-102 valve lineups..

UNSAT

COMMENTS:

CR SEQ STEP: 5

No No

PLANT LOC - Enter the specific plant location of the component being tagged.

STEP STANDARD:

See completed Attachment IC.

CUES:

SAT

For this JPM, this building and elevation is all that is required for component location.

UNSAT

COMMENTS:

CR SEQ STEP: 6

Yes No

REQ'D TAG POSIT - Enter the position in which the component is to be tagged.

STEP STANDARD:

See completed Attachment IC.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 7

STEP STANDARD:

Ye No

INST SEQ - Enter sequence that tags are to be installed. If no sequence is needed, place a 1 in each **INST SEQ** block. If only some tags require a sequence, number these tags in sequence starting with 1 and ending with all tags not requiring sequence having the same number, for example, 1, 2, 3,4, 4,4.

See completed Attachment IC.

CUES:

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-A-003

DESCRIPTION: TAGOUT "C" CHARGING PUMP

IC SET:

INSTRUCTIONS:

COMMENTS:

KEY

COMPONENT LOG

TAG	ISSUED TO				HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ
		E	M	I&C					
1	GROUP		X			XSW1DA 06	IB-463	BREAKER OPEN/ RACKED DOWN	1 OR 2
	CLEAR				X	CHARGING INJ PUMP C XPP0043C-CS			
2	GROUP		X			XSW1DB 14	IB-436	BREAKER OPEN/ RACKED DOWN	1 OR 2
	CLEAR				X	CHARGING INJ PUMP C XPP0043C-CS			
3	GROUP		X			XMC1DB2Y 07AD	AB-463	BREAKER OPEN	3 OR 4
	CLEAR				X	CHG PUMP C MINIFLOW ISOL XVT8109C-CS			
4	GROUP		X			XVG08485C-CS	AB-388	CLOSED	3 OR 4
	CLEAR					CHARGING/SI PUMP C DISCHARGE VALVE			
5	GROUP		X			XVT08109C-CS	AB-388	CLOSED	5
	CLEAR					CHG PUMP C MINIFLOW ISOL			
6	GROUP		X			XVG08471C-CS	AB-388	CLOSED	6
	CLEAR					CHARGING/SI PUMP C SUCTION VALVE			
7	GROUP		X			XVT00029-CV	AB-388	OPEN	7
	CLEAR					CHG/SI PUMP C DISCH HEADER DRAIN VALVE			

KEY

TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ
		E	M	I&C	OTHER					
8	GROUP		X				XVT08512-CS CHG/SI PUMP C SUCTION HEADER VENT VALVE	AB-388	OPEN	8
	CLEAR									
	GROUP									
	CLEAR									
	GROUP									
	CLEAR									
	GROUP									
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	CLEAR									
	GROUP									
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	GROUP									
	CLEAR									



Flex Gasket Leak
Location

FOR TRAINING
USE ONLY

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ATTACHMENT IC
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TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
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TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
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TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
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TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
	GROUP																	
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TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
	GROUP																	
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SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION

NUCLEAR OPERATIONS

FOR TRAINING
USE ONLY.

NUCLEAR OPERATIONS
COPY NO. _____

STATION ADMINISTRATIVE PROCEDURE

SAP-201

DANGER TAGGING

REVISION 8

SAFETY RELATED

Original Signed by: T.A. Stokes
DISCIPLINE SUPERVISOR

02/24/00
DATE

Original Signed by: Bruce Williams
APPROVAL AUTHORITY

5115100
DATE

RECORD OF CHANGES

CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE	CHANGE LETTER	TYPE CHANGE	APPROVAL DATE	CANCELLATION DATE
A	P	06/07/01		E	P	11/06/03	
B	P	05/19/03					
C	P	07/29/03					
D	P	09/29/03					

INFORMATION USE

Procedure May Be Performed From Memory.
User Retains Accountability for Proper Performance.

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ATTACHMENTS

Attachment IA	-	Danger Tag Log
Attachment IB	-	Component Realignment and Verification Log
Attachment IC	-	Component bog
Attachment II		Danger Tag
Attachment III	-	Danger Tag Index Sheet
Attachment IV	-	Danger Tagout Request Form
Attachment V	-	Danger Tag Audit Sheet
Attachment VI	-	Request for Electrical Component Operation

TABLE OF CONTENTS

ATTACHMENTS

Attachment VII	-	Hold Tag
Attachment VIII	-	instructions for Initial Information on Attachments IA, IB, IC, II, and VII
Attachment IX	-	General Tagging Instructions
Attachment X	-	Fuse Hold Tag
Attachment XI		Danger Tag, Shop Sign-On Sheet
Attachment XII	-	Annual Audit

CHG
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1.0 PURPOSE

- 7.1 Provide a safe, reliable, and uniform method of controlling equipment to protect personnel and/or equipment.
- 1.2 Provide a safe and orderly method of component realignment after maintenance is complete.

2.0 SCOPE

- 2.2 This procedure is applicable to all individuals in areas of the Virgil C. Summer Nuclear Station. Areas not within this scope are as follows:
 - 2.1.1 Equipment that is solely assigned to a Station group other than Operations, such as that in the Machine Shop, Electrical Shop, and Instrument Shop. Such equipment is under the control of the responsible supervisors and they may establish their own procedures for ensuring the safety of their personnel and equipment consistent with the South Carolina Electric and Gas Company Safety Manual. However, this procedure still applies for isolation of electrical distribution centers or piping systems supplying liquid and gases to the shop areas.
 - 2.1.2 All components in the main switchyard shall be tagged following the instructions in the SCE&G Safety Manual using the SCE&G dispatchers tag program (See Switching and Tagging Rules booklet) but in addition, may be tagged under this procedure.
 - 2.1.3 Fairfield Pump Storage Facility.
 - 2.1.4 A separate tagging program controls equipment located in buildings outside of the protected area, including the Security Building.
- 2.2 10CFR50 Appendix B, 29CFR1910.147, and 29CFR1910.269 apply to this procedure. A 10CFR50.59 review is not required.

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3.0 REFERENCES

- 3.1 INPO 87-002, Good Practice OP-203, Tagging Procedures for the Protection of Personnel, Components and Systems.
- 3.2 SAP-102, Statement of Responsibilities, Operations
- 3.3 SAP-753, Component/Condition Verification.
- 3.4 SAP-202, Caution Tagging.
- 3.5 SAP-205, Status Control and Removal and Restoration of Equipment.
- 3.6 SAP-601, Application, Scheduling and Handling of Maintenance Activities.
- 3.7 South Carolina Electric and Gas Company Safety Manual.
- 3.8 OAP-106.3, Locked Valve Program.

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4.0 DEFINITIONS

- 4.5 Danger Tag, Shop Sign-On Sheet (Attachment XI) – Identifies the Responsible Supervisor, Alternate(s) for Clearance and Individuals performing maintenance activities within the boundaries of the listed Danger Tag, for a given work group or shop. Additionally it denotes the specific work order and individuals actively working those documents.

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|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 4.6 | Designated Alternate - The Duty Shift Supervisor's designated alternate is the Control Room Supervisor for all portions of this procedure except Section 6.5. The designated alternate for Step 6.1.1 is any current Operations Group Shift Supervisor or Control Room Supervisor. | CHG
B |
| 4.7 | Hold Tag (Red)-(See Attachment VII) is used on control panels to inform the operator that the equipment is danger tagged preventing its use. During complex tagouts when components are being aligned in coordination with the sequence of the Red Tags, Hold Tag installation sequence is at the discretion of the Control Room Supervisor. Hold Tags are for information only and provide no protection or safety. | CHG
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| 4.8 | Individual – That person, either plant personnel, contractor, manufacturers field representative, etc. engaged in maintenance activities under a station work order, NCN, CER, or other work control process and protected from hazardous energy sources by danger tags. | CHG
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| 4.9 | Isolated - Specific equipment or a portion of a system has been placed in a specific configuration for: | CHG
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| 4.9.1 | Performing maintenance or testing. | CHG
B |
| 4.9.2 | Preventing operations that could result in danger to personnel or equipment. | CHG
B |
| 4.9.3 | Compliance with station procedures or Technical Specifications | CHG
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| 4.10 | Isolation Verification – A verification of the Danger Tagout by the Responsible Supervisor or Individual to ensure hazardous energy sources are isolated and residual energy dissipated. This verification should include but is not limited to approved system drawings, procedures, and Electrical Feeder List. A field walk down of applicable boundary isolations shall be performed. An individual performing the maintenance activity shall perform a field walk down of applicable system vents or drains and grounding devices. For work on electrical circuits that normally contain hazardous voltages, verification with instrumentation or tests and observations shall be performed. | CHG
B |

4.11 Qualified Danger Tagger

- 4.1.1.1 A member of the Operations Department who has received training in this procedure and has sufficient knowledge of the systems and equipment as determined by the Operations Supervisor to safely attach and remove safety tags and manipulate equipment without endangering personnel or equipment.
- 4.1.1.2 All Qualified Danger Taggers' names will be kept on a qualified danger taggers list in the Operations public folder and updated as required by the Operations Supervisor.
- 4.1.1.3 Electrical Maintenance Personnel must be qualified per SAP-153 to perform independent verification, to verify Return to As Found Position on Attachment VI, Request for Electrical Component Operation.
- 4.1.1.4 All persons specifically qualified to perform as "Human Red Tags" under Attachment VI, Request for Electrical Component Operation, will likewise be listed in the Operations public folder and updated as necessary by the Operations Supervisor.

4.12 Responsible Supervisor - One of the following persons who is responsible for having the required maintenance performed:

- 4.12.1 Supervisor responsible for the job.
- 4.12.2 Lead individual responsible for the job.
- 4.12.3 The planner responsible for the discipline work.
- 4.12.4 The Duty Shift Supervisor, for operations tagouts

4.13 Safety Tags - The two types are the Danger Tag (Red), and the Caution Tag (Yellow).

- 4.13.1 Danger Tag (Red) - (Attachment II) A warning device affixed to a component as an identifier that the position or condition of that component is strictly controlled. Other devices such as locks, seals, chains, blocks, etc. may supplement the Danger Tag, but the Danger Tag is the absolute controlling factor.
- 4.13.2 Caution Tag (Yellow) - (refer to SAP-282) is used where special precautions, instructions, training, or authority is required to operate equipment, valves, switches, or devices to prevent a personnel hazard or equipment damage.

CHG
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5.0 RESPONSIBILITIES

- 5.1 This procedure is to be followed by all plant personnel: contractors, manufacturer's field representatives, etc., engaged in work on plant equipment that is under the responsibility of the Operations Group. Specific responsibilities include absolute compliance with the following requirements:

5.1.1

Danger Tag physically attached is not permitted at any time. An exception to this policy is circuit breakers that have had the Red Tag placed on the breaker access panel or cubical door. It is permissible to remove or install the breaker assembly from the electrical switchgear.

CHG
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5.1.2

5.1.3

- 5.2 The Danger Tagout Requestor will be responsible for ensuring that:

5.2.1 Requested tagout boundaries are adequate for isolating the component or system being worked.

5.2.2 Requested tagout boundaries are not excessive or confusing.

5.2.3 Assistance from Operations Group is requested when a **lack** of system or component operation knowledge prevents determining safe and adequate isolation boundaries.

5.2.4 Safety reminders or special conditions are provided to the tagout preparer at the time of request.

5.2.5 Identification of instrumentation that is affected by the work but not clearly addressed by the work summary.

CHG
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or component operation prevents determining safe and adequate isolation boundaries or effects of instrument isolation on system operation.

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- 5.3.6 Tagouts are prepared using the guidelines of Attachment IX, General Tagging Instructions.

NOTE 5.4

The Administrative Supervisor (Shift Supervisor and/or Control Room Supervisor) can also assume responsibility per Section 5.4 during addition or reinstallation of tags per Sections 6.2 and the partial clearance of a tagout per Sections 6.4 during Extensive Outages only.

- 5.4 The Duty Shift Supervisor will be responsible for ensuring that:

- 5.4.1 His review prior to authorization to install a tagout constitutes an independent verification of the tagout preparers' work to ensure no adverse impact on current plant operation or equipment (Step 6.1.3)
- 5.4.2 His review prior to work authorization constitutes an independent verification per SAP-153, Component/Condition Verification, of the tagout preparers' work to ensure the adequacy and accuracy of the tagout for work assigned (Step 6.1.11).
- 5.4.3 Special conditions or instructions are completed prior to work authorization.

CHG
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- 5.4.4 Tag installation sequence **is** correct for safe and proper system or component removal from service.
 - 5.4.5 Work is stopped and tagouts returned to the Control Room when there is reason to suspect that the adequacy or safety level of the tagout has been reduced.
 - 5.4.6 Special conditions are understood and complied with during tag removal or tagout clearance.
 - 5.4.7 Tag removal sequence is correct for safe and proper system or component restoration.
 - 5.4.8 Required operable position is correct for operability requirements for safety related equipment.
 - 5.4.9** Required ~~operable~~ position is correct for current component or system operating conditibns for all systems.
 - 5.4.10 Every effort is expended to prevent removing tags or clearing tagouts in the absence of the Responsible Supervisor.
 - 5.4.11 Overall execution of this procedure provides a reasonable assurance for the safety of the individual working under this procedure and safe operation of the plant.
- 5.5 Individuals qualified as a Danger Tagger will be responsible for ensuring that:
- 5.5.1 Special conditions and safety reminders are adhered to during tagout installation and removal.
 - 5.5.2 Proper authorization has been granted by the Duty Shift Supervisor prior to repositioning any component or hanging and removing any tags.
 - 5.5.3 Components operate properly during repositioning
 - 5.5.4 Information for components listed on the Component Log (Attachment IC), agrees with component CHAMPS description tag.
 - 5.5.5 Full compliance with the requirements of SAP-153, Component/Condition Verification, during installation of tags or verification of position after tag removal is met.
 - 5.5.6 Fuses that are removed are tagged with a Fuse Hold Tag (Attachment X) and stored in the fuse locker located in the 463' Control Building.

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5.6 The Responsible Supervisor will ensure that:

5.6.1 Work does not start until he has:

- A. Reviewed the tagout to verify that it has all the requested tags or approved any changes.
- B. Reviewed the tagout to ensure that the system or component has been safely isolated, system vented and drained, or hazardous stored energy discharged for the job to be performed. This review should include but is not limited to approved system drawings, procedures, and the Electrical Feeder List.
- C. Concurred that the Safety Reminder or special instructions adequately reflect hazards the worker may encounter. These hazards and methods of minimizing them should be discussed during the pre-job brief.
- D. Possession of the yellow copy of the Danger Tag Log and Component bog sheets.
- E. A field walk down Isolation Verification of applicable tagged boundary isolation performed.

CHG
E

5.6.2 Only the specified work; test or operation isolated by the Tagout is performed.

CHG
E

5.6.3 Danger Tag Shop Sign-On Sheet (Attachment XI) is maintained current.

5.6.4 Work is complete or that no safety concerns exist for any remaining work before surrendering the yellow copy to Operations for clearing the Danger Tags.

5.7 All Individual(s) other than the Responsible Supervisor working a job requiring a tagout will be responsible for:

- 5.7.1 Review of the tagout concurring the danger tagged boundaries for his job.
- 5.7.2 Concurrence with the Safety Reminder(s) or Special Instructions listed on the front of the tagout.
- 5.7.3 Signing the Danger Tag, Shop Sign-On Sheet (Attachment XI) indicating concurrence with tagged boundary for his assigned work order(s).

NOTE 5.7.4

Major equipment or Refueling Outages - Some work activities may have multiple isolation boundaries, or may have individuals from multiple crafts, and/or the activity is scheduled to extend for more than one shift. In these conditions the Responsible Supervisor is responsible for ensuring the performance of the Isolation Verification of tagged components.

Each individual is assured of their right to personally verify that hazardous energy sources have been isolated and residual energy dissipated.

- 5.7.4 Prior to start of work activities (if not performed by the Responsible Supervisor) perform a field walk down Isolation Verification of applicable system boundaries, vents, drains, or grounding devices. Verification with instrumentation or tests and observations performed for work on electrical circuits that normally contain hazardous voltages to ensure isolation has been accomplished.
- 5.7.5 Notify the Responsible Supervisor if job scope expands or changes beyond that planned during work package and tagout preparation.
- 5.7.6 Operation or manipulation of Plant Equipment within the tagout boundary is permissible if controlled and tracked by the applicable maintenance procedure or, authorized by the Duty Shift Supervisor per SAP-300.
- 5.7.7 Upon completion of work activity, reassignment to another work activity, or at the end of the work shift, sign off the Danger Tag, Shop Sign-On Sheet, Attachment XI.

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6.0 PROCEDURE

6.1 Tagout preparation and installation.

NOTE 6.1.1

The following tagout requests do not require a Danger Tag Request Form:

- A. Unscheduled or emergency tagout requests.
- B. Mechanical Maintenance outage work that falls within the boundaries of an existing Outage System Tagout.

- 6.1.1 The person desiring to work on or remove from service any plant equipment shall present a Danger Tagout Request Form, Attachment IV, to the Scheduling Operations representative.

NOTE 6.1.2

During off normal working hours or for unscheduled work activities such as Priority #1 and #2 MWRs, the Shift Danger Tagger will complete the requirements of Step 6.1.2.

- 6.1.2 The Scheduling Operations representative will:

- A. Evaluate the request with respect to plant availability and impact on plant equipment.
- B. Prepare the Danger Tag Log, Component Realignment and Verification Log, Component bog and Danger Tags per Attachment VIII and Attachment IX.

CHG
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- 6.2.3 The Duty Shift Supervisor will:

- A. Review the Danger Tagout to determine if plant conditions will allow the tags to be installed.
- B. He will direct operators to place the systems or equipment in the configuration required to support hanging of the tags.
- C. Direct the Control Room Danger Tagger to complete the Tagout in preparation for Authorization.

CHG
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NOTE 6.1.4

Tagging program tagouts will be indexed automatically as part of preparation.

- 6.1.4

The Control Room Danger Tagger will:

A.

For a manually generated Danger Tagout assign the next sequence manual tagout number obtained from the Danger Tag Index.

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B

B.

C.

D.

E.

Ensure all Hold Tag(s) are identified on Attachment IC by a check mark in the Hold Tag Inst column.

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- 6.1.5

The Duty Shift Supervisor will review the complete tagout and sign the INITIAL line under SHIFT SUPERVISOR AUTHORIZATION on the Danger Tag bog, Attachment IA.
- 6.1.6

The Duty Shift Supervisor will then direct a Qualified Danger Tagger(s) to install the tagout per the installation sequence on the Component Log, Attachment IC.
- 6.1.7

The Qualified Danger Tagger(s) will:

A.

Review the Safety Reminder on the Danger Tag Log, Attachment IA, for any special conditions or warnings.

B.

Review the installation sequence (INST SEQ) and required tag positions (REQ'D TAG POSIT) on the Component Log, Attachment IC.

C.

Inform the Operator at the Controls of the components being tagged and their tagged position. For remotely operated components, the desired position will be established prior to local tag installation.

CHG
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- D. Give the associated Hold Tags to the Control Room Supervisor, or in the case of equipment operated from outside the Control Room, the person responsible for operating that piece of equipment (i.e. Building Operator, Water Treatment Plant Operator, etc.).
- E. Locate the component being tagged in the plant and compare the information on the Component bog, Attachment IC, and the component identification tag to ensure the correct component for positioning and tagging.
- F. Remove any Locking Device on a valve to be tagged (even if the valve is locked in the position required for the Danger Tag) per OAP-106.3, Locked Valve Program. Exceptions to this are noted on QAP-106.3 Attachment I (Locked Component Tracking Sheet).

CHG
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NOTE 6.1.7.G

Do not install a Danger Tag on a component that is already Danger tagged, it is only necessary to verify that the "Required Position" for the new Danger Tag matches the "Required Position" of the installed Danger Tag(s).

CHG
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- G. Place the component in the required position (REQ'B TAG POSIT) per the Component Log, Attachment IC.

NOTE 6.1.7.H

When an electrical breaker being tagged is to be removed from its cubicle, the Danger Tag should be attached to the breaker cover panel in close proximity to where the tag would be attached if the breaker were not removed.

- H. Attach the Danger Tag securely and conspicuously on the component being tagged.
 - I. Sign the Danger Tag in the INSTALLED BY block
 - J. Initial the Component Log, Attachment IC, in the INST BY block for the component tagged.
- 6.1.8 For components operated from the Control Room, the Control Room Supervisor will direct the placement of the Hold Tags by Control Room Operators. For other components, the person responsible for operating that piece of equipment will place the Hold Tags on tagged components. Hold Tags will be placed in a manner that does not obstruct the view of components that *will* remain energized.

CHG
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NOTE 6.1.9

All tags are not required to be installed prior to starting verification providing the requirements of SAP-153, Component/Condition Verification, are adhered to.

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6.1.9 A second Qualified Danger Tagger will:

- A. Perform independent verification per SAP-153, Component/Condition Verification, on each Danger Tag location and associated component's position.
- B. Sign the Danger Tag in the VERIFIED BY block
- C. Initial the Component Log, Attachment IC, in the VER **BY** block for the component verified.
- D. Verify placement of associated Hold Tags as indicated by the Component bog, Attachment IC, (HOLD TAG INST), on respective control panels, and ensure a check mark is placed in the HOLD TAG INST block.

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6.1.10 The tagout will be returned to the Duty Shift Supervisor when all authorized tags are installed and verified.

NOTE 6.1.11

The Duty Shift Supervisor's designated alternate for this step is any current Operations Group Shift Supervisor or Control Room Supervisor.

6.4.11 The Duty Shift Supervisor will:

- A. Review the tagout and ensure that all tags installed are properly documented.

NOTE 6.1.11.B

Review to ensure adequacy and accuracy of the tagout is required to complete independent verification of the tagout preparation per SAP-153, Component/Condition Verification.

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- B. Review all work documents listed on the Danger Tag Log, Attachment IA, and ensure the tagout is adequate for the work being performed.
- C. Initial the SS APPR block of Danger Tag Log, Attachment IA, beside each work document verified safe to work **by** this tagout.
- D. Grant permission to start work by signing the associated work documents per SAP-601, Application, Scheduling and Handling of Maintenance Activities.
- E. Return the tagout to the Control Room Danger Tagger.

6.1.12 The Control Room Danger Tagger will then notify the Responsible Supervisor that the tagout is ready for concurrence.

NOTE 6.1.13

The Duty Shift Supervisor is the Responsible Supervisor when tagouts are installed at his direction.

6.1.13 The Responsible Supervisor will:

- A. Review the tagout for completeness.
- B. Ensure the requirements of Step 5.6.1 have been completed.
- C. Enter the START DATE on the Danger Tag bog, Attachment IA.
- D. Sign the CONCURRENCE block on the Danger Tag Log, Attachment IA.
- E. Ensure individuals working under the Tagout sign Attachment XI.
- F. Maintain control of Attachment XI and ensure it is kept current while the Tagout is under the control of the appropriate maintenance shop.

CHG
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NOTE 6.1.14

After the original yellow copy has been issued and more than one Responsible Supervisor or discipline are involved in the tagout, the white copy will be reproduced and the copy conspicuously marked as the applicable shops yellow COPY.

Tag hog, Attachment IA, and Component Log, Attachment IC, and
Danger Tag, Shop Sign-On Sheet, Attachment XI, to each Responsible

CHG
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6.1.16 The pink copy of the Danger Tag Log, Attachment IA, Component
Realignment and Verification Log, Attachment IB, and Component Log,

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NOTE 6.2

The Administrative Supervisor (Shift Supervisor and/or Control Room Supervisor) can also assume responsibility per Section 5.4 during addition or reinstallation of tags per Section 6.2 during Extensive Outages only.

- 6.2 Amending active tagouts by either adding additional tags or reinstalling tags removed by partial clearance (Section 6.4).

NOTE 6.2.1

Only the Responsible Supervisor or discipline requiring additional tags or reinstallation of tags removed by partial clearance is required to return yellow copies.

- 6.2.1 The Responsible Supervisor(s) or discipline(s) holding the tagout will return all yellow copies of the affected tagout to the Shift Supervisor.
- 6.2.2 The Responsible Supervisor or discipline will provide the information on the components requested to be tagged either verbally or written to the Shift Supervisor.
- 6.2.3 The Duty Shift Supervisor will evaluate the request to determine the impact of the additional tag(s) on the existing tagout boundaries and existing plant conditions.
- 6.2.4 The Duty Shift Supervisor will direct the Control Room Banger Tagger to:
 - A. Add the component(s) to be tagged to the Component bog, Attachment IC, per Attachment VIII.
 - B. Indicate the correct installation sequence if more than one component is being added.
 - C. Generate the additional Danger Tags per Attachment VIII.

NOTE 6.2.4.D

If additional work documents are added affecting components not specifically tagged, then the Component Realignment and Verification Log, Attachment IB, must be updated.

D. Add any component(s) to the Component Realignment and Verification Log, Attachment IB, if new work documents are added with the additional tags.

6.2.5 When the additional component(s) are added to the tagout and the additional tags are prepared, the tagout will be returned to the Duty Shift Supervisor.

6.2.6 The Duty Shift Supervisor will review the additional tags requested and sign the next ABD line under SHIFT SUPERVISOR AUTHORIZATION on the Danger Tag Log, Attachment IA.

6.2.7 After his name, the Duty Shift Supervisor will indicate the number(s) of the tag(s) being added.

6.2.8 The Duty Shift Supervisor will then direct a Qualified Danger Tagger(s) to install the additional tags per the indicated installation sequence.

6.2.9 The Qualified Danger Tagger will install the danger tags per Step 6.1.7.

6.2.10 A second Qualified Danger Tagger will independently verify the additional danger tags per Step 6.1.9.

6.2.11 The tagout will be returned to the Duty Shift Supervisor after all additional authorized tags are installed and verified.

NOTE 6.2.12

If additional work documents are added to the tagout, the Shift Supervisor must complete all sections of Step 6.1.11.

6.2.12 The Duty Shift Supervisor will review the tagout per Steps 6.1.11.A and 6.1.11.B.

6.2.13 The Control Room Danger Tagger will then notify the Responsible Supervisor that the additional tag request has been completed.

NOTE 6.2.14

If additional work documents are added to the tagout, the Responsible Supervisor must complete all sections of Step 6.1.13.

- 6.2.15 The Responsible Supervisor will notify the Individuals performing maintenance activities of the tagout boundary change. Only those individuals impacted by the change are required to resign Attachment XI.

CHG
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NOTE 6.2.16

If the additional tags are generated by amending the tagout using the computer generated tagout program, an original yellow copy will be available.

- 6.2.16 The Control Room Danger Tagger will issue updated yellow copies of the attachment pages affected by this amendment. The amended white copy can be reproduced and the copy conspicuously marked as yellow COPY.

- 6.2.17 The white copy, including the amended pages, of the Danger Bag Log, Attachment IA, Component Realignment and Verification Log, Attachment IB, and the Component Log, Attachment IC, will be returned to the Active Danger Tag Book or file.

6.3 Tagout Clearance Instructions.

- 6.3.1 The Responsible Supervisor(s) or an Alternate for Clearance will:

- A. Return all yellow copies of the Danger Tag Log, Attachment IA, and the Component Log, Attachment IC, to the Control Room.
- B. Return all completed copies of Danger Tag, Shop Sign-On Sheet(s), Attachment XI indicating no work activities in progress.
- C. On the white copy of the Danger Tag hog, Attachment IA, enter the date in the COMPLETE DATE block for each work document that is complete.
- D. On the white copy of the Danger Tag Log, Attachment IA, sign the CLEARANCE AUTHORIZATION block, for each work document that is complete.

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6.3.2 When all work documents listed on the Danger Tag Log, Attachment IA, have Clearance Authorization signed, the Control Room Danger Tagger will deliver the tagout, the white copy, all yellow copies, and all completed copies of Danger Tag, Shop Sign-On Sheet(s), Attachment XI, to the Duty Shift Supervisor.

6.3.3 The Duty Shift Supervisor will:

- A. Review the tagout and ensure that all required signatures are entered and correct.

NOTE 6.3.3.B through 6.3.3.D

1. The Duty Shift Supervisor may add, at his discretion, additional components to be positioned or verified by the Component Realignment and Verification Log, Attachment IB.
2. During outages, when applicable portions of the SOP Lineup(s) are to be performed as part of the system restoration, the Component Realignment and Verification bog, Attachment IB, may be marked N/A.

- B. Evaluate system status and assign or concur the REQ'D OPERABLE POSITION on the Component Realignment and Verification Log, Attachment IB, and the REQ'D OPER POSIT on the Component Log, Attachment IC.
- C. Indicate the repositioning sequence on the Component Realignment and Verification Log, Attachment IB.

NOTE 6.3.3.D

If only a few tags require sequential removal, these tags should be numbered starting with 1 and ending with tags not needing sequential removal having the same number, for example 1,2,3,4,4,4.

- D. Indicate the tag removal and repositioning sequence on the Component Log, Attachment IC.
- E. Sign the COMPLETE line under SHIFT SUPERVISOR CLEARANCE AUTHORIZATION on the Danger Tag Log, Attachment IA.

6.3.4 The Duty Shift Supervisor will then direct a Qualified Danger Tagger to clear the tagout.

- A. Inform the Operator at the Controls, or the person responsible for operating the components, of the components being cleared and their cleared position.

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NOTE 6.3.5.C

No component will be repositioned until all Danger Tags on that component are removed.

- C. Align components on the Component Realignment and Verification Log. (Attachment IB), to their **REB'B OPERABLE POSITION** in the order listed and as directed by the Shift Supervisor.
- D. Initial the **RESTORED BY** block on the Component Realignment and Verification Log, Attachment IB.
- E. Locate each danger tagged component OR the Component bog, Attachment IC.
- F. Verify the correct Danger Tag to the correct TAG number on the Component Log, Attachment IC.
- G. Remove the Danger Tag.
- H. Initial the **TAG REM BY** block on the Component bog, Attachment IC, for each Danger Tag being cleared.

NOTE 6.3.5.I

No component will be repositioned until all Danger Tags on that component are removed.

- I. Place the component in the **REQ'D OPER POSIT** as indicated on the Component Log, Attachment IC.
- J. Initial the **REST BY** block under **COMP REST** section on the Component Log, Attachment IC.

- K. If the component is to be locked, sign OAP-106.3 Attachment II as the INITIAL POSITIONER in the LOCK INSTALLATION section.

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NOTE 6.3.6

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6.3.6 A second Qualified Danger Tagger will:

- A. Perform independent verification per SAP-153, Component/Condition Verification, on each restored component position.
- 5. Initial the Component Realignment and Verification Log, Attachment IB, under the VERIFIED BY block.
- C. Initial the Component Log, Attachment IC, in the VER BY block under the COMP REST section.
- D. Reinstall any required Locking Device per OAP-106.3, Locked Valve Program.

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6.3.7 The tagout will be returned to the Control Room Danger Tagger when all tags are removed and component positions are restored and verified.

6.3.8 The Control Room Danger Tagger will:

- A. Verify all attachments are complete.
- B. Account for all danger tags removed.
- C. Update the Danger Tag Index Sheet, Attachment III, with Shift Supervisor Authorizing Clearance and Clearance Date/Time.
- D. Notify the Duty Shift Supervisor that the tagout clearance is complete.

6.3.9 All yellow copies of the tagout will be destroyed.

- 6.3.10 The original white copies of the Danger Tag Log, Attachment IA, Component Realignment and Verification Log, Attachment IB, and the Component Log, Attachment IC, and the Danger Tag, Shop Sign-On Sheet, Attachment XI, will be forwarded to the Operations Clerical Support Personnel to be filed in the system file.

CHG
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- 6.3.1 ■ The pink copy in the system file will be removed and destroyed.

NOTE 6.4

The Administrative Supervisor (Shift Supervisor and/or Control Room Supervisor) can also assume responsibility per Section 5.4 during partial clearance of a tagout per Section 6.4 during Extensive Outages only.

6.4 Partial Clearance of a Tagout

NOTE 6.4.1

Only the Groups to which a particular component is tagged as indicated on the Component bog, Attachment IC, under the ISSUED TO section must return their yellow copy(s) to the Control Room to have that component's tag cleared.

- 6.4.1 The Responsible Supervisor(s) requesting a tag(s) cleared from an active tagout will:

- A. Notify and receive concurrence from all Individuals actively performing maintenance on impacted work orders. This concurrence will be documented on Danger Tag, Shop Sign-On Sheet, Attachment XI.
- B. Notify other shops that are assigned to the Tagout that their concurrence will be needed to clear the requested tag(s).
- C. Return the yellow copy of the Danger Tag bog, Attachment IA, and the Component bog, Attachment IC, to the Duty Shift Supervisor. Return of the Danger Tag, Shop Sign-On Sheet, Attachment XI is not required for partial clearance of a Danger Tag.

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NOTE 6.4.1.D

Initialing is not required by any discipline, which has completely signed CLEARANCE AUTHORIZATION on the Danger Tag Log, Attachment IA for all work documents assigned to that discipline.

- D. Initial the Component Log, Attachment IC, under the ISSUED TO section in the CLEAR block for each component to be cleared.

- B. Notify Responsible Supervisor(s) of other disciplines that have the same tag issued to them (as identified on Attachment IC) to perform actions of step 6.4.1

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- D. After his name indicate the number(s) of the tag(s) being cleared.
- E. Assign or concur the REQ'D QPER POSIT on the Component Log, Attachment IC, for each component to be cleared.
- F. Indicate the removal sequence (REM SEQ) for the tags, if more than one tag is being cleared, on the Component Log, Attachment IC.
- G. Direct a Qualified Danger Tagger to clear the indicated tag(s), per the removal sequence if more than one tag is being cleared.

6.4.3 The Qualified Danger Tagger will clear the Danger Tag(s) per Step 6.3.5.

NOTE 6.4.4

Independent verification may not be required, as directed by the Shift Supervisor, until the entire tagout is cleared.

6.4.4 A second Qualified Danger Tagger will independently verify the cleared and restored components per Step 6.3.6.

- 6.4.5 The tagout will be returned to the Shift Supervisor when all authorized tags are cleared and verified.
- 6.4.6 The Duty Shift Supervisor will review the tagout for completeness and return the tagout to the Control Room Danger Tagger.
- 6.4.7 The Control Room Danger Tagger will:
 - A. Issue an updated yellow copy(s) to the Responsible Supervisor(s) by reproducing the white copy and conspicuously marking as yellow copy.
 - B. Return the white copy of the Danger Tag Log, Attachment IA, Component Realignment and Verification Log, Attachment IB, and the Component Log, Attachment IC, to the Danger Tag Log Book.
- 6.5 Clearance of a tagout or individual danger tags in the absence of the Responsible Supervisor and Alternates for Clearance.

NOTE 6.5.1

The following actions *must* be completed by the Duty Shift Supervisor and cannot be delegated.

- 6.5.1 The Duty Shift Supervisor will:
 - A. Verify no Individuals are actively working under the protection of the tag(s). Use Danger Tag, Shop Sign-On Sheet, Attachment XI, as a guide in this determination
 - B. Verify the need to remove the tag(s) or clear the tagout prior to the Responsible Supervisor returning to work.
 - C. If an individual has left the site and failed to sign Attachment XI an attempt to contact and receive telcon approval of tagout release shall be made.

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NOTE 6.5.1.D

In emergency or unusual situations where Step **6.5.1.D** cannot be completed, the Duty Shift Supervisor can authorize the tag removal or tagout clearance.

- D. For those persons not contacted in Step 6.5.1.C, contact the Duty Shop Supervisor for the applicable discipline (see Duty ERO Roster). Determine the status of the work and receive permission

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NOTE 6.5.3

If Step **6.5.1.8** was not completed, then the Duty Shift Supervisor must complete Step **6.5.3**.

- 6.5.3** The supervisor contacted in Step **6.5.1.C** will contact the Responsible Supervisor and inform him of the tagout clearance or tag removal as soon as possible before work covered by this tagout is to resume.
- 6.5.4** The Responsible Supervisor(s) will then return the yellow copy to the Control Room.
- 6.5.5** The Responsible Supervisor(s) and Duty Shift Supervisor will then review the situation and determine the need for reinstalling the tagout or the cleared tag(s).

NOTE 6.6

Some electrical activities require intermittent operation of circuits, which preclude installation of a Danger Tag. To ensure personnel protection, an Electrical Maintenance person may be stationed at the electrical component in lieu of a Danger Tag.

6.6 Electrical personnel acting in the capacity of a red tag (Human Red Tag).

6.6.1 For de-energizing circuits for such activities as removal and installation of electrical covers, ground isolation, installing test equipment, vibration balancing, visual inspection, and minor maintenance, a person knowledgeable of the activities to be performed **will**:

- A. Initiate a Request For Electrical Component Operation, Attachment VI.
- B. Obtain Duty Shift Supervisor Approval for the activities to be performed.
- C. Record Component As Found Position for the isolation component.
- D. Record the Time and Date the component is repositioned.
- E. Station themselves at the component and remain there **at** all times while the component is used for isolation.
- F. Upon completion of the activity, return the component to its As Found Position or as directed by the Duty Shift Supervisor.
- G. Have a Second Technician or Operations personnel verify, per SAP-153, Component/Condition Verification, the component is returned to its As Found Position or as directed by the Duty Shift Supervisor.
- H. Return the Request For Electrical Component Operation, Attachment VI, to the Control Room for Duty Shift Supervisor review.

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6.7 Guidance for unattached active Red Tags

6.7.1 All Station Personnel – Persons finding an unattached Red Danger Tag shall contact the Control Room.

6.7.2 Operations Personnel -Assuming no other problems or concerns with component position or tag physical condition, it is permissible to rehang a tag. Counter signatures and initials are required on the individual tag and Banger Tagout Attachment IC white copy. A note shall be made on the Danger Tag white copy and a CER generated for documentation and evaluation.

6.8 Audits:

6.8.1 Monthly –At power (Mode I) – This audit is a review of the Danger Tagout Index of open Danger Tagouts. For Danger Tagouts older than thirty days, the RESPONSIBLE SUPERVISOR shall be notified by the generation of a CER to perform a 10 CFR 58.59 Applicability Determination for all Tagouts not having one attached. Results of Danger Tags audits shall be documented on a Danger Tag Audit Sheet, Attachment V, and shall be furnished to the Operations Supervisor for disposition and filing. A copy of the completed Applicability Determination, Screen, and/or Evaluation shall be attached to the DANGER TAG LOG. This process is to be completed within 30 days of the audit. All Danger Tagouts older than 90 days with the plant in an on-line condition shall have a 10 CFR 50.59 review.

6.8.2 Semi-annual - Audit of all active Danger Tags. This audit is a physical verification that all tags are in place and equipment status is as specified. Comments or Discrepancies noted during the Semi-annual audit shall be brought to the attention of the Duty Shift Supervisor for resolution. Results of Danger Tags audits shall be documented on a Danger Tag Audit Sheet, Attachment V, and shall be furnished to the Operations Supervisor for disposition and filing. The Shift Supervisor shall also re-evaluate whether the Tagout requires ECR initiation or the generation of any procedure changes. Resolutions shall be documented on Banger Tag Audit Sheet, Attachment V.

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- 6.8.3 Annual – This audit is the annual periodic inspection specified in 29CFR1910.269 for the station's Ranger Tagging and release for work procedure. The periodic inspection is performed to identify and correct any deviations or inadequacies in the program. The inspection team will consist of at least two members. Quality Assurance will normally have the lead in this inspection. With the exception of the Quality Assurance Team Leader, inspection team members will be Danger Tag qualified. Persons performing the audit shall not be using or working under the energy control procedure (tagout) being inspected. The performance of the audit shall be documented on Attachment XII and included as an attachment in a CER written to document the annual periodic inspection.

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7.0 RECORDS

- 7.1 Permanent records generated by this procedure are Danger Tag Audit Sheets.
- 7.2 Completed white copies of the Danger Tag Log (Attachment IA), Component Realignment and Verification Log (Attachment IB), Component Log (Attachment IC), Request for Electrical Component Operation (Attachment VI), and Danger Tag, Shop Sign-On Sheet (Attachment XI) are retained in the system file until the next complete system alignment is performed. These completed tagout documents are then discarded.

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8.0 EXCEPTIONS

- 8.1 None,

9.0 REVISION SUMMARY

- 9.1 Deleted NOMS Tagging Program.
- 9.2 Incorporated Change A.
- 9.3 Deleted the requirement to Danger Tag DC control power breakers when Danger Tagging 480v and 7.2kv breakers per Attachment IX.
- 9.4 Replaced references to DANTAG with Computer Generated Tagging.
- 9.5 Reworded the instructions for the use of the CQMPONENT REALIGNMENT AND VERIFICATIQN LOG to facilitate its use after a Tagout is cleared.

[illegible]

[illegible][illegible]

[illegible]

INDEX NO. _____

SHEET _____ OF _____

COMPONENT REALIGNMENT AND VERIFICATION LOG

The following non-danger tagged components shall be aligned and verified as directed by **the Shift Supervisor**:

[illegible]

COMPONENT LOG

TAG	ISSUED TO					HOLD TAG INST	COMPONENT ID	PLANT LOC	REQ'D TAG POSIT	INST SEQ	INST BY	VER BY	HOLD TAG REM	REM SEQ	TAG REM BY	REQ'D OPER POSIT	COMP REST	
		E	M	I&C	OTHER												REST BY	VER BY
	GROUP																	
	CLEAR																	
	GROUP																	
	CLEAR																	
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	GROUP																	
	CLEAR																	
	GROUP																	
	CLEAR																	
	GROUP																	
	CLEAR																	
	GROUP																	
	CLEAR																	

DANGER TAG (Computer Generated)



DANGER TAG(Manual Tagging program)

DANGER

DO NOT OPERATE

BREAKER		VALVE	
OPEN	CLOSED	OPEN	CLOSED
FUSE PULLED		LEAD LIFTED	
OTHER: /			

COMPONENT _____

LOCATION _____

INSTALLED BY:	VERIFIED BY:

DATE	INDEX NUMBER

TAG# _____

DANGER

DO NOT OPERATE

SOUTH CAROLINA ELECTRIC & GAS CO.

DANGER TAG INDEX SHEET

[illegible]

DANGER TAGOUT REQUEST FORM

DATE: _____ REQUESTED BY: _____

I.	<u>WORK DOC</u>	<u>EQUIP ID</u>	<u>WORK DOC</u>	<u>EQUIP ID</u>
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

II. Work Summary _____

III. Special Conditions/Safety Considerations _____

IV. Instrumentation Affected (Include Instrumentation not directly identified by work summary) _____

V. Recommended Boundaries (Required)

<u>COMPONENT</u>	<u>POSITION</u>	<u>COMPONENT</u>	<u>POSITION</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

VI. Equipment Restoration (List any equipment not covered in another program that may require restoration prior to clearing **tags**):

<u>COMPONENT</u>	<u>POSITION</u>	<u>COMPONENT</u>	<u>POSITION</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

VII. Referenced Drawings, _____

☐ CONTINUED ON PAGE 2.

DANGER TAGOUT REQUEST FORM (CONTINUATION)

DATE: _____

I.	<u>WORK DOC</u>	<u>EQUIP ID</u>	<u>WORK DOC</u>	<u>EQUIP ID</u>
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

V.	Recommended Boundaries (Required):			
	<u>COMPONENT</u>	<u>POSITION</u>	<u>COMPONENT</u>	<u>POSITION</u>
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

VI	Equipment Restoration (List any equipment not covered in another program that may require restoration prior to clearing tags):			
	<u>COMPONENT</u>	<u>POSITION</u>	<u>COMPONENT</u>	<u>POSITION</u>
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

DANGER TAG AUDIT SHEET

Date of Audit _____

AUDIT TYPE

☐ Monthly (Tagout Index only)

CHG
B

☐ Semi-Annual

Number of Open Tagouts This Audit _____

Semi-Annual Audit Comments or Discrepancies:

List Tagouts that are more than 30 days old requiring a 10CFR50.59 review (a 10CFR50.59 review is required within the next 30 days):

CHG
B

Audit Performer(s):

Signature Date

Audit Reviewed By:

Shift Supervisor Date

Audit Reviewed By:

Operations Supervisor Date

REQUEST FOR ELECTRICAL COMPONENT OPERATION
(STEP 6.6)

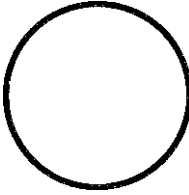
1. Electrical Panel and Component No: _____
2. Equipment and System Affected: _____ System _____
3. Reason for Operation (MWR, PM, STP): _____
4. Person Stationed at Component: _____
5. Shift Supervisor Approval: _____
(SS Signature) (Time) (Date)
6. Component As Found Position: _____
(Position)
7. Component Repositioned: _____
(Time) (Date)
8. Component Returned to As Found Position
or as directed by the Shift Supervisor: _____
(Position) (Initials)
(Time) (Date)
9. Verification By: _____
(Signature) (Time) (Date)
10. Shift Supervisor Review: _____
(SS Signature) (Time) (Date)

CHG
B

CHG
A

Forward to Operations Supervisor.

HOLD TAG

<p>HOLD TAG DO NOT OPERATE</p> <hr/>

<p>TAG# _ ! _____</p>
<p>SUMMER STATION SCE&G</p>

INSTRUCTIONS FOR INITIAL INFORMATION ON
ATTACHMENTS IA, IB, IC, II, AND VII

NOTE 1

This procedure is applicable when Danger Tags are prepared manually or by the Computer Generated Tagging program

I. Initial information on Danger Tag Log, Attachment IA.

- A. SYSTEM - Enter the system designation affected by this Danger Tag.
- B. TRAIN - Enter train association as appropriate, i.e. A, B, S(SWING) or N/A.
- C. REASON FOR TAG - Enter a brief and accurate account of work being performed or reason for equipment not to be operated, i.e. MWRs, PMs or when operation of the equipment results in a hazard.
- D. SAFETY REMINDER - Indicate any precautions such as draining, venting, special notes or hazards associated with this tagout.
- E. SAFETY RELATED - Circle YES or NO.
- F. TECH SPEC - Circle YES or NO.
- G. PREPARED BY - Enter name of the individual preparing this tagout package.

NOTE I.H

ALTERNATES FOR CLEARANCE and RESPONSIBLE SUPERVISORS need not be designated before tagout is installed.

- H. ALTERNATES FOR CLEARANCE - Enter the lead individual's name(s) for each crew or N/A. Foreman or Supervisor may be used in lieu of a specific individual name, i.e. Electrical Foreman or Supervisor, etc.
- I. MWR - Enter work activity number, i.e. MWR, PMTS, MRF, ECR or N/A as appropriate
- J. EQUIPMENT - Enter the complete CHAMPS identification number as listed on the associated work document.
- K. RSP GRP - Enter the abbreviation for the discipline to which the work activity is assigned.
- L. RSP SUPERVISOR - Enter the name of the lead individual or Responsible Supervisor

2. initial information on Component Realignment and Verification Log, Attachment IB.
 - A. COMPONENT I.D. - Enter the complete CHAMPS identification number of the component to be realigned.
 - B. PLANT LOCATION - Enter the specific plant location of the component to be realigned
 - C. REQ'D OPERABLE POSITION - Enter the normal operable position of the component as specified by the applicable SOP.
3. Initial information on Component Log, Attachment IC
 - A. TAG - Enter the sequential tag number.
 - B. **ISSUED TO** - Check blocks for which discipline each component is tagged.
 - C. HOLD TAG INST - Enter a check mark if a Hold Tag is to be placed on a control panel component.
 - D. COMPONENT I.D. - Enter the complete CHAMPS identification number of the component being tagged.
 - E. PLANT LOC - Enter the specific plant location of the component being tagged
 - F. REQ'B TAG POSIT - Enter the position in which the component is to be tagged.

NOTE 3.G and 3.H

The installation sequence and required operable position should be entered during tagout preparation, and be verified during Duty Shift Supervisor review.

- G. INST SEQ - Enter sequence that tags are to be installed. If no sequence is needed, place a 1 in each INST SEQ block. If only some tags require a sequence, number these tags in sequence starting with 1 and ending with all tags not requiring sequence having the same number, for example 1,2,3,4,4,4.

NOTE 3.H

- 1) The REQUIRED OPERABLE POSITION may be left blank when the applicable SOP line-up is condition dependent. Redundant component or train operation and swing component alignments are examples of this condition.
- 2) The REQUIRED OPERABLE POSITION may be left blank when generating tagouts on those components entirely under the control of the Chemistry Department and not covered by Operations SOPs.
- 3) It is the responsibility of the duty shift supervisor authorizing clearance of the tag(s) to ensure the desired position is recorded in the REQUIRED OPERABLE POSITION space.

CHG
B

H. REQUIRED OPERABLE POSITION - Enter the normal operable position of the component as specified by the applicable SOP.

4. Initial information on Danger Tag, Attachment II

- A. COMPONENT POSITION - All non-applicable positions will be blacked out leaving the required component position.
- B. COMPONENT - Enter the complete CHAMPS identification number from the Component Log, Attachment IC.
- C. LOCATION - Enter the specific plant location from the Component Log, Attachment IC
- D. TAG # - Enter the corresponding Tag number from the Component Log, Attachment IC

5. Initial information on Hold Tag, Attachment VII

- A. The Component I.D. shall be entered in the top blank and should include as a minimum the CHAMPS identification number as listed for the component on the Component Log, Attachment IC.
- B. TAG # - Enter the corresponding tag number from the Component Log, Attachment IC

GENERAL TAGGING INSTRUCTIONS

CAUTION 1.A

CHG

B. The following sequence should be adhered to when clearing a pump tagout:

1. Drains and vents
2. Suction valve
3. Discharge valve
4. Recirculation valve
5. Electrical or Steam supply

2. Instructions for installing Danger tags on plant equipment.

- A. Tags will be attached in a conspicuous location on the component or operator. Where a tag cannot be directly attached to a component or operator, the tag shall be located as close as safely possible and in a position that will be immediately obvious.
- B. If a component operator has provisions for a locking device, the tag should be attached at that point unless directed otherwise.
- C. It is preferred to attach the tag to a remote operator (hand wheel or chain) if it is the normal means of operating the component. When attached to a chain the tag should be attached through links on both the downhaul and uphaul sides.
- D. Tags shall normally be attached using a non-reusable self-locking device (e.g. ty-wrap) with an unlocking strength of at least 50 lbs. When the preferred "ty-wrap" can not be used due to lack of a suitable attachment point, a smaller "ty-wrap" or adhesive "duct" tape may be used to affix the tag to the component. Use of alternate tag attachment methods should be considered abnormal and a CER generated. This CER should request an evaluation for the installation of a permanent tag attachment device. Environmental conditions, expected duration, and possible interferences should be evaluated for determining alternate attachment methods. In all cases, the tag installer must ensure the method of attachment is substantial enough to prevent accidental removal.
- E. Danger tags when affixed to control panel switches should be attached and folded as necessary so that they do not interfere with adjacent switch operation or observation.

CHG
B

- F. When directed to hang tags on Motor Control Centers or 480 volt Electrical Switchgear cubicle doors, the danger tag shall be affixed to the panel front next to the opening for the breaker or operating mechanism.
- G. Clear plastic sleeves or wide transparent "packing" tape should be used when installing Danger tags on components where environmental, corrosive, or caustic environments exist. dependent on expected duration of the danger tag out. The protective covering shall be applied after the Danger tagged component is verified.
3. Instructions for circuit breaker tagging.
- A. An air gap or physical separation must be maintained between an electrical source and load to prevent violating the intent of a tagout.
- C01→ B. When tagging 7.2KV and 480V breakers in the OPEN/RACKED OUT POSITION, the DC Control Power Breakers shall also be opened per SOP-313, LOCAL SWITCHGEAR BREAKER OPERATION. Associated DC Control power breakers shall be included on the COMPONENT REALIGNMENT AND VERIFICATION LOG, or the applicable SOP Attachment completed, prior to being returned to service. For the HVAC Chiller C oil heaters per Item #3.C of this attachment.
- C. When tagging the C HVAC Chiller, it's oil heaters are interlocked with the DC tripping control power for the Chilled Water Pump C breaker aligned to XET-4002. The DC tripping control power breaker must be closed for the heaters to energize from XET-4002. This breaker should not be opened unless specified by the maintenance group requesting the tagout.

NOTE 3.D

- F. For remotely operated components the desired position will be established prior to local tag installation.

4. Instructions for fuse removal and tagging.

- A. operations, Electrical Maintenance or I&C personnel can remove or install fuses associated with tagouts.

NOTE 4.B

A computer generated Danger Tag label may be affixed to Fuse Hold Tag per Attachment VIII in lieu of filling out information on tag.

- B. Fuses that are removed shall be tagged with a Fuse Hold Tag per Attachment X and stored in the fuse locker located in the Control Building on the 463 elevation.
- C. If the correct size is available, a fuse tagger will be used to connect a danger tag to a fuse block.
- D. When fuse taggers are not utilized, caution must be used to prevent electrical shock when attaching danger tags to fuse block leads.
- E. When fuse taggers are not utilized, the danger tag should be attached such that it is obvious as to the component tagged.
- F. Instrument and control power fuses or fuse carriers that are removed from control panels (NI Panels etc.) should have the holes covered for FME concerns. Do not insert an empty fuse holder into the panel. The blown fuse indicating light circuit may put hazardous voltages onto the circuit being worked.

CHG
B

5. Instructions for tagging lifted leads.

- A. When all leads are to be removed from a selected termination point, the required tagged position should reflect "(all)" beside the termination point identification on both the Danger Tag and on the component Log, Attachment IC.
- B. When one lead on a multiple lead termination point is required to be lifted, it should be clear what the impact of lifting the other leads will be.
- C. A single lead request on a multiple lead termination point should be specified by wire identification in the COMPONENT ID block on Component Log, Attachment IC
- D. Insulated "Stand Off" may be used to tag leads in the lifted position. Leads not on insulated "Stand Offs" should be taped to prevent shorts.
- E. It is the responsibility of the group requesting leads to be lifted (either I&C or Electrical Maintenance), to provide support to lift the leads during tagout installation and to land the leads during tagout clearance and restoration. Other groups, such as Mechanical Maintenance or Operations, needing leads lifted should use either I&C or Electrical Maintenance as manpower is available.

6. When using a motor operated valve as a boundary for system work, the power supply breaker should be tagged open and the valve handwheel tagged in the required position.

7. Instructions for boundary valves on high-energy systems.
- A. It is preferred to use double valve isolation where possible and practical for **continued** system operation.
 - B. When double valve isolation is not utilized then proof of system isolation will be placed on visible system vent and or drain valves **as** indication of system isolation.
 - C. When a visible vent or drain is not possible then the **SAFETY REMINDER** on Attachment IA will denote the system is not vented or drained. Pre-job briefs conducted prior to the start of maintenance activities shall include this condition and methods of energy release discussed

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NOTE 8

Valves tagged in an open position to ensure system continuity between boundary isolations and system vents or drains **are** to be considered boundary isolation valves. Valves positioned and tagged to facilitate system vent, drain, or fill are not necessarily boundary valves.

8. Instructions for tagging components inside the tagout boundaries.

NOTE 8.A

The System Lineup may be used to restore components to their required position in place of the Component Realignment and Verification Log. The System Lineup should be performed prior to tag clearance or concurrently with tag clearance.

- A. Components, such **as** valves and breakers, which are worked or removed and not danger tagged, shall be entered on Attachment IB, Component Realignment and Verification Log, to ensure proper alignment prior to being returned to service.
 - B. All vent and drain valves, which are not worked or removed. **but manipulated, shall be** danger tagged in accordance with this procedure.
9. Clearing tags and component restoration.
- A. On-line tag clearance and component restoration position is that required by the SOP. Consideration by the Duty Shift Supervisor may be required for swing components or those systems under the control of the station's Chemistry Department. The Duty Shift Supervisor may at his discretion direct the performance of a **partial** system line-up verification after extensive maintenance on plant equipment.
 - B. During extended outages the Danger Tag restoration position **is** normally left "as is" and a system line-up is used to position components prior to system start-up. Verification **as** to the completion status of the SOP line-up is required prior to Danger Tag removal to ensure the tagout is not cleared with improper restoration positions identified.

CHG
B

FUSE HOLD TAG



FUSE HOLD TAG

TAG OUT NO. _____

WORK DOC. NO. _____

SYSTEM _____

DATE _____

FUSE NO : _____

LOCATION: _____

COMPONENT NO.: _____

SAFETY RELATED YES/NO

NAME OF INDIVIDUAL REMOVING **FUSES**

(PRINT) _____

[illegible]

Note: Attach to completed tagout and place in the system file

Evaluation of SAP 201 against the requirements of 29CFR1910.269 (electric power generation, transmission, and distribution) when a tagout is used for energy control.

Interviews with personnel should include but are not limited to:

- 1) Persons responsibilities under SAP-201 Danger Tagging.
- 2) Limitations of danger tags:
 - a) Tags are essentially warning devices and provide limited physical restraint.
 - b) Danger Tags may invoke a false sense of security, their meaning needs to be understood as part of the overall Summer Station safety program.
- 3) Requirements of Banger Bags:
 - a) Tags are not to be removed under any circumstance without authorization of the Duty Shift Supervisor or Control Room Supervisor.
 - b) Danger Tags are never to be by-passed, ignored, or otherwise defeated,
 - c) Danger tags are to be legible and understood by all personnel working in area.
 - d) Tags and their means of attachment must be of a material that can withstand their environment for their expected duration.
 - e) Tags must be securely attached, so that they cannot become inadvertently or accidentally detached.

Deficiencies Identified:

Recommended Actions:

General Comments:

FOR TRAINING
USE ONLY.

SOP-102
ATTACHMENT IA
PAGE 1 OF 11
REVISION 19

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

Persons completing checklist (print)	Initials	CVCS OUTSIDE REACTOR BUILDING VALVE LINEUP
Reviewed by SS/CRS	Date/Time	Date/Time started
		Date/Time completed

Valve Lineup Initial Conditions

Positioning the components to the REQUIRED POSITION places the system in a normal alignment for starting a Charging Pump, if required, and establishing Normal Charging, Letdown and Seal Injection.

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
463' AUXILIARY BUILDING					
XVD08410-CS	VOLUME CONTROL TK H2 INLET HDR ISOL VLV	CLOSED			
XVT08156-AV1-CS	IA ISOLATION VALVE FOR XVT08156-CS	OPEN			
XVD08158-CS	VCT H2 HDR SENSING ISOL VALVE	OPEN			
XVD08376-CS	VOLUME CONTROL TANK N2 INLET HDR VALVE	OPEN			
XVT08155-AV1-CS	IA ISOLATION VALVE FOR XVT08155-CS	OPEN			
XVD08159-CS	VCT N2 HDR SENSING ISOL VALVE	OPEN			
XVD08414-CS	VCT PURGE HEADER WP SYSTEM INLET VALVE	OPEN			
XVD08413-CS	VOLUME CONTROL TANK PURGE HDR ISOL VLV	OPEN			
XVD08412-CS	VOLUME CONTROL TANK OUTLET ISOL VALVE	OPEN			
XVD08416-CS	VOLUME CONTROL TANK INLET VALVE	OPEN (LVP)			

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
463' AUXILIARY BUILDING (Cont'd)					
XVD08419-CS	VOLUME CONTROL TANK DRAIN ISOL VALVE	CLOSED			
XVT08157-AV1-CS	IA ISOLATION VALVE FOR XVT08157-CS	OPEN			
XVD08101-AV1-CS	IA ISOLATION VALVE FOR XVD08101-CS	OPEN			
XVD08438-CS	VCT N2 PURGE PRESS CONTROL SENSING VLV	OPEN			
XVD08415-CS	HIGH ROOT TO IPT0117	OPEN			
XVD08447A-CS	HIGH ROOT TO ILT0112	OPEN			
XVD08447B-CS	LOW ROOT TO ILT0112	OPEN			
XVT08473-CS	VCT GAS SAMPLE SYSTEM ISOLATION VALVE	OPEN			
XVD08418A-CS	HIGH ROOT TO ILT0115	OPEN			
XVD08418B-CS	LOW ROOT TO ILT0115	OPEN			
XVD08523B-CS	MIXED BED DEMIN B RESIN FILL VALVE	CLOSED/ FLANGED			
XVD08523A-CS	MIXED BED DEMIN A RESIN FILL VALVE	CLOSED/ FLANGED			
XVD08515-CS	CATION DEMIN RESIN FILL INLET ISOL VLV	CLOSED/ FLANGED			
463' AUXILIARY BUILDING (Portable Resin Fill Station)					
XVD06734-SF	PORTABLE RESIN FILL TK MU WTR INLET VLV	CLOSED			
XVD08531-CS	RESIN FILL MAKEUP WATER ISOLATION VALVE	CLOSED			
XVD08530-CS	RESIN FILL MAKEUP WATER ISOLATION VALVE	CLOSED			
XVD08529-CS	RESIN FILL TANK OUTLET VALVE	CLOSED			
459' AUXILIARY BUILDING					
XVT08385B-CS	SEAL INJECTION FILTER B VENT VALVE	CLOSED			
XVT08548B-CS	SEAL INJECTION FILTER B VENT ISOL	CLOSED			
XVT08386B-CS	SEAL INJECTION FILTER B DRAIN VALVE	CLOSED			
XVT08549B-CS	SEAL WATER INJECTION FILTER B DRN ISOL	CLOSED			

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
459' AUXILIARY BUILDING (cont'd)					
XVT08385A-CS	SEAL INJECTION FILTER A VENT VALVE	CLOSED			
XVT08548A-CS	SEAL INJECTION FILTER A VENT ISOL	CLOSED			
XVT08386A-CS	SEAL INJECTION FILTER A DRAIN VALVE	CLOSED			
XVT08549A-CS	SEAL WATER INJECTION FILTER A DRN ISOL	CLOSED			
XVD08423-CS	REACTOR COOLANT FILTER VENT VALVE	CLOSED			
XVD08424-CS	REACTOR COOLANT FILTER DRAIN VALVE	CLOSED			
XVD08533-CS	SEAL RETURN FILTER VENT VALVE	CLOSED			
XVD08534-CS	SEAL RETURN FILTER DRAIN VALVE	CLOSED			
436' AUXILIARY BUILDING					
XVD08444-CS	BLENDER BORIC ACID INLET ISOL VALVE	OPEN			
IFY00113D-AV1-CS	IA ISOL VLV FOR IFY00113D	OPEN			
XVD08439-CS	BORIC ACID CHARGING PUMPS SUCT HDR VLV	CLOSED (LVP)			
XVD08432-CS	RWST & RHT BA INLET HEADER ISOL VALVE	CLOSED			
XVD08431-CS	BORIC ACID BLENDER LOCAL SAMP ISOL VLV	CLOSED			
XVD08428-CS	BORIC ACID BLENDER OUTLET VALVE	OPEN			
XVD08434-CS	RWST BORIC ACID INLET HEADER ISOL VALVE	CLOSED			
XVA18116-CS	BA BLENDER LOCAL SAMPLE VALVE	CLOSED			
FCV00113B-AV1-CS	IA ISOLATION VALVE FOR FCV0113B-CS	OPEN			
FCV00113A-AV1-CS	IA ISOLATION VALVE FOR FCV0113A-CS	OPEN			
FCV00168A-AV1-CS	IA ISOLATION VALVE FOR FCV0168A-CS	OPEN			
XVD08476A-CS	LOW ROOT TO IFT0168	OPEN			
XVD08476B-CS	HIGH ROOT TO IFT0168	OPEN			
XVT08388-CS	SEAL INJECT FILTER SUPPLY HDR ISOL VLV	OPEN			

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
436' AUXILIARY BUILDING (Cont'd)					
XVA08384A-CS	SEAL INJECT FILTER A INLET ISOL VALVE	CLOSED NOTE 4			
XVA08382B-CS	SEAL INJECT FILTER B OUTLET ISOL VALVE	CLOSED NOTE 5			
XVA08382A-CS	SEAL INJECT FILTER A OUTLET ISOL VALVE	CLOSED NOTE 4			
HCV00186-AV1-CS	IA ISOLATION VALVE FOR HCV0186-CS	OPEN			
XVT08387A-CS	HIGH ROOT TO IPS0157A	OPEN			
XVT08387B-CS	HIGH ROOT TO IPS0157B	OPEN			
XVT08383A-CS	LOW ROOT TO IPS0157A	OPEN			
XVT08383B-CS	LOW ROOT TO IPS0157B	OPEN			
LCV00115A-AV1-CS	IA ISOLATION VALVE FOR LCV0115A-CS	OPEN			
ILY00115A-AV1-CS	IA ISOLATION VALVE FOR ILY0115A	OPEN			
XVT00044-CV	DRAIN DOWNSTREAM OF XVT08105-CS	CLOSED			
XVT00043-CV	LCV0115A-CS OUTLET HDR DRAIN	CLOSED			
XVD08427-CS	HIGH ROOT TO IPI0149	OPEN			
XVD08426-CS	HIGH ROOT TO IPI00148	OPEN			
XVT08461-AV1-CS	IA ISOLATION VALVE FOR XVT08461-CS	OPEN			
XVT08455-AV1-CS	IA ISOLATION VALVE FOR XVT08455-CS	OPEN			
XVN18117-CS	BORON CONC MEAS SYS INLET NEEDLE VALVE	OPEN			
XVA18127-CS	BCMS INLET VALVE	OPEN			
XVA18128-CS	BCMS TEST INPUT VALVE	CLOSED			
XVA18125-CS	BORON CONC MEAS SYS TEST&GRAB SAMP VLV	CLOSED			
XVA18126-CS	BORON CONC MEASURING SYS OUTLET VALVE	OPEN			

NOTE 4 - Valve OPEN if Filler A is in service.
NOTE 5 - Valve OPEN if Filter B is in service.

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
436' AUXILIARY BUILDING (Cont'd)					
XVD08397A-CS	HIGH ROOT TO IPI0134	OPEN			
XVD08397B-CS	HIGH ROOT TO IPI0135	OPEN			
XVD08396B-CS	SEAL WATER RETURN FILTER OUTLET HDR VLV	OPEN			
XVD08396A-CS	SEAL WATER RETURN FILTER INLET HDR VLV	OPEN			
XVD08399-CS	SEAL WATER RETURN FILTER BYPASS VALVE	CLOSED			
XVD08425-CS	REACTOR COOLANT FILTER INLET VALVE	OPEN			
XVD08421-CS	REACTOR COOLANT FILTER BYPASS VALVE	CLOSED			
XVT08453-CS	BORON CONC MEASURE SUPPLY HDR ISOL VLV	2.0 TURNS OPEN (LVP)			
XVD08422-CS	REACTOR COOLANT FILTER OUTLET VALVE	OPEN			
XVD08468-CS	BORON CONC MEASURE OUTLET HDR ISOL VLV	OPEN			
XVT08389-CS	SEAL INJECTION HEADER FLOW BYPASS VALVE	CLOSED			
XVA08384B-CS	SEAL INJECT FILTER B INLET ISOL VALVE	CLOSED NOTE 5			
XVD08513-CS	LETDOWN DEMINS SLUICE HEADER ISOL VALVE	CLOSED (LVP)			
XVD08528B-CS	MIXED BED DEMINERALIZER B DRAIN VALVE	CLOSED			
XVD08527B-CS	MIXED BED DEMIN B RESIN OUTLET VALVE	CLOSED			
XVD08526B-CS	MIXED BED DEMIN B SLUICE HDR INLET VLV	CLOSED			
XVD08522B-CS	MIXED BED DEMINERALIZER B OUTLET VALVE	OPEN			
XVD08524B-CS	MIXED BED DEMIN B INLET ISOL VALVE	CLOSED NOTE 2			
XVD08525B-CS	MIXED BED DEMIN B SLUICE DISCHARGE VLV	CLOSED			
XVD08543B-CS	MIXED BED DEMIN B VENT HDR DRAIN VALVE	CLOSED			
XVD08524A-CS	MIXED BED DEMIN A INLET ISOL VALVE	CLOSED NOTE 1			

NOTE 1 - Valve OPEN if Mixed Bed Demin A is in service.
NOTE 2 - Valve OPEN if Mixed Bed Demin B is in service.
NOTE 5 - Valve OPEN if FILTER E is in service.

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
436' AUXILIARY BUILDING (Cont'd)					
XVT08514-CS	MIXED BED DEMINS OUTLET HDR ISOL VALVE	OPEN			
XVD08522A-CS	MIXED BED DEMINERALIZER A OUTLET VALVE	OPEN			
XVD08527A-CS	MIXED BED DEMIN A RESIN OUTLET VALVE	CLOSED			
XVD08526A-CS	MIXED BED DEMIN A SLUICE HDR INLET VLV	CLOSED			
XVD08528A-CS	MIXED BED DEMINERALIZER A DRAIN VALVE	CLOSED			
XVD08542A-CS	MIXED BED DEMINS OUTLET HDR ISOL VALVE	OPEN			
XVD08543A-CS	MIXED BED DEMIN A VENT HDR DRAIN VALVE	CLOSED			
XVD08525A-CS	MIXED BED DEMIN A SLUICE DISCHARGE VLV	CLOSED			
XVD08542B-CS	MODERATING HT EXCH BYPASS VLV INLET VLV	OPEN			
XVD08518-CS	CATION DEMIN OUTLET HEADER ISOL VALVE	OPEN			
XVD08521-CS	CATION DEMINERALIZER RESIN OUTLET VLV	CLOSED			
XVD08519-CS	CATION DEMIN SLUICE HEADER INLET VALVE	CLOSED			
XVD08520-CS	CATION DEMINERALIZER DRAIN VALVE	CLOSED			
XVD08516-CS	CATION BED DEMIN INLET HDR VALVE	CLOSED NOTE 3			
XVD08532-CS	CATION DEMINERALIZER VENT HDR DRAIN VLV	CLOSED			
XVD08517-CS	CATION DEMINERALIZER SLUICE DISCH VALVE	CLOSED			
XVD08508B-CS	LOW ROOT TO IFI0147	OPEN			
XVD08508A-CS	HIGH ROOT TO IFI0147	OPEN			
XVT08541-AV1-CS	IA ISOLATION VALVE FOR XVT08541-CS	OPEN			
XVT08547-CS	BORON CONC MEAS SYS INLET SUPPLY VALVE	THROTTLED (LVP)			
XVT08535B-CS	MIXED BED DEMIN B OUTLET SAMP ISOL VLV	OPEN			
TCV00143-AV1-CS	IA ISOLATION VALVE FOR TCV0143-CS	OPEN			

NOTE 3 - Valve OPEN if Cation Bed Demin is in service.

Valve Line (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
436' AUXILIARY BUILDING (Cont'd)					
XVT08437-CS	RC FILTER INLET HDR SAMPLE ISOL VALVE	OPEN			
XVD08495-CS	HIGH ROOT TO IPI0146	OPEN			
XVT08535A-CS	MIXED BED DEMIN A OUTLET SAMP ISOL VLV	OPEN			
424' AUXILIARY BUILDING					
XVD08398B-CS	SEAL WTR HEAT EXCHANGER OUTLET ISOL VLV	OPEN			
XVD08484-CS	SEAL WATER RETURN HEADER ISOLATION VLV	CLOSED (LVP)			
XVD08629-BR	RECYC EVAP CHG/SI PP FEED SUP ISOL VLV	CLOSED (LVP)			
XVD08398A-CS	SEAL WTR HEAT EXCHANGER INLET ISOL VLV	OPEN			
XVD08400-CS	SEAL WATER HEAT EXCHANGER BYPASS VALVE	CLOSED			
XVD08482-CS	SEAL WATER RETURN HEADER VALVE	OPEN			
PCV00145-AV1-CS	1A ISOLATION VALVE FOR PCV0145-CS	OPEN			
XVT08390-CS	VCT SAMPLE SYSTEM RETURN VALVE	OPEN			
XVD08477A-CS	HIGH ROOT TO IFT0110	OPEN			
XVD08477B-CS	LOW ROOT TO IFT0110	OPEN			
XVG08408A-CS	LTDN HDR PRESS CONT VLV INLET ISOL VLV	1 1/8 TURNS OFF BACKSEAT			
XVT08409-CS	LTDN HDR PRESS CONT VLV BYPASS VALVE	CLOSED			
XVG08408B-CS	LTDN HDR PRESS CONT VLV OUTLET ISOL VLV	1 1/8 TURNS OFF BACKSEAT			
XVT08401-CS	LOW PRESS LETDOWN HDR SAMPLE ISOL VALVE	OPEN			
XVT08407B-CS	LOW ROOT TO IFT0150	OPEN			
XVT08407A-CS	HIGH ROOT TO IFT0150	OPEN			
XVT08406-CS	HIGH ROOT TO IPT0145	OPEN			
XVG08405-CS	LETDOWN HEAT EXCHANGER OUTLET ISOL VLV	1 1/8 TURNS OFF BACKSEAT			

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
424' AUXILIARY BUILDING (Cont'd)					
XVG08448-CS	LTDN REHEAT HX TEMP CONT VLV OUT ISOL	1 1/8 TURNS OFF BACKSEAT			
TCV00381B-CS	LETDOWN REHEAT HX TEMP CONTROL VLV	FAILED OPEN NOTE 6			
XVG08446-CS	LTDN REHEAT HX TEMP CONT VLV INLET ISOL	1 1/8 TURNS OFF BACKSEAT			
TCV00381B-AV1-CS	IA ISOLATION VALVE FOR TCV00381B-CS	CLOSED/ CAPPED NOTE 6			
HCV00142-AV1-CS	IA ISOLATION VALVE FOR HCV0142-CS	OPEN			
XVT08449-CS	TCV0381B-CS BYPASS VALVE	CLOSED			
412' AUXILIARY BUILDING					
XVT00032-CV	LETDOWN HEAT EXCH TUBE SIDE DRAIN VALVE	CLOSED			
XVT00033-CV	LETDOWN HEAT EXCH TUBE SIDE VENT VALVE	CLOSED			
XVT00019-CV	SEAL WATER HT EXCH TUBE SIDE VENT VALVE	CLOSED			
XVT00022-CV	SEAL WATER HT EXCH TUBE SIDE DRN VLV	CLOSED			
FCV00168B-AV1-CS	IA ISOLATION VALVE FOR FCV0168B-CS	OPEN			
XVD08430-CS	BORIC ACID BLENDER INLET ISOL VALVE	OPEN NOTE 8			
XVD08441-CS	RMW CHARGING PUMP SUCT HDR ISOL VALVE	CLOSED (LVP)			
XVD08454-CS	CHEMICAL MIXER TANK HDR ISOLATION VLV	CLOSED NOTE 8			
XVN08457-CS	RMWS TO CHEM MIX TK THROTTLE VALVE	1/2 TURN OPEN (LVP)			
XVD08452-CS	CHEMICAL MIXER TANK VENT ISOLATION VLV	CLOSED/ CAPPED			
XVD08451-CS	CHEM MIXER TANK CHEM ADDITION ISOL VLV	CLOSED			
XVD08435-CS	CHEMICAL MIXER TANK OUTLET ISOL VALVE	CLOSED			
XVD08450-CS	CHEMICAL MIXER TANK DRAIN VALVE	CLOSED			

NOTE 6 - Air line between TCV00381B-AV1-CS and TCV00381B-CS is disconnected per MRF21511 MCN K
NOTE 8 - If in Mode 6, LOCKED CLOSED.

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
412' AUXILIARY BUILDING (West Pen)					
XVD00009-CV	DOWNSTREAM TEST VENT FOR XVT08100-CS	CLOSED/ CAPPED			
XVT00008-CV	TEST VENT SEAL INJECTION HEADER VALVE	CLOSED/ FLANGED			
XVT00034-CV	DRAIN DOWNSTREAM OF XVG08107-CS	CLOSED/ FLANGED			
XVT00001-CV	VENT DOWNSTREAM OF XVG08108-CS	CLOSED/ FLANGED			
IFY00122-AV1-CS	IA ISOLATION VALVE FOR IFY0122	OPEN			
XVG08402A-CS	CHG HDR FLOW CONTROL OUTLET ISOL VALVE	1 1/8 TURNS OFF BACKSEAT			
FCV00122-AV1-CS	IA ISOLATION VALVE FOR FCV0122-CS	OPEN			
XVT00020-CV	DRAIN DOWNSTREAM OF XVG08402B-CS	CLOSED/ CAPPED			
XVG08402B-CS	CHG HDR FLOW CONTROL INLET ISOL VALVE	1 1/8 TURNS OFF BACKSEAT			
XVT08403-CS	FCV0122-CS BYPASS	CLOSED			
XVT08404A-CS	LOW ROOT TO IFT0122	OPEN			
XVT08404B-CS	HIGH ROOT TO IFT0122	OPEN			
XVT00021A-CV	DOWNSTREAM TEST CONN FOR XVT08102A-CS	CLOSED/ FLANGED			
XVT08152-AV1-CS	IA ISOLATION VALVE FOR XVT08152-CS	OPEN			
XVN08369A-CS	RCP A SEAL SUPPLY THROTTLE VALVE	THROTTLED NOTE 7 (LVP)			
XVT08371A-CS	HIGH ROOT TO IFT0130	OPEN			
XVT08370A-CS	LOW ROOT TO IFT0130	OPEN			
XVT00010-CV	DOWNSTREAM TEST VENT FOR XVT08152-CS	CLOSED/ FLANGED			

NOTE 7 - Throttled to maintain 6-13 GPM. Not LOCKED until RCS pressure is at 2235 psig.

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
412' INTERMEDIATE BUILDING (East Pen)					
XVT08371B-CS	HIGH ROOT TO IFT0127	OPEN			
XVT08370B-CS	LOW ROOT TO IFT0127	OPEN			
XVN08369B-CS	RCP B SEAL SUPPLY THROTTLE VALVE	THROTTLED NOTE 7 (LVP)			
XVT00021B-CV	DOWNSTREAM TEST CONN FOR XVT08102B-CS	CLOSED/ FLANGED			
XVT08371C-CS	HIGH ROOT TO IFT0124	OPEN			
XVT08370C-CS	LOW ROOT TO IFT0124	OPEN			
XVN08369C-CS	RCP C SEAL SUPPLY THROTTLE VALVE	THROTTLED NOTE 7 (LVP)			
XVT00021C-CV	DOWNSTREAM TEST CONN FOR XVT08102C-CS	CLOSED/ FLANGED			
388' AUXILIARY BUILDING					
XVT00030-CV	CHG/SI PUMP A DISCH HEADER DRAIN VALVE	CLOSED/ CAPPED			
XVT08479A-CS	HIGH ROOT TO IPI0151B	OPEN			
XVT08510-CS	CHG/SI PUMP A SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVT08115A-CS	HIGH ROOT TO IPI0151A	OPEN			
XVT00028A-CV	CHG/SI PUMP A MINI FLOW HDR DRAIN VALVE	CLOSED/ CAPPED			
XVG08471A-CS	CHARGING/SI PUMP A SUCTION VALVE	OPEN (LVP)			
XVG08485A-CS	CHARGING/SI PUMP A DISCHARGE VALVE	1 1/8 TURNS OFF BACKSEAT (LVP)			
XVG08485C-CS	CHARGING/SI PUMP C DISCHARGE VALVE	1 1/8 TURNS OFF BACKSEAT (LVP)			
XVG08471C-CS	CHARGING/SI PUMP C SUCTION VALVE	OPEN (LVP)			
XVG08471B-CS	CHARGING/SI PUMP B SUCTION VALVE	OPEN (LVP)			
XVG08485B-CS	CHARGING/SI PUMP B DISCHARGE VALVE	1 1/8 TURNS OFF BACKSEAT (LVP)			

NOTE 7 - Throttled to maintain 6-13 GPM. Not LOCKED until RCS pressure is at 2235 psig

Valve Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
388' AUXILIARY BUILDING (Cont'd)					
XVT08115B-CS	HIGH ROOT TO IPI0152A	OPEN			
XVT08511-CS	CHG/SI PUMP B SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVT08479B-CS	HIGH ROOT TO IPI0152B	OPEN			
XVT00027-CV	CHG/SI PUMP B DISCH HEADER DRAIN VALVE	CLOSED/ CAPPED			
XVT00028B-CV	CHG/SI PUMP B MINI FLOW HDR DRAIN VALVE	CLOSED/ CAPPED			
XVT08115C-CS	HIGH ROOT TO IPI0153A	OPEN			
XVT08512-CS	CHG/SI PUMP C SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVT08479C-CS	HIGH ROOT TO IPI0153B	OPEN			
XVT00028C-CV	CHG/SI PUMP C MINI FLOW HDR DRAIN VALVE	CLOSED/ CAPPED			
XVT00029-CV	CHG/SI PUMP C DISCH HEADER DRAIN VALVE	CLOSED/ CAPPED			
400' AUXILIARY BUILDING					
XVT18107-CS	CHG/SI PUMPS SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVT08380-CS	HIGH ROOT TO IPT0121	OPEN			
XVT18105-CS	CHG/SI PUMPS SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVT18104-CS	CHG/SI PUMPS SUCTION HEADER VENT VALVE	CLOSED/ CAPPED			
XVA18130-CS	RHW LP A TO CHG PP SUCTION VENT VLV	CLOSED/ CAPPED			

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

Persons completing checklist (print) 	Initials 	CVCS ELECTRICAL LINEUP
Reviewed by SS/CRS 	Date/Time 	Date/Time started _____ / _____ / _____ Date/Time completed _____ / _____ / _____

<u>Electrical Lineup Initial Conditions</u>					
Positioning of these components to the REQUIRED POSITION places them in standby.					
COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
XSW1DA 463' INTERMEDIATE BUILDING					
XSW1DA 05	CHARGING INJ PUMP A XPP0043A-CS	NOTE 1			
XSW1DA 05 CCP	CLOSING CNTRL PWR XPP0043A-CS (RRP)	ON IF 05 RACKED IN			
XSW1DA 05 TCP	TRIPPING CNTRL PWR XPP0043A-CS (RRT)	ON IF 05 RACKED IN			
XSW1DA 06	CHARGING INJ PUMP C XPP0043C-CS	NOTE 1 NOTE 2			
XSW1DA 06 CCP	CLOSING CNTRL PWR XPP0043C-CS (RRP)	ON IF 06 RACKED IN			
XSW1DA 06 TCP	TRIPPING CNTRL PWR XPP0043C-CS (RRT)	ON IF 06 RACKED IN			

NOTE 1 - Only one breaker may be racked in per train.
NOTE 2 - Breaker will be racked in only if Charging Pump C is aligned to A train.

Electrical Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
APN1DA2 463' INTERMEDIATE BUILDING					
APN1DA2 10, 12	SPACE HTR FOR CHARG/SI PP A XPP0043A-CS	CLOSED			
XSW1DB 436' INTERMEDIATE BUILDING					
XSW1DB 14	CHARGING INJ PUMP C XPP0043C-CS	NOTE 1 NOTE 2			
XSW1DB 14 CCP	CLOSING CNTRL PWR XPP0043C-CS (RRP)	ON IF 14 RACKED IN			
XSW1DB 14 TCP	TRIPPING CNTRL PWR XPP0043C-CS (RRT)	ON IF 14 RACKED IN			
XSW1DB 15	CHARGING INJ PUMP B XPP0043B-CS	NOTE 1			
XSW1DB 15 CCP	CLOSING CNTRL PWR XPP0043B-CS (RRP)	ON IF 15 RACKED IN			
XSW1DB 15 TCP	TRIPPING CNTRL PWR XPP0043B-CS (RRT)	ON IF 15 RACKED IN			
XMC1DB2X 436' INTERMEDIATE BUILDING					
XMC1DB2X 02AD	RCP B SEAL INJECTION ISO ORC XVT8102B-CS	CLOSED			
XMC1DB2X 02EH	RCP C SEAL INJECTION ISO ORC XVT8102C-CS	CLOSED			
APN1DB2 436' INTERMEDIATE BUILDING					
APN1DB2 10, 12	SPACE HTR FOR CHARG/SI PP B XPP0043B-CS	CLOSED			
XET2002C 388' AUXILIARY BUILDING					
XET2002C	S/I CHARGING PUMP "C" TRANSFER SWITCH "A" CHANNEL SOURCE XSW1DA	NOTE 3			
XET2002C	S/I CHARGING PUMP "C" TRANSFER SWITCH "B" CHANNEL SOURCE XSW1DB	NOTE 3			

NOTE 1 - Only one breaker may be racked in per train.

NOTE 2 - Breaker will be racked in only if Charging Pump C is aligned to B train.

NOTE 3 - Only one train on XET2002C-CS will be closed.

Electrical Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
XMC1DA2Y 412' AUXILIARY BUILDING					
XMC1DA2Y 01DG	CHARGING PUMP MINIFLOW VALVE XVG8106-CS	CLOSED			
XMC1DA2Y 01HK	RCS CHARGING LINE VLV XVG8107-CS	CLOSED			
XMC1DA2Y 01LM	CHARG/SI PUMP A AUX OIL PUMP 1 XPP0043A-CS	CLOSED			
XMC1DA2Y 02AD	RWST TO CHARGING PP VLV LCV-115B XVG0115B-CS	CLOSED			
XMC1DA2Y 02EH	VCT TO CHARGING PUMP ISOL VALVE LCV-115C XVG0115C-CS	CLOSED			
XMC1DA2Y 03AD	CHG PUMP SUCTION HDR ISO XVG8130A-CS	CLOSED			
XMC1DA2Y 03EH	CHG PUMP SUCTION HDR ISO XVG8131A-CS //	CLOSED			
XMC1DA2Y 03IM	SEAL WATER RETURN ISOL VALVE XVT08112-CS	CLOSED			
XMC1DA2Y 04ABR	CHG PUMP C AUX TRANSF SWITCH PNL XPN0040-ES	CLOSED			
XMC1DA2Y 04EH	CHG PUMP DISCHG HDR ISO XVG8132A-CS	CLOSED			
XMC1DA2Y 04IL	CHG PUMP DISCHG HDR ISO XVG8133A-CS	CLOSED			
XMC1DA2Y 07IJ	PWR LCKOUT XVG8133A-CS	CLOSED NOTE 4			
XMC1DA2Y 13AC	PWR LCKOUT XVG8889-84-88A-SI XVG 8106-CS	CLOSED NOTE 5			
APN4003 436' AUXILIARY BUILDING					
APN4003 20, 22, 24 (Machine shop)	XPN-0024 BORON CONCENTRATE MEASUREMENT SYSTEM PANEL	CLOSED			
APN01B3 436' AUXILIARY BUILDING					
APN01B3 9, 11	XPP43C-SPACE HTR	CLOSED			

NOTE 4 - Power is supplied from the load side of XMC1DA2Y 07IJ to the line side XMC1DA2Y 04IL.

NOTE 5 - Power is supplied from the load side of XMC1DA2Y 13AC to the line side of XMC1DA2Y 01DG. This breaker also is addressed in SOP-112 Electrical Lineup.

Electrical Lineup (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	ACTUAL POSITION	INITIALS	VERIFIERS INITIALS
XMC1DB2Y 463' AUXILIARY BUILDING					
XMC1DB2Y 06AD	CHARGING PUMP DISCHARGE HEADER ISOLATION VALVE XVG8132B-CS	CLOSED			
XMC1DB2Y 06EH	CHG PUMPS B & C DISCHG HDR CROSSOVER VALVE XVG8133B-CS	CLOSED			
XMC1DB2Y 06IL	VLV RCP A SEAL INJECTION ISOLATION XVT8102A-CS	CLOSED			
XMC1DB2Y 07AD	CHG PUMP C MINIFLOW ISOL XVT8109C-CS	CLOSED			
XMC1DB2Y 07EH	CHG PUMP SUCTION HDR ISOL XVG8130B-CS	CLOSED			
XMC1DB2Y 07IL	CHG PUMP SUCTION HDR ISOL XVG8131B-CS	CLOSED			
XMC1DB2Y 08AD	RCS CHARGING LINE VALVE XVG8108-CS	CLOSED			
XMC1DB2Y 08EH	CHARGING PUMP A MINIFLOW ISOL XVT8109A-CS	CLOSED			
XMC1DB2Y 08IL	CHG PUMP B MINIFLOW ISOL XVT8109B-CS	CLOSED			
XMC1DB2Y 09AD	SEAL WTR RETURN HDR ISOL ORC XVT8100-CS	CLOSED			
XMC1DB2Y 09EH	B.A.T. TO CHARGING PUMP SUCTION PUMP XVT8104-CS	CLOSED			
XMC1DB2Y 09IL	SEAL WATER INJECT VALVE XVT8105-CS	CLOSED			
XMC1DB2Y 10EG	CHARG/SI PUMP B AUX OIL PUMP ALOP 2 XPP0043B-CS	CLOSED			
XMC1DB2Y 10JM	VCT TO CHARGING PUMP ISOLATION VALVE LCV-115E XVG0115E-CS	CLOSED			
XMC1DB2Y 14FGR	CHARGING PUMP AUX TRANSFER SW PNL XPN0040-ES	CLOSED			
XMC1DB2Y 15CD	PWR LCKOUT XVG8133B-CS	CLOSED NOTE 6			
XMC1DB2Y 21EH	RWST TO CHARGING PUMP VALVE LCV-115D XVG0115D-CS	CLOSED			
APN1FX1 436' CONTROL BUILDING					
APN1FX1 17	XPN0024 - BORON CONCENTRATE MEASUREMENT SYSTEM	CLOSED			

NOTE 6 - Power is supplied from the load side of XMC1DB2Y 15CD to the line side of XMC1DB2Y 06EH.

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Electrical Effects Report

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XSW1DA U01	BKR	I		XSW1DA BUS	*	LOSS OF DC: 1. BREAKER WILL NOT CLOSE ELECTRICALLY. 2. BREAKER WILL NOT TRIP ELECTRICALLY. 3. WILL LOSE ALL LIGHT INDICATION. 4. BREAKER WILL NOT TRIP ON FAULT. SEE INDIVIDUAL LOADS FOR OTHER EFFECTS.	TECH. SPEC. 3.8.1.1, 3.8.1.2
INCOMING FEED FROM XSW1DX AND TIE TO XSW1DB							
XSW1DA U02	BUS	O				BUS TIE TO UNIT 16 NO BREAKER. SEE NOTES FOR XSW1DA UNIT 01	N/A
SOLID 1200 A BUS TIE TO CUBICLE 16							
XSW1DA 1103	RKR	I	DGM 1A DGM 2A		*	DIESEL GENERATOR A; XEG00001A NO OTHER EFFECTS. B-208-024 SHEET DG01 SEE NOTES FOR XSW1DA UNIT 01	DIESEL GENERATOR A BREAKER INOPERABLE. TECH. SPEC. 3.8.1.1; 3.8.1.2
INCOMING FEED FROM DIESEL GENERATOR A							
XSW1DA U04	BKR	O	ES M 191A	XSW1EA BUS	*	FEEDER FOR SWITCHGEAR XSW1EA. TSC COMPUTER POINT ED1000 (BIS) SW POWER FOR TRAM A) NOT RELIABLE. B-208-037 SHEET ES24; SEE LIST FOR XSW1EA SEE NOTES FOR XSW1DA UNIT 01	XSW1EA INOPERABLE. TECH. SPEC. 3.7.4
FEEDER SWGR IEA							
XSW1DA U05	BKR	O	CS M 1A	XPP00043A		CHARGING/SI PUMP A, XPP00043A. COMPUTER POINT Y0101D WILL NOT BE RELIABLE. B-208-021 SHEET CS05	XPP00043A INOPERABLE. TECH. SPEC. 3.1.2; 3.5.2; 3.5.3
FEEDS CHARGING/SI PUMP XPP43A							
XSW1DA U06	BKR	O	CS M 41A	XPP00043C	*	CHARGING/SI PUMP C (A TRAIN)	XPP00043C (A TRAIN) INOPERABLE TECH. SPEC. 3.1.2, 3.5.2, 3.5.3
FEEDS CHARGING/SI PUMP XPP43C VIA XET2002C							
XSW1DA 1107	BKR	O	CC M 33A	MPP00001C	*	COMPONENT COOLING PUMP C; XPP00001C; (A' TRAIN) 1. CLOSING VALVE XVG06517-VU COMPONENT COOLMG PUMP MOTOR COOLER ISOLATION VALVE. 2. IF PUMP IS RUNNING ON HIGH SPEED; THE MOTOR WILL TRIP WHEN DPN1HA1 BREAKER # 01 IS RECLOSED. 3. COMPUTER POINT 710 NOT BE RELIABLE B-208-011 SHEET CC05 B-208-109 SHEET VU18 NOTE: TO PREVENT COMPONENT COOLING PUMP TRIP: RUN COMPONENT COOLING PUMP C IN LOW SPEED. OPEN XMC1DA2Y BREAKER 12EH TO PREVENT VALVE XVG06518- VU FROM CLOSING. SEE NOTES FOR XSW1DA UN UP TO RUN VIA	CCW PUMP 'C' INOPERABLE (A' TRAIN). TECH. SPEC. 3.7.3
FEEDS COMPONENT COOLING PUMP XPP1C VIA TRANSFER & SPEED SWS							

Note: An asterisk (*) in the Flag column indicates that the effect(s) are not applied at an end device in the electrical distribution system. These effects should be reviewed and moved if possible to the appropriate end device. An end device is generally the last circuit breaker or fuse before the actual load.

V.C. Summer Nuclear Station

Electrical Effects Report

Equip Tag/Comp/Device

Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XSW1DA U08	RKR	O	CC M 11A CCM 12A	MPP00001A		COMPONENT COOLING PUMP A, 1. CLOSES VALVE XVG06516-VU COMPONENT MOLING PUMP MOTOR COOLER ISOLATION VALVE. 2. COMPUTER POINT Y7101D WILL NOT BE RELIABLE. 3. IF PUMP IS RUNNING ON FAST SPEED THE MOTOR WILL TRIP WHEN DPN1HA1 BREAKER # 01 IS RECLOSED. B-208-011 SHEET CC01 B-208-109 SHEET VU16 NOTE: TO PREVENT COMPONENT COOLING PUMP A TRIP; RUN IN LOW SPEED. OPEN XMC1DA2Y BREAKER 09AD TO PREVENT VALVE XVG06516-VU FROM CLOSING. SEE NOTES FOR XSW1DA UNIT 01.	CCW PUMP 'A' INOPERABLE. TECH. SPEC. 3.7.3
FEEDS COMPONENT COOLING PUMP XPP1A VIA SPEED SW XES2001A							
XSW1DA U09	RKR	O				SPARE	N/A
SPARE							
XSW1DA U10	SPACE	?			*	PT COMPARTMENT; NO BREAKER 1. STARTS DIESEL GENERATOR A2. STARTS SEQUENCER A. XPN06025 NOTE 1. TO PREVENT STARTING OF DIESEL GENERATOR A; PLACE THE DIESEL MODE SELECTOR SWITCH IN 'MAINTENANCE'. 2. TO PREVENT SEQUENCER A FROM OPERATING; OPEN APN05901 BREAKER # 16. PRIOR TO RESTORING DIESEL OR CLOSING APN05901 BREAKER # 16; ENSURE THAT DPN1HA1 BREAKER # 1 IS CLOSED AND POTENTIAL LIGHTS ARE LIT ON SWITCHGEAR B-208-037 SHEET ES66 B-208-024 SHEET DG01	DG 'A' INOPERABLE. TECH. SPEC. 3.8.1.1; 3.8.1.2
PT COMPARTMENT							
XSW1DA U11	BKR	O	SP M 11A	XPP00038A		REACTOR BUILDING SPRAY PUMP A: COMPUTER POINT Y7351D NOT RELIABLE B-208-097 SHEET SP01 SEE NOTES FOR XSW1DA UNIT 01.	REACTOR BUILDING SPRAY PUMP 'A' INOPERABLE. TECH. SPEC. 3.6.2.1
FEEDS REACTOR BUILDING SPRAY PUMP XPP38A							
XSW1DA U12	BKR	O	RC M 51XA	XTF04101	*	XTF04101; PRESSURIZER HEATER GROUP 1 NO OTHER EFFECTS. B-208-082 SHEET RC08	TRAIN 'A' PRESSURIZER HEATERS INOPERABLE. TECH. SPEC. 3.4.3
FEEDS PRESS HEATER BACK-UP GROUP 1, PNL APN4104 VIA XTF							
XSW1DA U13	RKR	O	EF M 14A	XPP00021A		EF PUMP A; XPP00021A COMPUTER POINT Y3501D NOT RELIABLE B-208-032 SHEET EF01 SEE NOTES FOR XSW1DA UNIT 01.	EFW PUMP 'A' INOPERABLE. TECH. SPEC. 3.7.1.2
FEEDS EMERGENCY FEEDWATER PUMP XPP21A							
XSW1DA U14	BKR	O	ES M 181A ES M 182A	XSW1DA 1/2 BUS	*	FEEDER FOR SWITCHGEARS XSW1DA1 AND XSW1DA2. SEE FEEDERS FOR XSW1DA1 AND XSW1DA2. B-208-037 SHEET ES20 SEE NOTES FOR XSW1DA UNIT 01.	TECH. SPEC. 3.8.3.1; 3.8.3.2
FEEDS UNIT SUB 1DA1 VIA XTF							

Note: An asterisk (*) in the Flag column indicates that the effect(s) are not applied at an end device in the electrical distribution system. These effects should be reviewed and moved if possible to the appropriate end device. An end device is generally the last circuit breaker or fuse before the actual load.

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Equip Tag/Comp/Device	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
Function							
XSWIDA U15	BKR	I			*	EMERGENCY INCOMING FEEDER BREAKER XSWIDA.TSC COMPUTER POINT ED1004 NOT RELIABLE. B-208-037 SHEET ES10SEE NOTES FOR XSWIDA UNIT 01.	TECH. SPEC. 3.8.3.1; 3.8.3.2 NO EFFECT IF NORMAL FEED,UNIT 1,IS CLOSED.NEED TO CONSIDER OPERABILITY OF OFF SITE POWER SOURCE.
INCOMING FEED FROM EMERG XTF00031 AND TIE TO XSW1DB							
XSWIDA U16	BUS	O				BUS TIE TO UNIT 2,NO BREAKER SEE NOTES FOR XSWIDA UNIT 01.	N/A
SOLID 1200 A BUS TIE TO CUBICLE 2							

Total Records: 16

Note: An asterix (*) in the Flag column indicates that the effect(s) are not applied at an end device in the electrical distribution system. These effects should be reviewed and moved if possible to the appropriate end device. An end device is generally the last circuit breaker or fuse before the actual load.

V.C. Summer Nuclear Station

Electrical Effects Report

Equip Tag/Comp/Device	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
Function XSW1DB U01	BKR	I		XSW1DB BUS		EMERGENCY INCOMING FEEDER BREAKER FOR XSW1DB. TSC COMPUTER INPUT DD1033 WILL NOT BE RELIABLE B-208-037 SHEET ES08 SEE NOTES FOR DPN1HB1 BREAKER 01.	NO EFFECT IF NORMAL FEED UNIT 16 IS CLOSED. NEED TO CONSIDER OPERABILITY OF OFFSITE POWER SOURCE. TECH. SPEC. 3.8.1.1, 3.8.1.2
INCOMING FEED FROM XSW1DX AND TIE TO XSW1DA XSW1DB U02	SPACE	7				FUTURE	N/A
FUTURE XSW1DB U03	BKR	O	EF M 24B	XPP00021B		EMERGENCY FEEDWATER PUMP B COMPUTER POINT Y3502D NOT RELIABLE. B-208-032 SHEET EF02 SEE NOTES FOR DPN1HB1 BREAKER 01	FEEDWATER PUMP IS INOPERABLE. TECH. SPEC. 3.7.1.2
FEEDS EMERGENCY FEEDWATER PUMP XPP21B XSW1DB U04	BKR	O	ES M 221B	XSW1EB BUS	*	FEEDER FOR SWITCHGEAR XSW1EB. TSC COMPUTER POINT ED1002 NOT RELIABLE. B-208-037 SHEET ES23 SEE NOTES FOR DPN1HB1 BREAKER 01	XSW1EB OPERABLE TECH. SPEC. 3.7.4
FEEDS SWGR XSW1EB XSW1DB U05	BKR	O	RCM 61XB	XTF04102		XTF04102, PRESSURIZER HEATER GROUP II NO OTHER EFFECTS. B-208-082 SHEET RC09 SEE NOTES FOR DPN1HB1 BREAKER 01	TRAM B PRESSURIZER HEATER INOPERABLE. TECH. SPEC. 3.4.3
FEEDS PRESS HEATER BACK-UP GROUP 2, PNL APN4105 VIA XTF4102 XSW1DB U06	BKR	O	SPM 21B	XPP00038B		REACTOR SPRAY PUMP B COMPUTER POINT Y7352D NOT RELIABLE. B-208-097 SHEET SP02 SEE NOTES FOR DPN1HB1 BREAKER 01	REACTOR BUILDING SPRAY PUMP B INOPERABLE. TECH. SPEC. 3.4.3
FEEDS REACTOR BUILDING SPRAY PUMP XPP38B XSW1DB U07	BKR	O	ES M 171B ES M 172B	XSW1DB1/2 BUS	*	FEEDER FOR SWGR, XSW1DB1 AND XSW1DB2 NO OTHER EFFECTS. B-208-037 SHEETS ES19, ES81 SEE NOTES FOR DPN1HB1 BREAKER 01	TECH. SPEC. 3.8.3.1; 3.8.3.2
FEEDS UNIT SUB 1DB1 VIA XTF XSW1DB U08	BUS	O			*	PT COMPARTMENT, BUS TIE TO UNIT 12 1. STARTS DIESEL GENERATOR B 2. STARTS SEQUENCER B (XPN06025) NOTE: (A) TO PREVENT STARTING OF DIESEL GENERATOR B; PLACE THE DIESEL MODE SELECTOR SWITCH IN MAINTENANCE. (B) TO PREVENT SEQUENCER B FROM OPERATING; OPEN BREAKER # 16 IN APN05903. PRIOR TO RESTORING DIESEL OR CLOSING BREAKER # 16 IN APN05903; INSURE THAT DPN1HB1 BREAKER # 1 IS CLOSED. B-208-037 SHEET ES67 SEE NOTES FOR DPN1HB1 BREAKER 01.	TECH. SPEC. 3.8.1.1; 3.8.1.2
SOLID 1200 A BUS TIE TO CUBICLE 12 XSW1DB U09	BKR	O				SPARE	N/A
SPARE							

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Equip Tag/Comp/Device	Type	ID	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
Function							
XSW1DB U10	BKR	I	DG M 3B DG M 4B		*	DIESEL GENERATOR B NO OTHER EFFECTS. B-208-024 SHEET DG02 SEE NOTES FOR DPN1HB1 BREAKER 01.	DIESEL GENERATOR B BREAKER INOPERABLE. SEE TECH. SPEC. 3.8.1.1; 3.8.1.2
INCOMING FEED FROM DIESEL GENERATOR B							
XSW1DB U11	BKR	O	CC M 43B	MPP00001C Train B	*	COMPONENT COOLING PUMP C XPP0001C (TRAIN B). B - 208-011 SHEET CC04.	CCW PUMP C INOPERABLE (B TRAIN) TECH. SPEC. 3.7.3
FEEDS COMPONENT COOLING PUMP XPP1C VIA XETOZOIC & SPEED SW							
XSW1DB U12	BUS	O				BUS TIE TO UNIT 08. NO BREAKER	N/A
SOLID 1200 A BUS TIE TO CUBICLE 8							
XSW1DB U13	BKR	O	CC M 21B CC M 22B	MPP00001B		COMPONENT COOLING PUMP B1. CLOSES VALVE XVG06519; COMPONENT COOLING PUMP MOTOR COOLER ISOLATION VALVE 2. COMPUTER POINT Y7102D WILL NOT BE RELIABLE. 3. IF PUMP IS RUNNING ON FAST SPEED: THE MOTOR WILL TRIP WHEN BREAKER # 1 IN DPN1HB1 IS RECLOSED B-208-011 SHEET CC02 B-208-109 SHEET VU17 NOTES: 1. TO PREVENT CC PUMP B TRIP: RUN IT SLOW SPEED. 2. OPEN BREAKER # 16EH IN XMC1DB2Y TO PREVENT VALVE XVG06519 FROM CLOSING. SEE NOTES FOR DPN1HB1 BREAKER 01.	'C' CCW PUMP INOPERABLE. TECH. SPEC. 3.7.3
FEEDS COMPONENT COOLING PUMP XPP1B VIA SPEEDSW XES20001B							
XSW1DB U14	BKR	O	CS M 42B CS M 41C	XPP00043C Train E	*	CHARGING/SI PUMP C ('B' TRAIN) COMPUTER POINT Y9113D NOT RELIABLE. SEE NOTES FOR DPN1HB1 BREAKER 01. B-208-021 SHEET CS08	'C' CHARGING PUMP INOPERABLE; 'B' TRAIN TECH. SPEC. 3.1.2; 3.5.2; 3.5.3
FEEDS CHARGING/SI PUMP XPP43C VIA XET2002C							
XSW1DB U15	BKR	O	CS M 11B	XPP00043B		CHARGING/SI PUMP B COMPUTER POINT Y0102D NOT RELIABLE. B-208-021 SHEET CS06 SEE NOTES FOR DPN1HB1 BREAKER 01.	'B' CHARGING PUMP INOPERABLE. TECH. SPEC. 3.1.2; 3.5.2; 3.5.3
FEEDS CHARGING/SI PUMP XPP43B							
XSW1DB U16	BKR	B			*	NORMAL INCOMING FEED FOR XSW1DB TSC COMPUTER POINT DD1031 NOT RELIABLE. B-208-037 SHEET ES07 SEE NOTES FOR DPN1HB1 BREAKER 01.	NO EFFECT IF EMERG. FEED, UNIT 01, IS CLOSED. NEED TO CONSIDER OPERABILITY OF OFFSITE POWER SOURCE. TECH. SPEC. 3.8.1.1, 3.8.1.2
SOLID 1200 A TIE TO CUBICLE 17							
XSW1DB U17	BUS	O			*	BUS TIE TO UNIT 16. NO BREAKER	N/A
SOLID 1200 A TIE TO CUBICLE 16							
XSW1DB U18	BKR	B			*	FUTURE	N/A
FUTURE TIE TO UNIT 2							
XSW1DB U19	BKR	I			*	DISCONNECT BREAKER NO OTHER EFFECTS IUS-23446.1 SEE NOTES FOR DPN1HB1 BREAKER 01 EMERG. TO 1DA	TECH. SPEC. 3.8.1.1; 3.8.1.2
INCOMING FEED FROM EMERG AUX TRANSFORMER XTF31							

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Date: 3/23/2004 5:14:15 PM

Filter: XSW1DB

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
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Total Records: 19

Note: An asterisk (*) in the Flag column indicates that the effect(s) are not applied at an end device in the electrical distribution system. These effects should be reviewed and moved if possible to the appropriate end device. An end device is generally the last circuit breaker or fuse before the actual load.

Date: 3/24/2004 6:44:56 AM

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 01AC INCOMING LINES PRIMARY	BKR	I			*	INCOMING FEEDER FED FROM XSW1DB2 UNIT 6B.	FEEDER, SEE INDIVIDUAL LOADS
XMC1DB2Y 01D RLANK	SPACE	-			*	BLANK	N/A
XMC1DB2Y 01EH	BKR	O	SPC 51B	XVG03003B		SPRAY HEADER ISOLATION VALVE B 1. WILL NOT OPEN ON CONTAINMENT ISOLATION; PHASE A: SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN 4. INTERLOCKED WITH XVG03002B TO OPEN B-208-097 SHEET SP08	TRAIN 'B' REACTOR BUILDING SPRAY INOPERABLE. TECH. SPEC. 3.6.2.1 VALVE MUST BE CLOSED PER TECH. SPEC. 3.6.4 (CONTAINMENT ISOLATION) NOTE: DE-ENERGIZING THIS CIRCUIT ALONE WILL NOT CAUSE THE SPRAY PUMP TO START. GROUNDING CERTAIN LIMIT SWITCH WIRING CAN CAUSE AN INADVERTANT START. PLACE THE SPRAY PUMP IN PULL-TO-LOCK.
FEEDS VALVE, RB SPRAY HEADERS ISOLATION CIRCUIT B							
XMC1DB2Y 01JL	BKR	O	ET C 15B	XP02010	*	NAOH SPRAY SYSTEM HEAT TRACING CONTROL PANEL NO EFFECT IF XP02009 IS OPERABLE. IMS-39-208-1	ENSURE 'A' TRAIN HEATING PANEL IS FUNCTIONAL.
FEEDS SODIUM HYD SPRAY HEAT TRACE CONTROL PANEL B							
XMC1DB2Y 01JR SPARE	BKR	O				SPARE	N/A
XMC1DB2Y 01KL	BKR	O	RM C 6XB	IRM00011		AUXILIARY BUILDING VENTILATION RADIATION MONITOR 1. STOPS SAMPLE BLOWER 2. ALARMS AT XCP06200 IMS-44-281	NONE; MINIMIZE IN-PLANT EVOLUTIONS WHICH COULD CAUSE RADIATION RELEASE.
FEEDS RADIATION MONITOR AUX. BLDG. VENTS-							
XMC1DB2Y 01M BLANK	SPACE	.			*	BLANK	N/A
XMC1DB2Y 02AD	BKR	O	SPC 11B	XVG03001B		RWST TO REACTOR BUILDING SPRAY PUMP B SUCTION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES OPEN 3. WILL NOT OPEN ON SPRAY ACTUATION SIGNAL 4. INTERLOCKED WITH XPP00038B TO OPEN XVG03003B RELAY VIA K643 AT SAFEGUARDS TEST CABINET B-208-097 SHEET SP04	TWIN 'B' REACTOR BUILDING SPRAY INOPERABLE. TECH. SPEC. 3.6.2.1 NOTE: DE-ENERGIZING THIS CIRCUIT ALONE WILL NOT CAUSE THE SPRAY PUMP TO START. GROUNDING CERTAIN LIMIT SWITCH WIRING CAN CAUSE AN INADVERTANT START. PLACE THE SPRAY PUMP IN PULL-TO-LOCK.
FEEDS VALVE, RWST TO RB SPRAY PUMP B SUCTION							
XMC1DB2Y 02EH	BKR	O	SPC 31B	XVG03002B		NAOH TANK TO REACTOR BUILDING SPRAY PUMP B SUCTION VALVE 1. WILL NOT OPEN ON CONTAINMENT ISOLATION (PHASE A) SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN 4. INTERLOCKED WITH XVG03000B TO OPEN XVG03001B AND START XPP00038B VIA K644 RELAY AT SAFEGUARDS TEST CABINET B-208-097 SHEET SP06	TRAIN 'B' REACTOR BUILDING SPRAY INOPERABLE. TECH. SPEC. 3.6.2.1 NOTE: DE-ENERGIZING THIS CIRCUIT ALONE WILL NOT CAUSE THE SPRAY PUMP TO START. GROUNDING CERTAIN LIMIT SWITCH WIRING CAN CAUSE AN INADVERTANT START. PLACE THE SPRAY PUMP IN PULL-TO-LOCK.
FEEDS VALVE, NAOH TANK TO RB SPRAY PUMP B SUCTION							

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 02IM	HKR	O	SP C 71R SP C 74R	XVG03004B		REACTOR BUILDING SUMP ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL IN CONJUNCTION WITH LO-LO LEVEL IN THE RWST 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-097 SHEET SP10	TRAIN 'B' REACTOR BUILDING SPRAY INOPERABLE. TECH. SPEC. 3.6.2.1 VALVE MUST BE CLOSED PER TECH. SPEC. 3.6.4 (CONTAINMENT ISOLATION).
FEEDS VALVE, RB SUMP ISOLATION							
XMC1DB2Y 03AD	HKR	O	RHC 111B	XVG08706B		RHR SYSTEM TO CHARGING PUMP VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES CLOSED 3. POWER ON ROTOR 2 FROM XMC1DB2Y UNIT 04FI 4. DISABLES XVG08702B IF VALVE IS OPENED 5. STEM MOUNTED SWITCH POWERED FROM XMC1DA2Y WIT 18IM B-208-094 SHEET RH10	TRAIN 'B' ECCS INOPERABLE. TECH. SPEC. 3.5.2; 3.5.3
FEEDS RHR TO CHARGING PUMP VALVE							
XMC1DB2Y 03EH		O	RHC 91B	XVT00602B		RHR PUMP MINIFLOW VALVE VALVE FAILS 'AS IS'. B-208-084 SHEET RH08	TRAIN 'B' RHR INOPERABLE. TECH. SPEC. 3.5.2; 3.5.3
FEEDS RHR PUMP R MINIFLOW FCV-602B							
XMC1DB2Y 03IM	RKR	O	RCC 31R RCC 32R	XVG08000A		PRESSURIZER RELIEF ISOLATION VALVE TSC INPUT UNRELIABLE. B-208-082 SHEET RC10	CLOSE VALVE PRIOR TO REMOVING POWER. TECH. SPEC. 3.4.4
FEEDS VALVE, PRESSURIZER PRESSURE RELIEF ISOLATION							
XMC1DB2Y 04AE	RKR	O	RHC 418 RHC 428	XVG08702A		RHR LOOP 1 INLET ISOLATION VALVE 1. MI LIGHT 2. STEM MOUNTED SWITCH FED FROM XMC1DA2Y UNIT 18EH 3. TSC INPUT UNRELIABLE; INDICATES OPEN 4. POWER ON ROTOR 1 FROM APN05908 BREAKER 21 5. WILL NOT AUTO STROKE FROM RCS PRESSURE SIGNAL 6. IF VALVE IS OPENED; ABILITY TO OPEN XVG08706A IS LOST B-208-084 SHEET RH05	TRAIN 'A' RHR INOPERABLE. TECH. SPEC. 3.4.1.3; 3.4.1.4.1; 3.4.1.4.2
FEEDS RHR LOOP 1 MLET ISOLATION VALVE							
XMC1DB2Y 04FI	BKR	O	RHC 61R RHC 62R	XVG08702B		RHR LOOP 3 INLET ISOLATION VALVE 1. POWER ON CIRCUIT FROM XMC1DB2Y UNIT 03AD; APN05908 BREAKER 21 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED 4. IF VALVE IS OPENED; ABILITY TO OPEN XVG08706B IS LOST 5. WILL NOT STROKE VIA RCS PRESSURE SIGNAL B-208-084 SHEET RH06	TRAIN 'B' RHR INOPERABLE. TECH. SPEC. 3.4.1.3; 3.4.1.4.1; 3.4.1.4.2
FEEDS RHR LOOP 3 MLET ISOLATION VALVE							

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Equip Tag/Comp/Device	Type	IO	Circuit ID	Lead Tag	Flag	Effect Circuit	Effect Operations
Function							
XMC1DB2Y 04KM	BKR	O	EM C 26X	APN08013B		ESSENTIAL LIGHTING PANEL # 13 PARTIAL LOSS OF CONTROL BUILDING LIGHTING CONTINUE TO RUN. E-220.173 SHEET 2	NONE
FEEDS LIGHTING PANEL 13 ESSENTIAL PANEL, TRAIN B							
XMC1DB2Y 05AB	BKR	O				RELAY COMPARTMENT	NONE
FEEDS RELAY COMPARTMENT							
XMC1DB2Y 05CD	SPACE	.			*	SPACE	NIA
SPACE							
XMC1DB2Y 05EH	RKR	O	MSC 11B	XVG02802B		MS LOOP 3 TO TURBINE DRIVEN EFW PUMP 1. WILL NOT OPEN ON LOSS OR LO-LO SG LEVEL SIGNAL 2. MI LIGHT 3. COMPUTER POINT Y1058D UNRELIABLE B-208-067 SHEET MS02	VALVE FAILS AS IS. ENSURE OPEN PRIOR TO POWER REMOVAL. VALVE WILL HAVE TO BE MANUALLY GAGGED CLOSED IF ISOLATION OF C SG IS REQUIRED
FEEDS VALVE, EFW MAIN STEAM BLOCK							
XMC1DB2Y 05IL	BKR	O	EM C 286B	XIT05903	*	120V INVERTER 1, NSSS NO EFFECT PROVIDED DC INPUT IS ENERGIZED FROM DPN1HB BREAKER 22. IMS-51-051-2	NOTIFY ELECTRICAL MAINTENANCE. ENSURE NO I&C TESTING IS IN PROGRESS CAUSING TRIPPED BISTABLE
NORMAL FEED FOR INVERTER 3, NSSS (XIT5903)							
XMC1DB2Y 05UR	RKR	O	EM C 287B	XIT05904	*	120V INVERTER 4, NSSS NO EFFECT PROVIDED DC INPUT IS ENERGIZED FROM DPN1HB BREAKER 20. IMS-51-051-2	NOTIFY ELECTRICAL MAINTENANCE. ENSURE NO I&C TESTING IS IN PROGRESS CAUSING TRIPPED BISTABLES.
NORMAL FEED FOR INVERTER 4, NSSS (XIT5904)							
XMC1DB2Y 05KM	RKR	O	EM C 96U	XBC1A-1B TRAIN B	*	DC DISTRIBUTION BUS 1A-1B BACKUP BATTERY CHARGER NO EFFECT PROVIDED XBA1B IS ALIGNED TO XBC1B. E-206-026	NONE
FEEDS RATTERY CHARGER 1A-1B VIA XET04003							
XMC1DB2Y 06AD	BKR		CSC 211B	XVG08132B		CHARGING PUMP DISCHARGE HEADER ISOLATION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-021 SHEET CS27	PREVENTS TRAIN ISOLATION DURING ECCS RECIRCULATION PHASE. TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP DISCHARGE HEADER ISOLATION VALVE							
XMC1DB2Y 06EH	RKR	O	CSC 231B	XVG08133B		CHARGING PUMP DISCHARGE HEADER ISOLATION VALVE 1. CONT PWR LIGHT. B-208-021 SHEET CS29.	VALVE XVG8133B INOPERABLE, SEE TECH. SPEC. 3.5.2; 3.5.3.
FEEDS VLV, DISCHARGE HDR CROSSOVER, CHARGING PUMPS B & C (SEE UNIT 15CD POWER LOCKOUT)							
XMC1DB2Y 06IL	RKR	O	CSC 41B	XVT08102A		SEAL WATER INJECTION FILTER ISOLATION VALVE MI LIGHT B-208-021 SHEET CS10	NO SIGNIFICANT EFFECT.
FEEDS VLV, RCP A SEAL INJECTION ISOLATION							
XMC1DB2Y 06M	SPACE	.				BLANK	N/A
BLANK							

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 07AD	BKR	O	CSC 91B	XVT08109C		CHARGING PUMP 'C' MINIFLOW VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-021 SHEET CS15	ENSURE VALVE OPEN, IF REQUIRED; POST-SI; VALVE CAN BE MANUALLY OPERATED. TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP C MINIFLOW ISOLATION VALVE							
XMC1DB2Y 07EH	BRR	O	CSC 171B	XVG08130B		CHARGING PUMP SUCTION HEADER ISOLATION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE B-208-021 SHEET CS23	PREVENTS TRAIN ISOLATION DURING ECCS RECIRCULATION PHASE TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP SUCTION HEADER ISOLATION VALVE							
XMC1DB2Y 07II	DKR	O	CSC 191B	XVG08131B		CHARGING PUMP SUCTION HEADER ISOLATION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE B-208-021 SHEET CS25	PREVENTS TRAIN ISOLATION DURING ECCS RECIRCULATION PHASE TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP SUCTION HEADER ISOLATION VALVE							
XMC1DB2Y 07M	SPACE	.			*	BLANK	NIA
BLANK							
XMC1DB2Y 08AD	BKR	O	CSC 141B	XVG08108		RCS CHARGING LINE VALVE 1. WILL NO CLOSE ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-021 SHEET CS20	IF VALVE FAILS IS FAILED OPEN, DEPENDENCY IS PLACED ON XVG08107 (TRAIN 'A') TO ISOLATE CHARGING. TECH. SPEC. 3.5.2; 3.5.3
FEEDS RCS CHARGING LINE VALVE							
XMC1DB2Y 08EH	BKR	O	CSC 71B	XVT08109A		CHARGING PUMP A MINIFLOW VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-021 SHEET CS13	ENSURE VALVE IS OPEN IF REQUIRED POST-SI; VALVE CAN BE MANUALLY OPERATED. TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP A MINIFLOW ISOLATION VALVE							
XMC1DB2Y 08II	BKR	O	CSC 81B	XVT08109B		CHARGING PUMP B MINIFLOW VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-021 SHEET CS14	ENSURE VALVE IS OPEN, IF REQUIRED POST-SI; VALVE CAN BE MANUALLY OPERATED. TECH. SPEC. 3.5.2; 3.5.3
FEEDS CHARGING PUMP B MINIFLOW ISOLATION VALVE							
XMC1DB2Y 08M	SPACE	.			*	BLANK	NIA
BLANK							
XMC1DB2Y 09AD	BKR	O	CSC 111B	XVT08100		SEAL WATER RETURN ISOLATION VALVE 1. WILL NOT CLOSE ON CONTAINMENT ISOLATION 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-021 SHEET CS17	CONTAINMENT ISOLATION VALVE PENETRATION MUST BE ISOLATED WITHIN 4 HOURS. TECH SPEC. 3.6.4 WILL CAUSE DIVERSION OF SEAL RETURN STREAM TO THE PRT IF SEAL INJECTION IS IN SERVICE.
FEEDS SEAL WATER RETURN (SOLATION VALVE							

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Equip/Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 09EH	BKR	O	CSC 31B	XVT08104		B.A.T. TO CHARGING INJECTION PUMP SUCTION VALVE 1. ALTERNATE CONTROL POWER SOURCE FROM APN01DB1 BREAKER # 7 WHEN IN LOCAL AT CREP 2. IF VALVE IS CLOSED XPP00013B WILL NOT AUTO START 3. POWER ON ROTOR 3 FROM XMC1DB2Y UNIT 10EH B-208-021 SHEET CS09	VALVE CAN BE OPERATED MANUALLY.
FEEDS B.A.T. TO CHARGING PUMP SUCTION VALVE							
XMC1DB2Y 09IL	RKR	O	CSC 151B	XVT08105		SEAL WATER INJECTION VALVE VALVE FAILS AS ISB-208-021 SHEET CS21	VALVE NORMALLY OPEN; NO ADVERSE EFFECT.
FEEDS SEAL WATER INJECTION VALVE							
XMC1DB2Y 09M	SPACF				*	BLANK	NIA
BLANK							
XMC1DB2Y 10AD	BKR	O	CCC 205B	XVG09626		NON-ESSENTIAL LOOP TO COMPONENT COOLING BOOSTER PUMP ISOLATION VALVE WILL NOT CLOSE ON HI-FLOW. B-208-011 SHEET CC30	PREVENTS AUTO ISOLATION OF CCW LOADS IN REACTOR BUILDING ON HI-FLOW.
FEEDS NON-ESS LOOP TO CC BOOSTER PUMP ISOLATION VALVE							
XMC1DB2Y 10EG	RKR	O	CSC 251XB	XPP00043B PP AUX OIL		CHARGING PUMP B AUXILIARY LUBE OIL PUMP WILL NOT AUTO START. B-208-021 SHEET CS31	CHARGING PUMP 'B' INOPERABLE.
FEEDS CHARG/SI PUMP B AUXILIARY OIL PUMP ALOPZ							
XMC1DB2Y 10IH	RKR	O	CSC 11XB	XPP00013B		BORIC ACID TRANSFER PUMP RI. ALTERNATE CONTROL POWER SOURCE FROM APN01DB1 BREAKER # 5 WHEN IN LOCAL AT CREP 2. WILL NOT AUTO START FROM RCS MAKEUP CONTROLS B-208-021 SHEET CS02	R.A.T. TRANSFER PUMP 'B' INOPERABLE.
FEEDS BORIC ACID TRANSFER PUMP B							
XMC1DB2Y 10JM	RKR	O	CSC 301B	XVG00115E		VCT OUTLET LINE STOP VALVE 1. WILL NOT AUTO CLOSE ON ST 2. POWER ON CIRCUIT FROM XMC1DB2Y UNIT 21EH 3. MI LIGHT 4. TSC INPUT UNRELIABLE, INDICATES CLOSED B-208-021 SH. CS36	IF VALVE IS FAILED OPEN, DEPENDENCY IS PLACED ON LCV00115C, TRAIN A. TECH. SPEC. 3.5.2, 3.5.3
FEEDS VCT TO CHARGING PUMP ISOLATION VALVE LCV-115E							
XMC1DB2Y 11AD	BKR	O	CCC 55B	XVB09524B		NON-ESSENTIAL EQUIPMENT ISOLATION VALVE 1. INTERLOCKED WITH XVB09526B 2. TSC INPUT UNRELIABLE; INDICATES OPEN 3. POWER ON CIRCUIT FROM XMC1DB2X UNIT 01DG B-208-011 SHEET CC13	VALVES CAN BE MANUALLY OPERATED.
FEEDS VLV, MTR OP BUTTERFLY, ISOLATION TO NON-ESS EQUIPMENT							
XMC1DB2Y 11EH	RKR	O	CCC 61B	XVB09525A		NON-ESSENTIAL EQUIPMENT ISOLATION VALVE 1. INTERLOCKED WITH XVB09687A 2. TSC INPUT UNRELIABLE; INDICATES OPEN 3. POWER ON CIRCUIT FROM XMC1DB2X UNIT 01HK B-208-011 SHEET CC14	VALVES CAN BE MANUALLY OPERATED.
FEEDS VLV, MTR OP BUTTERFLY, ISOLATION TO NON-ESS EQUIPMENT							

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Date: 3/24/2004 6:45:35 A M

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMCIDB2Y 111L	BKR	O	CC C 135B	XVG09606		RC PUMP THERMAL BARRIER ISOLATION VALVE 1. WILL NOT CLOSE ON CONTAINMENT ISOLATION; PHASE B 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-011 SHEET CC26	CONTAINMENT ISOLATION VALVE TECH. SPEC. 3.6.4
FEEDS VLV, MTR OP GATE CC RETURN, REACTOR BUILDING							
XMCIDB2Y 111M	SPACE				*	BLANK	N/A
BLANK							
XMCIDB2Y 12AD	BKR	O	CC C 44B	XVB09503B		RHR HEAT EXCHANGER INLET VALVE TSC INPUT UNRELIABLE; INDICATES CLOSED. B-208-011 SHEET CC11	SHIFT RUNNING LOOP TO TRAIN 'A' AND OPEN THIS VALVE PRIOR TO DE-ENERGIZING.
FEEDS VALVE, ISOLATION RHR HY B							
XMCIDB2Y 12EF	RKR	O	AHC 124X	XFN00041B		COMPUTER ROOM SUPPLY FAN B 1. DISABLES HEATING COIL AT XPN04005B 2. DISABLES HUMIDIFIER XHF00002B B-208-004 SHEET AH112	NOTIFY COMPUTER ROOM. THIS FAN LOCKED OUT ON SITE
FEEDS COMPUTER ROOM SUPPLY FAN B (UNIT 1)							
XMCIDB2Y 12GH	BKR	O	AHC 114B	XFN00036B		RELAY ROOM COOLING SYSTEM FAN B 1. DISABLES HEATING COIL AT XPN04003B 2. DISABLES XDP00101B 3. WILL NOT AUTO START VIA ESFLS B-208-004 SHEET AH108	ENSURE RELAY ROOM COOLING SYSTEM FAN 'A' IS IN SERVICE. MONITOR ROOM TEMPERATURE. TECH. SPEC. 3.7.11
FEEDS RELAY ROOM SWPLY FAN B (UNIT 1)							
XMCIDBZY 12JM	HKR	O	RC C 107B RC C 111B	XVT08096B		REACTOR HEAD VENT VALVE TO PRT VALVE FAILS 'AS B'. B-208-082 SHEET RC16	NO SIGNIFICANT EFFECT.
FEEDS REACTOR HEAD VENT VV TO PRESSURIZER RELIEF TANK							
XMCIDB2Y 13A	SPACE				*	BLANK	N/A
BLANK							
XMCIDB2Y 13BD	BKR	O	AHC 51X	XFN00028B		CONTROL ACCESS EXHAUST FAN B 1. CLOSES XDP00038B AND XDP00059B 2. DISABLES XFN00087B 3. DISABLES XFN00026 UNLESS XFN00028A IS RUNNING 4. SPACE HEATER FED FROM XMC1B4X UNIT 03EF B-208-004 SHEET AH101	ENSURE PAN 'A' RUNNING.
FEEDS CONTROLLED ACCESS EXHAUST FAN B							
XMCIDB2Y 13EG	BKR	O	AHC 71B	XFN00030B		CONTROL ROOM EMERGENCY FILTER SYSTEM FAN B 1. OPENS XDP00023B AND XDP00024B 2. WILL NOT START ON H1-RAD OR ESF SIGNAL 3. STARTS XFN00034 IF XDP00245B IS OPEN 4. TRIPS XFN00032B UNLESS XDP00022B IS OPEN. WILL NOT CLOSE XDP00022B OR XDP00245B ON A CONTROL ROOM EMERGENCY FILTER SYSTEM ACTUATION 6. TSC INPUTS FROM XDP00023B; XDP00024B; AND XFN00003B 7. SPACE HEATER FED FROM XMC1B4X UNIT 03EF B-208-004 SHEET AH103	ENSURE TRAIN 'A' CONTROL ROOM VENTILATION IS OPERABLE. TECH. SPEC. 3.7.6
FEEDS CONTROL ROOM EMERG FILTERING SYSTEM FAN B							

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Date: 3/24/2004 6:45:42 A M

Filter: XMC1DB2Y

V.C. Summer Nuclear Station

Electrical Effects Report

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 13HI RELAY COMPARTMENT	BKR	O				RELAY COMPARTMENT	N/A
XMC1DBZY 13JM	BKR	O	SPC 91B	XVG03005B		REACTOR BUILDING SUMP ISOLATION VALVE 1. WILL NOT OPEN ON SI IN CONJUNCTION WITH LO-LO LEVEL IN THE RWST 2. TSC INPUT UNRELIABLE; INDICATES OPEN 3. MI LIGHT B-208-097 SHEET SP12	TRAIN 'B' REACTOR BUILDING SPRAY INOPERABLE TECH. SPEC. 3.6.2.1
FEEDS VALVE, RB SUMP ISOLATION							
XMC1DB2Y 14ABL SPARE	BKR	O				SPARE	NIA
XMC1DB2Y 14ABR SPARE	BKR	O				SPARE	NIA
XMC1DB2Y 14CE	BKR	O	EM C 28X	XTF09006B		RECEPTACLE TRANSFORMER # 6 PARTIAL LOSS OF CONTROL BUILDING RECEPTACLES. B-220-173 SHEET 6	DE-ENERGIZES APN09006B. LOADS LISTED ON B-220-173-6. ENSURE NO TEMPORARY RECORDERS ARE POWERED FROM THESE CONTROL ROOM AREA OUTLETS.
FEEDS RECEPTACLE PANEL 6 ESSENTIAL PANEL B VIA XTF							
XMC1DB2Y 14FGL SPARE	BKR	O				SPARE	NIA
XMC1DB2Y 14FGR	BKR	O	ES C 5B	XPN00040 TRAIN B	*	CHARGING PUMP AUXILIARY TRANSFER SWITCH PANEL 1. NO EFFECT IF XPP00043C IS ALIGNED TO TRAIN 'A'. 2. DISABLES XPN00047; ALOP3 AND XVX06524C IF ALIGNED TO TRAIN 'B' 3. TSC INPUT UNRELIABLE 4. LOCAL CONTROL PROVIDED VIA SWITCHES IN XPN05529; TRAIN 'B' ONLY B-208-021 SHEET CS41	C CHARGING PUMP INOPERABLE ON TRAIN 'B'. FAILS PUMP AUXILIARY SUPPORT SYSTEMS.
FEEDS XPN0040 CHARGING PUMP AUX TRANSFORMER SW PANEL							
XMC1DB2Y 14FI	BKR	O	RM C 2XR	IRM00002		ATM GASEOUS IODINE; REACTOR BUILDING SAMPLE LINE 1. STOPS SAMPLE BLOWERS 2. ALARMS AT XCP06200 IMS-44-250	RMA-2 INOPERABLE. TECH. SPEC. 3.3.3.1; 3.4.6.1 3.4.6.2; 4.4.6.2.1A
FEEDS RAD MONITORING REACTOR BUILDING SAMPLE LINE PUMP 1							
XMC1DB2Y 14IK	BKR	O	RM C 5XB	IRM00006		FUEL HANDLING BUILDING EXHAUST SYSTEM RADIATION MONITOR 1. STOPS SAMPLE BLOWERS 2. ALARMS AT XCP06200 IMS-44-235	RMA-6 INOPERABLE. TECH. SPEC. 3.3.3.1
FEEDS RADIATION MONITORING FUEL HANDLING BLDG. EXHAUST PUMP							
XMC1DB2Y 14LM SPACE	SPACE	-			*	SPACE	NIA
XMC1DBZY 15AB RELAY COMPARTMENT	BKR	O				RELAY COMPARTMENT	NIA
XMC1DB2Y 15CD	BKR	O	CSC 347B		*	POWER LOCKOUT FOR CHARGING PUMP DISCHARGE HEADER ISOLATION VALVE. 1. CONT. PWR/VLV STATUS LTGS. 7. TSC INPUT UNRELIABLE; B-208-021 SHEET CS107.	REFERENCE TECH SPEC INFORMATION/RELOCATION FORM TSR 1021, T/S 3/4.5.2 AND 3/4.5.3.
CHARGING PUMP DISCH. HDR ISOL VLV (XVG8133B) POWER LOCKOUT							

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 15EH	BKR	O	SIC 71B	XVG08801B		HI-HEAD TO COLD LEG INJECTION 1. WILL NOT OPEN ON SI 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN 4. POWER ON ROTOR 3 FROM XMC1DB2Y UNIT 15IL B-208-095 SHEET S110	ECCS INOPERABLE. TECH. SPEC. 3.5.2; 3.5.3
FEEDS HI HEAD TO COLD LEG INJECTION VALVE							
XMC1DB2Y 15IL	BKR	O				SPARE	N/A
SPARE							
XMC1DB2Y 15M	SPACE	-			*	BLANK	N/A
BLANK							
XMC1DB2Y 16AD	RKR	O	SIC 171B	XVG08809B		RWST TORHR PUMP ISOLATION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES OPEN 3. POWER ON ROTOR 4 FROM XMC1DB2Y UNIT 04FJ 4. STEM MOUNTED SWITCH FED FROM XMC1DAZY UNIT 13IM 5. XVG08701B AND XVG08702B WILL NOT OPEN IF THIS VALVE IS OPEN B-208-095 SHEET S120	TRAIN B' RHR INOPERABLE.
FEEDS REFUEL WATER STATION TORHR PUMP ISOL VALVE							
XMC1DB2Y 16IM	BKR	O	SIC 141B SIC 142B	XVG08808B		ACCUMULATOR ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL OR P-11 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-095 SHEET S117	ENSURE VALVE IS IN CORRECT POSITION ACCORDING TO TECH. SPEC. FOR CURRENT PLANT CONDITIONS PRIOR TO DE-ENERGIZING VALVE.
FEEDS ACCUMULATOR R ISOLATION VALVE							
XMC1DB2Y 17AD	HKR	O	SIC 211B	XVG08812B		CONTAINMENT SUMP ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL IN CONJUNCTION WITH LO-LO LEVEL IN THE RWST 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-095 SHEET S124	TRAIN B' RHR INOPERABLE.
FEEDS CONTAINMENT SUMP ISOLATION VALVE							
XMC1DB2Y 17EG	BKR	O				SPARE	N/A
SPARE							
XMC1DB2Y 17H	SPACE	-			*	BLANK	N/A
BLANK							
XMC1DB2Y 17IL	BKR	O	SIC 2310	XVG08887B		LOW HEAD TO HOT LEG CROSS TIE VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE B-208-095 SHEET S126	PREVENTS SEPARATION OF ECCS TRAINS DURING RECIRCULATION PHASE. TECH. SPEC. 3.5.2; 3.5.3
FEEDS LOW HEAD INJECTION TO HOT LEG RECIRC LINE VALVE							
XMC1DB2Y 17M	SPACE	-			*	BLANK	N/A
BLANK							

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EquipTag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 18AD	BKR	O	SW C 101B	XVG03103B		RECIRCULATION UNIT B CONTAINMENT ISOLATION VALVE 1. MI LIGHT 2. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW24	ISOLATES AND MAKES INOPERABLE TRAIN 'B' RBCU. TECH. SPEC. 3.6.2.3 VALVE MUST BE CLOSED DUE TO CONTAINMENT ISOLATION. TECH. SPEC. 3.6.4
FEEDS VALVE, RECIRCULATING UNIT B CONTAINMENT ISOLATION							
XMC1DB2Y 18EH	RKR	O	SW C 141B	XVG03107B		REACTOR BUILDING OUTLET B ISOLATION VALVE 1. WILL NOT OPEN ON ESF SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-101 SHEET SW28	TRAIN 'B' RBCU'S MOPERABLE. TECH. SPEC. 3.6.2.3
FEEDS VALVE, ISOLATION REACTOR BUILDING OUTLET "B"							
XMC1DB2Y 18FM	BKR	O	SW C 177XB	XVG03108C		REACTOR BUILDING RECIRCULATION UNIT C ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW31	MAKES ONE OF TWO RBCU'S IN TRAIN 'B' INOPERABLE. ENSURE OPPOSITE RBCU IS SELECTED FOR OPERATION AND OPERABLE
FEEDS VALVE, REACTOR BUILDING RECIRC UNIT "C" ISOLATION							
XMC1DB2Y 19AD	RKR	O	SW C 241B	XVB03110B		BUILDING SERVICE INLET B ISOLATION VALVE 1. WILL NOT OPEN ON FSF SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-101 SHEET SW38	ISOLATES INDUSTRIAL COOLING TO TRAIN 'B' RBCU's. VALVE MUST BE CLOSED FOR CONTAINMENT ISOLATION. TECH. SPEC. 3.6.4
FEEDS VALVE, BUILDING SERVICE INLET "B" ISOLATION							
XMC1DB2Y 19EH	BKR	O	SW C 261B	XVG03111B		BUILDING SERVICE OUTLET B ISOLATION VALVE 1. WILL NOT OPEN ON ESF SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE INDICATES CLOSED B-208-101 SHEET SW40	ISOLATES INDUSTRIAL COOLING TO TRAIN 'B' RBCU's.
FEEDS VALVE, BUILDING SERVICE OUTLET "B" ISOLATION							
XMC1DB2Y 19FM	RKR	O	SW C 187XB	XVG03108D		REACTOR BUILDING RECIRCULATION UNIT D ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW32	MAKES ONE OF TWO RBCU'S IN TRAIN 'B' INOPERABLE. ENSURE OPPOSITE RBCU IS SELECTED FOR OPERATION AND OPERABLE.
FEEDS RW STORAGE TANK HEAT TRACE CONTROL PANEL B							
XMC1DB2Y 20AB	BKR	O	VL C 4B	XPN00046B		CHARGING/SI PUMP ROOM B COOLING UNIT FAN 1. WILL NOT AUTO START/STOP WITH XPP00043B 2. SPACE HEATERS FED FROM APN01A2 BREAKER # 8 3. LOCAL CONTROL PROVIDED VIA XPP05528; LOCAL CONTROL STATION B-208-108 SHEET VL06	DECLARE CHARGING PUMP 'B' INOPERABLE.
FEEDS CHARGING/SI PUMP ROOM 3 COOLING UNIT FAN							

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DBZY 20CD	BKR	O	VLC 21B	XFN00049B		RHR/SPRAY PUMP ROOM 2 COOLING UNIT 1. WILL NOT AUTO START/STOP WITH XPP00031B/XPP00038B 2. SPACE HEATWTFED FROM APN01A2 BREAKER # 8 B-208-108 SHEET VL09	DECLARE 'B' TRAM RHR AND SPRAY SYSTEMS MOPERABLE.
FEEDS SPRAY/RHR PUMP ROOM #2 COOLING UNIT FAN XMC1DBZY 20EH	RKR	O	SW C 271B	XVG03112A		BUILDING SERVICE OUTLET A ISOLATION VALVE 1. WILL NOT CLOSE ON ESF SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-101 SHEET SW41	ISOLATES INDUSTRIAL COOLING TO TRAIN 'A' RBCU's.
FEEDS VALVE, BUILDING SERVICE OUTLET "A" ISOLATION XMC1DBZY 20IM	BKR	O	SW C 212B SW C 218B SW C 219B	XVG03109C		REACTOR BUILDING RECIRCULATION UNIT C ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW35	MAKES ONE OF TWO RBCU's IN TRAIN 'B' INOPERABLE. ENSURE OPPOSITE RBCU IS SELECTED FOR OPERATION AND OPERABLE.
FEEDS VALVE, REACTOR BUILDING RECIRC UNIT "C" ISOLATION XMC1DBZY 21EH	BKR	O	CS C 291B	XVG00115D		REFUELING WATER SUPPLY LINE STOP VALVE 1. WILL NOT OPEN ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE INDICATES OPEN B-208-021 SHEET CS35	ECCS INOPERABLE, TECH. SPEC. 3.5.2; 3.5.3
FEEDS RWST TO CHARGING PP VALVE LCV-115D XMC1DBZY 21IM	RKR	O	SW C 222B SW C 228B SW C 229B	XVG03109D		REACTOR BUILDING RECIRCULATION UNIT D ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW36	MAKES ONE OF TWO RBCU's IN TRAIN 'B' INOPERABLE. ENSURE OPPOSITE RBCU IS SELECTED FOR OPERATION AND OPERABLE.
FEEDS VALVE, REACTOR BUILDING RECIRC UNIT "D" ISOLATION XMC1DBZY 22ABL	RKR	O	ET C 13B	XPN02006		RWST HEAT TRACE CONTROL PANEL B NO EFFECT IF XPN02005 IS OPERABLE. 1MS-39-195-1	TAKE PRECAUTIONS; IF NEEDED; TO PREVENT RWST LEVEL TRANSMITTERS FROM FREEZING.
RW STORAGE TANK HEAT TRACE CONTROL PANEL B XMC1DBZY 22ABR	BKR	O				SPARE	N/A
SPARE XMC1DBZY 22CG	BKR	O	SI C 191B SI C 194B	XVG08811B		RECIRCULATION SUMP TO RHR PUMP B ISOLATION VALVE 1. WILL NOT OPEN ON SI SIGNAL IN CONJUNCTION WITH LO-LO LEVEL IN THE RWST 2. MI LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-095 SHEET SI22	TRAIN 'B' RHR INOPERABLE.
FEEDS RECIRC SUMP TO RHR PUMP A ISOLATION VALVE XMC1DBZY 22H	SPACE				*	BLANK	N/A
BLANK							

Vote: An asterisk (*) in the Flag column indicates that the effect(-) are not applied at an end device in the electrical distribution system. These effects should be reviewed and moved if possible to the appropriate end device. An end device is generally the last circuit breaker or fuse before the actual load.

Date: 3/24/2004 6:46:11 AM

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 22IM	BKR	O	SW C 121B	XVB03106B		REACTOR BUILDING INLET B ISOLATION VALVE 1. WILL NOT OPEN ON ESF SIGNAL 2. M I LIGHT 3. TSC INPUT UNRELIABLE; INDICATES OPEN B-208-101 SHEET SW26	ISOLATES AND MAKES INOPERABLE 'B' TRAIN RBCU's. TECH. SPEC. 3.6.2.3 VALVE MUST BE CLOSED DUE TO CONTAINMENT ISOLATION. TECH. SPEC. 3.6.4
FEEDS VALVE. ISOLATION REACTOR BUILDING INLET B							
XMC1DB2Y 23AD	UKR	O	FSC 1B	XVG06797		FIRE SERVICE CONTROL ISOLATION VALVE 1. WILL NOT CLOSE ON CONTROL ISOLATION SIGNAL 2. M I LIGHT 3. TSC INPUT UNRELIABLE; INDICATES CLOSED B-208-044 SHEET FS01	ISOLATES FIRE SERVICE FROM CHARCOAL CLEAN-UP UNITS; MANUAL DELUGE. VALVE MUST BE CLOSED PER TECH. SPEC. 3.6.4; CONTAINMENT ISOLATION.
FEEDS FIRE SERVICE TO RB CHARCOAL CLEANUP ISOLATION VALVE							
XMC1DB2Y 23E	SPACE	-			*	BLANK	N/A
BLANK							
XMC1DB2Y 23FI	BKR	O	RC C 97B RC C 101B	XVT08095B		REACTOR HEAD VENT VALVE TO PRT VALVE FAIL'S AS IS B-208-082 SHEET RCT3	VALVE IS NORMALLY CLOSED. VESSEL HEAD VENTING STILL AVAILABLE.
FEEDS REACTOR HEAD VENT VALVE TO PRESSURIZER RELIEF TANK							
XMC1DB2Y 23KL	BKR	O	VLC 144B	XFN00133		AUXILIARY BUILDING MCC-SWITCHGEAR AHU FAN 1. WILL NOT START VIA ESF SIGNAL OR TEMPERATURE SWITCH 2. SPACE HEATERS FED FROM APN01A2 BREAKER # 8 B-208-108 SHEET VI.02	FANS STARTED IF TEMPERATURE > 75 F OR ESFLS STEP 1A. SWITCHGEAR TEMPERATURE SHOULD BE MONITORED IF FANS ARE TO BE OUT FOR EXTENDED PERIODS. COOLS XSW1DB1 AND XMC1DB2Y ON 463' ELEVATION OF AUXILIARY BUILDING.
FUVL02; FEEDS AUX BLDG MCC SWGR AIR HANDLING UNIT							
XMC1DB2Y 23M	SPACE	-			*	BLANK	N/A
BLANK							
XMC1DB2Y 24AB	BKR	O	EAC 11X EAC 12X	XTF05930	*	TRANSFORMER FOR BACK-UP MET TOWER E-206.050	SEE LOAD LIST FOR APN05930.
FEEDS AC DISTRIBUTION PANEL FOR BACKUP MET. TOWER VIA XTF							
XMC1DB2Y 24CD	BKR	O	AHC 91R	XFN00032B		CONTROL ROOM NORMAL SUPPLY FAN B 1. M I LIGHT 2. CLOSES XDP00022B; XVB00003B; XVB00004B; CONTROL ROOM SUPPLY AND BUTTERFLY ISOLATION VALVES 3. WILL NOT RUN ON ESF OR HI-RAD SIGNAL 4. DISABLES XDP00105B; CONTROL ROOM NORMAL SUPPLY WILL NOT MODULATE 5. TSC INPUT UNRELIABLE; INDICATES NORMAL FAN RUNNING 6. DISABLES XFN00030B; CONTROL ROOM EMERGENCY FILTER FAN B 7. DISABLES XDP00245A & B; CONTROL ROOM TOILET EXHAUST DAMPERS 8. DISABLES HEATING COILS AT XPN04002B 9. DISABLES HUMIDIFIERS XHFOUP TO RUN VIA F00006B 10. SPACE HEATERS FED FROM APN01B4 BREAKER # 6 B-208-044 SHEET AH105	TRAIN 'B' CONTROL ROOM VENTILATION INOPERABLE. TECH. SPEC. 3.7.6
FEEDS CONTROL ROOM NORMAL SUPPLY FAN B							

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Equip Tag/Comp/Device Function	Type	IO	Circuit ID	Load Tag	Flag	Effect Circuit	Effect Operations
XMC1DB2Y 24EFL	BKR	O	ET C 14B	XP02008	*	REACTOR MAKEUP WATER HEAT TRACING CONTROL PANEL B IMS-39-205-1	ENSURE TRAIN 'A' HEAT TRACING IS IN SERVICE.
FEEDS MU WATER STOR TANK HEAT TRACE CONTROL PANEL B							
XMC1DB2Y 24EFL	SPACE				*	SPACE	NIA
SPACE							
XMC1DB2Y 24G	SPACE	-			*	BLANK	N/A
BLANK							
XMC1DB2Y 24HJ	RKR	O	PSC 7X	XTF05014	*	SECURITY SYSTEM TRANSFER SWITCH NO EFFECT IF SECURITY SYSTEM IS ALIGNED TO TRAIN 'A' AT XCP06040. IMS-38-227-7-0	NOTIFY SECURITY.
FEEDS SECURITY SYSTEM VIA TRANSFER SWITCH XET4006							
XMC1DB2Y 24KL	RKR	O				RELAY COMPARTMENT	NIA
RELAY COMPARTMENT							
XMC1DB2Y 24M	SPACE				*	BLANK	NIA
BLANK							
XMC1DB2Y 25AC	DKR	I			*	INCOMING LINES	N/A
INCOMING LINES SECONDARY							
XMC1DB2Y 25EH	RKR	O				SPARE	NIA
SPARE							
XMC1DB2Y 25IJ	BKR	O	AT C 21X	XP00087B		CONTROLLED ACCESS LAB HOOD EXHAUST FAN 1. CLOSES XDP00127B AND XDP00128B 2. DISABLES XFN00055 UNLESS XFN00087A IS RUNNING B-208-004 SHEET AH097	ENSURE XFN00087A IS RUNNING. OTHERWISE, NOTIFY PERSONNEL IN THE RADIO CHEMICAL LAB THAT THE VARIOUS EXHAUST HOODS WILL BE INOPERABLE.
FEEDS CONTROLLED ACCESS LAB HOOD EXHAUST FAN B							
XMC1DB2Y 25KM	RKR	O	EMC TTX	XTF08024B		ESSENTIAL LIGHTING PANEL # 24 PARTIAL LOSS OF AUXILIARY BUILDING E-220-171 SHEET 9	NOTIFY PERSONNEL IN AUXILIARY BUILDING.

FEEDS ESS LIGHTING PNL 24 TRAIN B VIA XTF

Total Records: 109

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V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-A-004

**DETERMINE DOSE RATES WITH AIRBORNE ACTIVITY
PRESENT**

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

TASK:

TASK STANDARD:

Dose is correctly calculated with a respirator and without a respirator.

GEN 2.3.1 Knowledge of 10 CFR: 20 and related facility radiation control requirements. (RO 2.6/SRO 3.0).

GEN 2.3.4 Knowledge of facility ALARA program. (RO 2.5/SRO2.9)

PREFERRED EVALUATION LOCATION

CLASSROOM

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

TOOLS:

EVALUATION TIME

10

TIME CRITICAL NO

NO 10CFR55: 4384

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT:

UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE _____

COMMENTS:

Thursday, April 08, 2004

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343-029-03-03

Assess exposure limits of personnel for assigned duties

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: An NLO has been assigned the task of performing a valve lineup in the Auxiliary Building. The area where the valves are located has a **dose** rate of **24 mR/Hr.** and also has **some** airborne activity. From **experience** the NLO knows that it will take 45 minutes to perform the valve lineup with out a respirator, or 75 minutes to complete the job with a respirator. If the **job** is done without a respirator the NLO will receive 2 DAC-hours of internal exposure.

INITIATING CUES: You have been directed to: Determine the dose the NLO will receive if he doesn't wear a respirator while performing the valve lineup and the dose he will receive if he wears a respirator. Report to the Shift Supervisor which method will be the lowest **dose** and keep exposure ALARA.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

SAFETY CONSIDERATIONS:

INITIAL CONDITION: An NLO has been assigned the task of performing a valve lineup in the Auxiliary Building. The area where the valves are located has a dose rate of 24 mR/Hr. and also *has* some airborne activity. From experience the NLO knows that it will take 45 minutes to perform the valve lineup with out a respirator, or 75 minutes to complete the job with a respirator. If the job is done without a respirator the NLO will receive 2 DAC-hours of internal exposure.

INITIATING CUES: You have been directed to: Determine the dose the NLO will receive if he doesn't wear a respirator while performing the valve lineup and the dose he will receive if he wears a respirator. Report to the Shift Supervisor which method will be the lowest dose and keep exposure ALARA.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
Yes No Calculates NLO dose without a respirator.

STEP STANDARD:
Calculates the dose to the NLCJ without a respirator.
 $0.75 \text{ hours} \times 24 \text{ mR/hour} = 18.0 \text{ mRem} + 2$
 $\text{BAC hours} \times 2.5 \text{ mRem/DAC-hour} = 48.0$
 $+ 5 \text{ mRem} = 23 \text{ mRem}$

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 2
Yes No Calculates NLO dose with a respirator.

STEP STANDARD:
Calculates the dose to the NLCJ with a respirator
 $1125 \text{ hours} \times 24 \text{ mRem/hour} = 30 \text{ mRem.}$

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 3
Yes No Determines that the job should be performed without a respirator and reports findings to Shift Supervisor.

STEP STANDARD:
Reports to Shift Supervisor that performance of work should be performed without a respirator to achieve a dose that is ALARA.

CUES:

SAT
UNSAT

COMMENTS:

Examiner ends JPM at this point.
Thursday, April 08, 2004

JPM SETUP SHEET

JPM NO: NRC-A-004

DESCRIPTION: DETERMINE DOSE RATES WITH AIRBORNE ACTIVITY PRESENT

IC SET:

INSTRUCTIONS:

COMMENTS:

Thursday, April 08, 2004

IN-PLANT JPMs

NRC-I-001	Start-up and Parallel A Rod Drive M/G Set
NRC-I-002	Locally Shed Non-Essential DC Loads
NRC-I-003	Loss of Containment Integrity

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: NRC-I-001

STARTUP ANR PARALLEL A ROD DRIVE M/G SET

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

ALTERNATE

TASK:

001-007-0 1-04 STARTUP THE FULL LENGTH ROB CONTROL SYSTEM

TASK STANDARD:

The "#1" rod drive M/G set has been started and parallel has been attempted. Due to the failure to parallel, the operator restores #1 MG set to standby status in accordance with Step III.A.2.3.c. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION

PLANT

PREFERRED EVALUATION METHOD

SIMULATE

REFERENCES: SOP-403 ROD CONTROL AND POSITION INDICATING SYSTEM

TOOLS: SOP-403 SECTION III.A, STEPS 2.1 AND 2.3

EVALUATION TIME 20 **TIME CRITICAL** No **10CFR55:** 45(a)1

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT: UNSAT

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A plant heatup is in progress. Initial conditions for startup of the rod drive M/G sets have been completed per SOP-403, Section III.A. The "#2" Rod Drive Motor Generator is already running.

INITIATING CUES: NROATC directs that #1 rod drive M/G set be started and paralleled in accordance with SOP-403, Section III.A, Steps 2.1 and 2.3.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 11

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A plant heatup is in progress. Initial conditions for startup of the rod drive M/G sets have been completed per SOP-403, Section III.A. The "#2" Rod Drive Motor Generator is already running.

INITIATING CUES: NROATC directs that #1 rod drive M/G set be started and paralleled in accordance with SOP-403, Section III.A, Steps 2.1 and 2.3.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1

No Yes Place VOLTMETER selector is position 1-2.

STEP STANDARD:

Positions M/G set #1 VOLTMETER selector switch to the 1-2 position.

CUES:

Cue operator before entering Rod Control Room to point to each operation performed and indication observed due to high noise area. Operator may use a pad of paper to write down additional information for examiner. Cue operator that voltmeter selector switch is in position 1-2.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 2

No Yes Adjust VOLTAGE ADJUST potentiometer to minimum by releasing the lock and turning fully counterclockwise.

STEP STANDARD:

Adjusts VOLTAGE ADJUST potentiometer to minimum by releasing the lock and rotating potentiometer fully counterclockwise.

CUES:

Cue operator that VOLTAGE ADJUST potentiometer has been turned fully counterclockwise.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 3

No Yes Place AMMETER selector in position A.

STEP STANDARD:

Places M/G set #1 AMMETER selector switch to the " A position.

CUES:

Cue operator that AMMETER switch is in the "A" position.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 4
Yes Yes Close MOTOR Breaker to start MIG #1.

STEP STANDARD:
Positions M/G set #1 MOTOR Breaker to CLOSE position.

CUES: **SAT**
After operator describes the expected response, then cue operator that the red **UNSAT**
light is lit on MIG set #1 and the green light is off.

COMMENTS:

CR SEQ STEP: 5
Yes Yes Depress and **hold** GEN FIELD FLASH
pushbutton until voltage is at least 235 VOLTS
as indicated by GENERATOR LINE VQLTS,
then release.

STEP STANDARD:
Depresses and holds GEN FIELD FLASH
pushbutton until voltage reads at least 235
volts on voltmeter and then releases
pushbutton.

CUES: **SAT**
Examiner informs operator that the voltmeter reads 240 volt after field flash by **UNSAT**
pointing at indication.

COMMENTS:

CR SEQ STEP: 6
Yes **Yes** Adjust VOLTAGE ADJUST potentiometer
clockwise until 255 TO 265 VOLTS is
indicated by GENERATOR LINE VOLTS.

STEP STANDARD:
Adjusts VOLTAGE ADJUST potentiometer
clockwise until voltage meter at MIG
control panel for #1 M/G set indicates 260
± 5 volts.

CUES: **SAP**
Cue operator that voltage increases to 260 VOLTS (as seen) by pointing at **UNSAT**
indication,

COMMENTS:

CR	SEQ	STEP:	7	STEP STANDARD:
No	Yes	With the VOLTMETER selector in position 2-3, verify indication is between 255 and 265 volts.		Verifies 260 ± 5 volts on voltmeter phase 2-3 by placing voltmeter selector switch to the 2-3 position.

CUES: **SAT**
Examiner informs operator that each phase indicates 260 volts when each phase ~~is~~ **UNSAT** selected by pointing at indication.

COMMENTS:

CR	SEQ	STEP:	8	STEP STANDARD:
No	Yes	With the VOLTMETER selector in position 3-1, verify indication is between 255 and 265 volts.		Verifies 260 ± 5 volts on voltmeter phase 3-1 by placing voltmeter selector switch to the 3-1 position.

CUES: **SAT**
Examiner informs operator ~~that~~ each phase indicates 260 volts when each phase is **UNSAT** selected by pointing at indication.

COMMENTS:

CR	SEQ	STEP:	9	STEP STANDARD:
No	Yes	Lock the VOLTAGE ADJUST potentiometer.		Locks the Voltage Adjust potentiometer.

CUES: **SAT**
If performed correctly, cue operator that the voltage adjust potentiometer is locked. **UNSAT**

COMMENTS:

CR	SEQ	STEP:	10	STEP STANDARD:
Yes	Yes	Parallel Generator No. 1 as follows Turn Generator No.1 SYNCHRONIZE Switch ON.		Positions the Generator No.1 SYNCHRONIZE Switch to the ON position

CUES: **S4T**
Examiner informs operator that #2 M/G set is already running per step 2.2 SOP-403 and the #2 M/G set generator breaker is as-is if information is requested. **UNSAT**

COMMENTS:

CR	SEQ	STEP:	11	STEP STANDARD:
Yes	Yes	Place Generator No 1 GENERATOR Breaker Switch to CLOSE.		Positions the M/G set #1 GENERATOR circuit breaker switch to the CLOSE position.

CUES: **SAT**

COMMENTS: **UNSAT**

CR	SEQ	STEP:	12	STEP STANDARD:
Yes	Yes	Verify GENERATOR No. 1 GENERATOR Breaker closed.		Verifies M/G set #1 generator breaker closed by red light indicator lit for #1 M/G generator breaker.

CUES: **SAT**
After examinee describes expected actions, CUE Examinee that GREEN light is LIT and that the RED light is QFF by pointing to M/G set #1 generator circuit breaker. **UNSAT**
Inform examinee that conditions have not changed for TWO (2) minutes.
NOTE: This indicates a failure to parallel, the examinee **should** perform the following steps. (23-18).

COMMENTS:

CR SEQ STEP: 13

Yes Yes Place Generator No. 1 GENERATOR Breaker Switch to TRIP.

STEP STANDARD:

Positions the M/G set #1 GENERATOR circuit breaker switch to the TRIP position.

CUES:

SAT

After examinee describes expected actions, cue operator that green light is ON and **UNSAT** that red light is OFF by pointing to indication.

COMMENTS:

CR SEQ STEP: 14

No Yes Turn Generator No. 1 SYNCHRONIZE Switch to **OFF**.

STEP STANDARD:

Positions Generator No. 1 SYNCHRONIZE switch to the OFF position.

CUES:

SAT

After examinee describes expected actions, cue operator that M/G set #1 synchronizer is in OFF position.

UNSAT

COMMENTS:

CR SEQ STEP: 15

Yes Yes Readjust VOLTAGE ADJUST potentiometer clockwise until 255 TO 265 VOLTS is indicated by GENERATOR LINE VOLTS.

STEP STANDARD:

Readjusts VOLTAGE ADJUST potentiometer clockwise until voltage meter at M/G control panel for #1 MIG set indicates 260 ± 5 volts.

CUES:

SAT

Cue operator that voltage increases to 260 VOLTS (as seen) by pointing at indication.

UNSAT

COMMENTS:

CR SEQ STEP: 16

No	Yes	Turn Generator No. 1 SYNCHRONIZE Switch to ON .
----	-----	--------------------------------------------------------

STEP STANDARD:

Positions Generator **No. 1** SYNCHRONIZE switch to the **ON** position.

CUES:

After examinee describes expected actions, cue operator that M/G set #1 synchronizer is in ON position.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 17

Yes Yes Place Generator No. 1 GENERATOR Breaker Switch to CLOSE.

STEP STANDARD:

Positions the M/G set #1 GENERATOR circuit breaker switch to the CLOSE position.

CUES:

After examinee describes expected actions, cue operator that green light is off and **UNSAT** that red light is lit by pointing to indication.

SAT

UNSAT'

COMMENTS:

CR SEQ STEP: 18

No	No	Verify Generator No. 1 GENERATOR breaker closed.
----	----	--------------------------------------------------

STEP STANDARD:

Verifies Generator No. 1 GENERATOR
breaker closed,

CUES:

After examinee describes expected actions, cue operator that green light is off and **UNSAT** that red light **is** lit by pointing to Generator Breaker indication.

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-I-00

DESCRIPTION: STARTUP AND PARALLEL A ROD DRIVE M/G SET

IC SET:

INSTRUCTIONS:

COMMENTS:

III. NORMAL OPERATIONS

A. STARTUP OF THE FULL LENGTH ROD CONTROL SYSTEM

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

1.0 INITIAL CONDITIONS

- 1.1 Electrical lineup *is* complete per Attachment I
- 1.2 Control Panel lineup is complete per Attachment II.
- 1.3 Both RX TRIP and both RX TRIP BYPASS Breakers are open.
- 1.4 Both Generator No.1 and Generator No.2 GENERATOR Breakers are open.

2.0 INSTRUCTIONS

- 2.1 At XCA0005-CR, GENERATOR NO. 1 Control Panel (IB-463), start Generator No. 1 as follows:
 - a. Place the VOLTMETER Selector in position 1-2
 - b. Adjust the VOLTAGE ADJUST Potentiometer to minimum by releasing the lock and turning fully counterclockwise.
 - c. Place the AMMETER Selector in position A.
 - d. Close the MOTOR Breaker to start Generator No.1.
 - e. Depress and hold the GEN FIELD FLASH Pushbutton until at least 235 volts is indicated by GENERATOR LINE VOLTS, then release.
 - f. Adjust the VOLTAGE ADJUST Potentiometer clockwise until 255 to 265 volts is indicated by GENERATOR LINE VOLTS.
 - g. With the VOLTMETER Selector in position 2-3, verify indication is between 255 and 265 volts.
 - h. With the VOLTMETER Selector in position 3-1, verify indication is between 255 and 265 volts.

- i. Lock the VOLTAGE ADJUST Potentiometer.
 - j. Perform one of the following:
 - 1) If Generator No.2 GENERATOR Breaker is closed, parallel Generator No.1 to Generator No.2 per Step 2.3.
 - 2) If Generator No.2 GENERATOR Breaker is not closed, place Generator No.1 GENERATOR Breaker Switch to CLOSE.
- 2.2 At XCA0005-CR, GENERATOR NO. 2 Control Panel (IB-463), start Generator No.2 as follows:
- a. Place the VOLTMETER Selector in position 1-2.
 - b. Adjust the VOLTAGE ADJUST Potentiometer to minimum by releasing the lock and turning fully counterclockwise.
 - c. Place the AMMETER Selector in position A.
 - d. Close the MOTOR Breaker to start Generator No.2.
 - e. Depress and hold the GEN FIELD FLASH Pushbutton until at least 235 volts is indicated by GENERATOR LINE VOLTS, then release.
 - f. Adjust the VOLTAGE ADJUST Potentiometer clockwise until 255 to 265 volts is indicated by GENERATOR LINE VOLTS.
 - g. With the VOLTMETER Selector in position 2-3, verify indication is between 255 and 265 volts.
 - h. **With** the VOLTMETER Selector in position 3-1, verify indication is between 255 and 265 volts.
 - i. Lock the VOLTAGE ADJUST Potentiometer
 - j. Perform one of the following:
 - 1) If Generator No.1 GENERATOR Breaker is closed, parallel Generator No.2 to Generator No.1 per Step 2.4.
 - 2) If Generator No.1 GENERATOR Breaker is not closed. place Generator No.2 GENERATOR Breaker Switch to CLOSE.

CAUTION 2.3

When the Incoming Generator is synchronized, the Generator Breaker may close automatically. The Generator Breaker Switch should be placed in the CLOSE (flags matched) position to activate alarms.

NOTE 2.3

Generators may not parallel if the system is not under adequate load.

- 2.3 To parallel Generator No.1 to Generator No.2, proceed as follows (IB-463):
- a. Turn Generator No.1 SYNCHRONIZE Switch to ON.
 - b. Place Generator No.1 GENERATOR Breaker Switch to CLOSE
 - c. If Generator No.1 GENERATOR Breaker does not close within one minute, perform the following:
 - 1) Place Generator No.1 GENERATOR Breaker Switch to TRIP.
 - 2) Turn Generator No.1 SYNCHRONIZE Switch to OFF.
 - 3) Readjust the VOLTAGE ADJUST Potentiometer until 255 to 265 volts is indicated.
 - 4) Turn Generator No.1 SYNCHRONIZE Switch to ON.
 - 5) Place Generator No.1 GENERATOR Breaker Switch to CLOSE.
 - d. Verify Generator No.1 GENERATOR Breaker closed.
 - e. Turn Generator No.1 SYNCHRONIZE Switch to OFF
 - f. After paralleling generators, contact Electrical Maintenance to perform EMP-245.009.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: NRC-I-002

LOCALLY SHED NON-ESSENTIAL DC LOADS

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 9

TASK:

000-1 14-05-04

RESPOND TO LOSS OF ALL ENGINEERING SAFETY FEATURES ALTERNATING CURRENT POWER

TASK STANDARD:

Nonessential DC loads have been shed per EOP-6.0. Attachment 2. The use of applicable Human Performance Tools (**3-way** communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION

PLANT

PREFERRED EVALUATION METHOD

SIMULATE

REFERENCES: EOP-6.0

LOSS OF ALL ESF AC POWER

TOOLS: EOP-6.0, Attachment 2
FLASHLIGHT

EVALUATION TIME	15	TIME CRITICAL	No	10CFR55:	45(a)8
------------------------	----	----------------------	----	-----------------	--------

CANDIDATE:

TIME START:**TIME FINISH**

PERFORMANCE RATING:

SAT: UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE _____

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is at **100%** power when a station blackout occurs, with subsequent entry into EOP-6.0, LOSS OF ALL ESF AC POWER

INITIATING CUES: Control Room Supervisor directs stripping nonessential **DC loads** per EOP-6.0, Attachment 2.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 9

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is at 100% power when a station blackout occurs, with subsequent entry into EOP-6.0, LOSS OF ALL ESF AC POWER

INITIATING CUES: Control Room Supervisor directs stripping nonessential DC loads per EOP-6.0, Attachment 2.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ

STEP: 1

STEP STANDARD:

Yes Yes

Close GEN GAS PURGING SYS HYDROGEN SUPPLY valve (TB-412).

Operator closes GEN GAS PURGING SYS HYDROGEN SUPPLY VLV (XVT12225-HY) by turning valve hand wheel in the clockwise direction until the valve is closed.

CUES:

Valve turns clockwise then stops.

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 2

STEP STAADARD:

Yes Yes

Open HYDROGEN-CARBON DIOXIDE XCONN VALVE (TB-412).

Operator opens HYDROGEN-CARBON DIOXIDE XCONN VALVE (XVT-12218-HY) by turning the hand wheel in the counter-clockwise direction until the valve is open.

CUES:

Valve turns counter-clockwise then stops

SAT

UNSAT

COMMENTS:

CR	SEQ	STEP:	3	STEP STANDARD:
Yes	Yes	Open CARBON DIOXIDE VENT HEADER ISOL VALVE (TB-412).		Operator opens CARBON DIOXIDE VENT HEADER ISOL VALVE (XVT10556-CD) by turning the valve hand wheel in the counter-clockwise direction <i>until</i> the valve is open

CUES:	SAT
Valve turns counter-clockwise then stops.	UNSAT
COMMENTS:	

CR	SEQ	STEP:	4	STEP STANDARD:
Yes	Yes	Open MAIN CONDENSER A & B VACUUM BREAKER (TB-436).		Operator opens MAIN CONDENSER A&B VACUUM BREAKER (XVB00101-AR) operating the Declutch mechanism and turning the hand wheel CCW until hand wheel stops.

CUES:	SAT
Valve position indicator is not calibrated and therefore not required for this step.	UNSAT
Valve turns clockwise then stops.	
COMMENTS:	

CR	SEQ	STEP:	5	STEP STANDARD:
No	Yes	Check if the MFW pumps have stopped. (TB-436).		Operator verifies that the shafts of the MFW pumps are stopped.

CUES:	SAT
When requested, inform the examinee that each MFW pump shaft is stopped	UNSAT
COMMENTS:	

CR SEQ STEP: 6

No Yes Check if the Main Turbine has stopped (TB-463).

STEP STANDARD:

Operator verifies that the main turbine shaft has stopped.

CUES:

When requested inform the examinee that Main Turbine speed indicates "zero" **SAT**
UNSAT

COMMENTS:

CR SEQ STEP: 7

No Yes Check that IPI-5130, MACHINE HYDROGEN GAS PRESSURE INDICATOR, indicates less than 5 psig. (TB-412)

STEP STANDARD:

Operator verifies that IPI-5130 indicates less than 5 psig on the Turbine/Generator Auxiliary Panel.

CUES:

Cue examinee that 20 minutes has elapsed and hydrogen pressure indicates "zero" **SAT**
after XVT10556 is opened **UNSAT**

COMMENTS:

CR SEQ STEP: a

Yes Yes De-energize TPP0022A, (B), (C) - FWPT EMERGENCY BEARING OIL PP (TB-412).

STEP STANDARD:

Operator opens breaker for FWPA(B)(C) - FWP EBOP (XSX0002A(B)(C)) from Panel DPN-2X 01(02)(03) after FW pumps stop.

CUES:

If requested, inform the examinee that each MFW pump shaft is stopped. **SAT**
UNSAT

COMMENTS:

CR

SEQ

Yes

Yes

STEP:

9

De-energize EMERGENCY SEAL OIL PUMP, XPT0001-PP3 (TB-412)

STEP STANDARD:

Operator de-energizes XTP0001-PP3 EMERGENCY SEAL OIL PUMP from panel DPN-2X by opening breaker #4.

CUES:

If requested, inform operator that machine gas pressure is < 5 psig.

COMMENTS:

SAT

UNSAT

CR

SEQ

Yes

Yes

STEP:

10

Be-energize breaker for EBOP (XSX0003) (TB-412).

STEP STANDARD:

Operator deenergizes MAIN TURB EMERG. BEARING OIL PP, (XOR001), by opening breaker 05 (XSX0003) on DPN-2X, after the Main Turbine has stopped.

CUES:

If requested, inform examinee that Main Turbine shaft has stopped.

COMMENTS:

SAT

UNSAT

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-I-002

DESCRIPTION: LOCALLY SHED NON-ESSENTIAL DC LOADS

IC SET:

INSTRUCTIONS:

COMMENTS:

Thursday, April 08, 2004

Page 9 of 9

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
<p>1 Vent Main Generator pressure (TB-412):</p> <p>a. Close XVT12225-HY, GEN GAS PURGING SYS HYDROGEN SUPPLY VLV. <input type="checkbox"/></p> <p>b. Open XVT12218-HY, HYDROGEN-CARBON DIOXIDE XCONN VALVE. <input type="checkbox"/></p> <p>c. Open XVT10556-CD, CARBON DIOXIDE VENT HEADER ISOL VALVE. <input type="checkbox"/></p> <p>2 Open XVB00101-AR, MAIN CONDENSER A & E VACUUM BREAKER (TB-436). <input type="checkbox"/></p> <p>3 Monitor the following:</p> <ul style="list-style-type: none"> • Check if the Main Feedwater Pumps have stopped (TB-436). <input type="checkbox"/> ■ Check if the Main Turbine has stopped (TB-463). <input type="checkbox"/> • Check if IPI05130, MACHINE HYDROGEN GAS PRESSURE INDICATOR, indicates LESS THAN 5 psig (TE-4121). <input type="checkbox"/> <p>4 <u>WHEN</u> the conditions of Step 3 are met, <u>THEN</u> secure the associated Emergency Oil Pumps (TB-412):</p> <ul style="list-style-type: none"> • <u>WHEN</u> the associated Main Feedwater Pump has stopped, <u>THEN</u> open DPN-2X 01(02)(03), BREAKER FOR FWP-A(B)(C) EBDP (XSX0002A(B)(C)). <input type="checkbox"/> <p><u>WHEN</u> Machine Gas Pressure is LESS THAN 5 psig, <u>THEN</u> open DPN-2X 04, EMERGENCY SEAL OIL PUMP XPT0001-PP3. <input type="checkbox"/></p> <p><u>WHEN</u> the Main Turbine has stopped, <u>THEN</u> open DPN-2X 05, BREAKER FOR EBOP (XSX0003). <input type="checkbox"/></p>	

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: NRC-I-003

LOSS OF CONTAINMENT INTEGRITY (XVG-503B)

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

ALTERNATE

Thursday, April 08, 2004

Page 1 of 7

TASK:

038-002-01-04

STARTUP AND OPERATE STEAM GENERATOR NUCLEAR BLOWDOWN

TASK STANDARD:

S/G Blowdown from loop "B" is isolated per EOP-1.0, Attachment 4. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION

PLANT

PREFERRED EVALUATION METHOD

SIMULATE

REFERENCES:

EQP-1.0

REACTOR TRIP/SAFETY INJECTION ACTUATION

TOOLS:

EOP-1.0 Attachment 4, Pg 5 OF 8

EVALUATION TIME

15

TIME CRITICAL

No

10CFR55: 45(a)5

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT:

UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The Plant has experienced an SI from 100% power with the CRS implementing EOP-1.0, REACTOR TRIP SAFETY INJECTION ACTUATION. Blowdown isolation valve XVG00503B has failed to close on a valid phase 1 A containment isolation signal.

INITIATING CUES: The Control Room Supervisor directs you to close IFV-4701B (the Backup Isolation Valve for XVG00503B-BD) per EOP-1.0, Attachment 4.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 58, 2004

Page 3 of 7

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The Plant has experienced an SI from 100% power with the CRS implementing EOP-1.0 REACTOR TRIP/SAFETY INJECTIONACTUATION. Blowdown isolation valve XVG00503B has failed to close on a valid phase 'A'containment isolation signal

INITIATING CUES: The Control Room Supervisor directs you to close IFV-4701B (the Backup Isolation Valve for XVG00503B-BD) per EOP-1.0. Attachment 4

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

SYSTEM

STEPS

CR	SEQ	STEP:		STEP STANDARD:
No	Yes	1	Attempts to close IFV-4701B using the switch on the Nuclear Blowdown Processing Panel (AB-436).	Places and holds the BD LOOP C FLOW CTRL IFV-4701B switch in the CLOSE position or rotates the BD LOOP B FLOW CTRL IFV-470113 potentiometer counterclockwise to zero until the red light goes out

CUES:

When operator simulates operation of controller or control switch, inform him that indications remain "as seen" (Le., red "open" light on). Cue to operator if he reports "the valve will not close" to the control room. The CRS instructs him to locally isolate IFV-4701B.

SAT

UNSAT

COMMENTS:

CR	SEQ	STEP:		STEP STANDARD:
No	Yes	2	Close Instrumentair isolation valve. (IB-412, East Penetration)	Closes IFV04701B-AV1-BD, IA Isolation Valve for IFV4701B-BD (turns in clockwise direction).

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 3
Yes Yes Vents air from regulator to close IFV-4701B.

STEP STANDARD:
Vents air from IFV04701B-PRI-BD, 1A
SUPPLY REG FOR IFV4701B-BD by
turning the regulator **T-Bar** in the
counterclockwise direction.

CUES: **SAT**
COMMENTS: **UNSAT**

CR SEQ STEP: 4
Yes Yes Verify valve IFV-4701B closed

STEP STANDARD:
Checks valve stem position to verify that
valve is closed

CUES: **SAT**
Have operator point out valve stem position indication. Cue examinee that **UNSAT**
IFV-4901B indicates fully closed. This completes this JPM.
COMMENTS:

Examiner ends JPM at **this** point.

JPM SETUP SHEET

JPM NO: NRC-I-003

DESCRIPTION: LOSS OF CONTAINMENT INTEGRITY (XVG-503B)

IC SET:

INSTRUCTIONS:

COMMENTS:

Thursday, April 08, 2004

Page 7 of 7

**FOR TRAINING
USE ONLY**
CONTAINMENT ISOLATION VALVE NO. STATUS
LIGHT LOCATIONS

EOP-1.0
REVISION 19
ATTACHMENT 4
PAGE 2 of 4

XCP-6104

SAFETY INJECTION

RG-1.97

PHASE A ISOL

	SG B BLWDN ISOL 503B CLSD	RB AIR SMPL 9311A CLSD			
SG A BLWDN ISOL 503A CLSD	SG C BLWDN ISOL 503C CLSD	RB AIR SMPL 9312A CLSD			
					CRDM CLG WTR ISOL 7501 CLSD
				PRT SMPL ISOL 9341 CLSD	CRDM CLG WTR ISOL 7503 CLSD
					RB AIR SERV ISOL 2660 CLSD
				RB SMP DISCH 6242A CLSD	RB AIR SERV ISOL 2662A CLSD
			RCP SL WTR ISOL 8112 CLSD	PRT TO GAS DECAY TK 8047 CLSD	RCDT PP DISCH 7170 CLSD
				RCDT VENT ISOL 7126 CLSD	

- NOTES:
1. Lights should be BRIGHT.
 2. Only the windows indicated are Phase A Isolation Valves.

FOR TRAINING USE ONLY.

CONTAINMENT ISOLATION AND BACKUP VALVE
LOCATIONS

EOP-1.0
REVISION 19
ATTACHMENT 5
PAGE 1 of 4

VALVE ID	VALVE DESCRIPTION	TYPE	LOCATION	PENETRATION NUMBER	BACKUP ISOLATION
XVB00001A-AH	REACTOR BLDG PURGE SUPPLY HEADER VALVE	A	FB-479	402	PVB-1B
XVB00001B-AH	RB PURGE SUPPLY ISOL VLV (IRC)	A	RE	402	PVB-1A
XVB00002A-AH	REACTOR BLDG PURGE EXHAUST HEADER VALVE	A	FB-479	101	PVB-2B
XVB00002B-AH	RB PURGE EXHAUST ISOL VLV (IRC)	A	RB	101	PVB-2A
XVG00503A-BD	STEAM GEN A BLOWDOWN HEADER ISOL VALVE	A	AB-412	326	IFV-4701A
XVG00503B-BD	STEAM GEN B BLOWDOWN HEADER ISOL VALVE	A	IB-412	224	IFV-4701B
XVG00503C-BD	STEAM GEN C BLOWDOWN HEADER ISOL VALVE	A	IB-412	219	IFV-4701C
XVT02660-IA Note 1	RB INSTRUMENT AIR SUPPLY ISOL VLV (ORC)	A	AB-436	311	PVT-2660 (Manual) Note 1
XVT02662A-IA	RB IA SUCTION ISOLATION VALVE (ORC)	A	AB-412	319	PVT-2662B
X1	A SUC OF HDR ATION AL E (IRC)	A	RB	319	PVT-2662A
SVX-6050A	POST ACCID H2 LOOP A VLV (IRB)	S	MCB	3018	SVX-6052A
SVX-6054	RB NR PRESS CNTMT ISOL	S	MCB	3018	SVX-6050A
XVG06056	REACTOR BUILDING PURGE INLET VALV	A	RB	103	PVG-6057
XVG06057-HR	BACK-UP PURGE LINE ISOLATION VALVE	A	FB-479	103	PVG-6056

VALVE TYPE NOTES: A= Air (Fail Closed) S= Solenoid
NOTE 1: Do NOT close if Instrument Air is available.

SIMULATOR JPMs

NRC-S-001	Transfer to Hot Leg Recirc.
NRC-S-002	Operate the CVCS System to increase RCS Pressure
NRC-S-003	Start and Load 'B' Diesel Generator
NRC-S-004	Minimize the Consequences of A Total loss of Service Water
NRC-S-005	Perform Boron Concentration Dilution of the RCS
NRC-S-006	Steam Generator Tube Rupture (depressurize RCS to less than S/G pressure)
NRC-S-007	Loss of Power Range Instrument N-44
NRC-S-008	Control Room Evacuation Duties of NROATC

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-S-001

TRANSFER TO HOT LEG RECIRCULATION

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

ALTERNATE

Thursday, April 08, 2004

Page 1 of 12

TASK:

000-1 37-05-01

TRANSFER RHR FROM COLD LEG TO HOT LEG RECIRCULATION

TASK STANDARD:

Safety Injection system has been aligned for Hot beg Recirculation. Charging pumps have not been runout or deadheaded. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

EOP-2.0

LOSS OF REACTOR OR SECONDARY COOLANT

EOP-2.3

TRANSFER TO HOT LEG RECIRCULATION

TOOLS:

EVALUATION TIME

10

TIME CRITICAL

No

10CFR55: 45(a)7

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT:

UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE _____

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS **AS** DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: It has been 8 hours since a Loss of Coolant Accident occurred and the plant is presently in the Cold Leg Recirculation mode. The CRS has entered EOQ-2.3, TRANSFER TO HOT LEG RECIRCULATION) from EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.

INITIATING CUES: The CRS directs the NROATC to transfer from Cold beg to Hot beg Recirculation per EOP-2.3.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 4 of 12

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: It has been 8 hours since a loss of Coolant Accident occurred and the plant is presently in the Cold Leg Recirculation mode. The CRS has entered EOP-2.3, TRANSFER TO HOT LEG RECIRCULATION) from EOP-2.0, LOSS OF REACTOR OR SECONDARY COOLANT.

INITIATING CUES: The CRS directs the NROATC to transfer from Cold Leg to Hot Leg Recirculation per EOP-2.3.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
Yes Yes Stop the Charging Pump on " A Train

STEP STAADARD:
CHG/SI Pump ' A indicates OFF.

CUES: SAT
If Charging Pump "A" is still running when 8885 is closed, it will **be** deadheaded; this **UNSAT**
constitutes failure. Running the charging pump with both 8885 and 8884 runs the
pump **out, also** failing.
COMMENTS:

CR SEQ STEP: 2
No Yes Check if CHG/SI Pump C is aligned to Train A
by verifying XFER switch XET 2002C on Train A
A is lit.

STEP STANDARD:
XFER SWITCH XET 2002C on Train A is
not lit, directing the operator to alternative
action step 1.b.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 3
No Yes Ensure MVG-8132A(B), CHG PP C TO LP A
DISCH, are closed.

STEP STANDARD:
MVG-8132A and MVG-8132B, CHG PPL C
TO LP A BISCH, indicate CLOSE.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 4
Yes Yes Close charging LP "A ALT to COLD LEG (MVG-8885).

STEP STANDARD:
MVG-8885, CHG LP A TO COLD LEGS, indicates CLOSE.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ STEP: 5
No No Turn on ' A Train Power Lockout.

STEP STANDARD:
Places the "TRN A POWER LOCKOUT" switch to ON

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ STEP: 6
Yes Yes Open CHG LP "A to HOT LEGS (MVG-8884).

STEP STANDARD:
MVG-8884, CHG LP A TO HOT LEGS, indicates OPEN.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ STEP: 7
No No Turn off 'A' Train Power Lockout.

STEP STANDARD:
Places the "TRN A POWER LOCKOUT"
switch to OFF

CUES: SAT
UNSAT

COMMENTS:

CR SEQ STEP: 8
Yes No Start "A" Charging Pump.

STEP STANDARD:
CHG/SI PUMP "A" indicates ON with
normal running amps.

CUES: SAT
UNSAT

COMMENTS:

CR SEQ STEP: 9
Yes Yes Stop "B" charging pump

STEP STANDARD:
CHG/SI Pump ' B indicates OFF with 0
amps.

CUES: SAT
UNSAT

COMMENTS:

CR SEQ STEP: 10
No Yes Check if 'C' charging pump is aligned to Train B.

STEP STANDARD:
Verifies XFER SWITCH XET2000C ON TRAIN B is lit.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 11
No Yes Ensure MVG-8132A and MVG-8132B, CHG PP C TO LP A BISCH, are closed.

STEP STANDARD:
MVG-8132A and MVG-8132B, CHG PP C TO LP A BISCH, indicate CLOSE.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 12
No Yes Verify HI HEAD to COLD LEG INJECTION (MVG-8801A) is closed.

STEP STANDARD:
MVG-8801A, HI HEAD TO COLD LEG INJ indicates CLOSE.

CUES:

SAT
UNSAT

COMMENTS:

CR

SEQ

STEP:

13

STEP STANDARD:

Yes

Yes

Close HI HEAD TO COLD LEG INJECTION valve MVG-8801B, HI HEAD TO COLD LEG INJ MVG-8801B. indicates CLOSE.

CUES:

SAT

if 8801B is closed with "B" Charging Pump running, this deadheads the pump and constitutes failure of the JPM.

UNSAT

COMMENTS:

CR

SEQ

STEP:

14

STEP STANDARD:

No

No

Turn on ' B Train Power Lockout.

Turns the "TRN B POWER LOCKOUT" switch to ON

CUES:

SAT

UNSAT

COMMENTS:

CR

SEQ

STEP:

15

STEP STANDARD:

Yes

Yes

Open MVG-8886, CHG LOOP "B" in HOT LEGS. MVG-8886, CHG LP B TO HOT LEGS, indicates OPEN.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 16
No No Turn off 'B' Train Power Lockout.

STEP STANDARD:
Turns the "TRN B POWER LOCKOUT" switch to OFF

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 17
Yes No Start "B" CHG/SI pump

STEP STANDARD:
CHG/SI Pump ' B indicates OFF with zero running amps, and annunciator XCP 614, 4-2, CHG PP B/C TRIP is received. The NRO should review the ARP for XCP 614, 4-2 and recognize that the only step which will result in a success path would be the direction that if "B" Gharging Pump is inoperable, then align "C" Charging Pump to "B" train.

CUES: SAT
Electrical maintenance personnel will investigate and determine that a breaker malfunction exists and they estimate 6 hours to complete change out and testing. **UNSAT**

NOTE TO THE EVALUATOR: Prompt applicant for recommendation as needed
COMMENTS:

CR SEQ STEP: 18
Yes No Align Charging Pump Con B train electrically.

STEP STANDARD:
Place "B" Charging Pump in PTL, direct IB AO to rack down "B" Charging Pump, ensure "C" Charging Pump ("B" train) is in PTL, direct IB AO to rack up "C" Charging Pump ("B" train). (P-T-L is not critical.)

CUES: **SAT**
If requested, SOP 102, Att VB, Charging Pump C to Train B lineup had previously **UNSAT**
been performed and verified, with the exception of racking down " B Charging Pump breaker and racking in "C" Charging Pump ("B" train) " SEE HANDOUT".

Booth operator should request NRO to verify both Charging pump switches are in PTL prior to racking breakers up or down, IAW SOP 313.
Follow up question if applicant does not preemptively use the P-T-L feature - as to its function.

COMMENTS:

CR SEQ STEP: 19
Yes No Start the Charging Pump on Train B (PUMP B or C). **STEP STANDARD:**
CHG/SI Pump "C" indicates ON and normal running amps.

CUES: **SAT**
CUE TO BOOTH: AB operator reports: "'C' CHG pump looks good after start." **UNSAT**

This completes this JPM.

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-S-001

DESCRIPTION: TRANSFER TO HOT **LEG** RECIRCULATION

IC SET: 164

INSTRUCTIONS:

1. Start in IC set 164 and go to run.

COMMENTS:

Thursday, April 08.2004

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FOR TRAINING USE ONLY

SOP-102
ATTACHMENT VB
PAGE 1 OF 3
REVISION 19

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

Persons completing checklist (print)	Initials	CHARGING PUMP C TO TRAIN B LINEUP
<u>BILL DAVIS</u>	<u>WED</u>	
<u>D. Edwards</u>	<u>S</u>	
_____	_____	
_____	_____	
Reviewed by SS/CRS	Date/Time	Date/Time started <u>4/16/04 1 0900</u>
_____	<u>1</u>	Date/Time completed <u>1</u>

Charging Pump C To Train B Lineup Initial Conditions

Positioning of these components to the REQUIRED POSITION prepares Charging Pump C for service aligned to Train B.

COMPONENT	DESCRIPTION	REQUIRED POSITION	INITIALS	VERIFIERS INITIALS
MVG-8130A	LP A SUCT TO CHG PP C	OPEN	<u>WED</u>	<u>S</u>
MVG-8130B	LP A SUCT TO CHG PP C	OPEN	<u>WED</u>	<u>S</u>
MVG-8131B	LP B SUCT TO CHG PP C	OPEN	<u>WED</u>	<u>S</u>
MVG-8131A	LP B SUCT TO CHG PP C	OPEN	<u>WED</u>	<u>S</u>
MVG-8132A	CHG PP C TO LP A DISCH	OPEN	<u>WED</u>	<u>S</u>
MVG-8132B	CHG PP C TO LP A DISCH	OPEN	<u>WED</u>	<u>S</u>
MVG-8133A	CHG PP C TO LP B DISCH	PWR OFF/ OPEN	<u>WED</u>	<u>S</u>
MVG-8133B	CHG PP C TO LP B DISCH	PWR OFF/ OPEN	<u>WED</u>	<u>S</u>
XVG08471C-CS AB-388	CHARGING/SI PUMP C SUCTION VALVE	OPEN (LVP)	<u>WED</u>	<u>S</u>
XVG08485C-CS AB-388	CHARGING/SI PUMP C DISCHARGE VALVE	OPEN (LVP)	<u>WED</u>	<u>S</u>
XVT06439A-VU AB-400	XAH0002 CHILL WATER INLET VALVE	CLOSED	<u>WED</u>	<u>S</u>

FOR TRAINING
USE ONLY

SOP-102
ATTACHMENT VB
PAGE 2 OF 3
REVISION 19

CHARGING PUMP C TO TRAIN B LINEUP (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	INITIALS	VERIFIERS INITIALS
XVT06372A-VU AB-400	XAH0002 CHILL WATER INLET ISOL VALVE	CLOSED	WED	9
XVT06404A-VU AB-400	XAH0002 CHILL WATER OUTLET ISOL VALVE	CLOSED	WED	9
XVT06374A-VU AB-400	XAH0002 CHILL WATER OUT HDR ISOL VALVE	CLOSED	WED	9
XVT06439B-VU AB-400	XAH0002 CHILL WATER ALT INLET VALVE	OPEN	WED	9
XVT06372B-VU AB-400	XAH0002 CHILL WATER ALT INLET ISOL VALVE	OPEN	WED	9
XVT06404B-VU AB-400	XAH0002 CHILL WATER ALT OUTLET VALVE	OPEN	WED	9
XVT06374B-VU AB-400	XAH0002 CHILL WATER ALT OUT ISOL VALVE	OPEN	WED	9
XVG09681A-CC AB-400	CHG PP C OIL CLR CCW INLET VALVE	CLOSED	WED	9
XVG09679A-CC AB-400	CHG PP C OIL CLR CCW INLET HDR ISOL VLV	CLOSED	WED	9
XVG09658A-CC AB-400	CHG PP C OIL CLR CCW OUTLET HDR ISOL VLV	CLOSED	WED	9
XVT09686A-CC AB-400	CHG PP C OIL CLR CCW OUTLET VALVE	CLOSED	WED	9
XVG09681B-CC AB-400	CHG PP C OIL CLR CCW ALT INLET VALVE	OPEN	WED	9
XVG09679B-CC AB-400	CHG PP C OIL CLR CCW ALT IN HDR ISOL VLV	OPEN	WED	9
XVG09658B-CC AB-400	CHG PP C OIL CLR CCW ALT OUTLET ISOL VLV	OPEN	WED	9
XVT09686B-CC AB-400	CHG PP C OIL CLR CCW ALT OUTLET VALVE	OPEN	WED	9

CHARGING PUMP C TO TRAIN B LINEUP (Cont'd)

COMPONENT	DESCRIPTION	REQUIRED POSITION	INITIALS	VERIFIERS INITIALS
XSW1DA 06	CHARGING INJ PUMP C XPP0043C-CS	RACKED DOWN NOTE 2	WED	J
XMC1DB2Y 14FGR	CHARGING PUMP AUX TRANSFER SW PNL XPN0040-ES	CLOSED	WED	J
XET2002C-CS AB-388	S/I CHARGING PUMP "C" TRANSFER SWITCHES "A" ("B") CHANNEL SOURCE XSW1DA (1DB)	SAFETY LOCKS REMOVED NOTE 3	WED	N/A
XET2002C-CS AB-388	S/I CHARGING PUMP "C" TRANSFER SWITCH "A" CHANNEL SOURCE XSW1DA	OPEN NOTE 1	WED	J
XET2002C-CS AB-388	S/I CHARGING PUMP "C" TRANSFER SWITCH "B" CHANNEL SOURCE XSW1DB	CLOSED NOTE 1	WED	J
XET2002C-CS AB-388	S/I CHARGING PUMP "C" TRANSFER SWITCHES "A" ("B") CHANNEL SOURCE XSW1DA (1DB)	SAFETY LOCKS REINSTALLED NOTE 3	WED	J
XSW1DB 14	CHARGING INJ PUMP C XPP0043C-CS	RACKED UP NOTE 2		
XSW1DB 15	CHARGING INJ PUMP B XPP0043B-CS	RACKED DOWN NOTE 2		

NOTE 1 - When transferring XET-2002C-CS between trains, both Pump C switches should be in PULL-TO-LK-NQN-A.

NOTE 2 - Only one breaker may be racked up for Charging Pump C at any time.
Only one Charging Pump should be racked up on Train B except during the following evolutions:

- Periods of STP operability testing.
- While transferring operable Train B Charging Pumps.

NOTE 3 - Operations Safety Lock Keys are located as follows:

- CRS Keybox (CB-463).
- FEP Keybox (AB-412).

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPMNO:: NRC-S-002

***OPERATE THE CVCS SYSTEM TO INCREASE RCS
PRESSURE***

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 1

TASK:

004-032-01-01 OPERATE CHEMICAL AND VOLUME CONTROL SYSTEM TO INCREASE
REACTOR COOLANT SYSTEM PRESSURE

TASK STANDARD:

RCS pressure has been increased to 350-425 psig without lifting RHR suction relief and is stable.

PREFERRED EVALUATION LOCATION

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES: SOP-102 CHEMICAL AND VOLUME CONTROL SYSTEM

TOOLS:

EVALUATION TIME 15 **TIME CRITICAL** No **10CFR55:** 45(a)6

CANDIDATE:

'TIME START:

TIME FINISH

PERFORMANCE RATING:

SAT: UNSAT:

QUESTION GRADE

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has been in long term cold shutdown due to refueling. The RCS is in solid plant conditions with RCS pressure at < 50 psig and the RHR system in operation.

INITIATING CUES: The CRS directs that RCS pressure be increased to 350-425 psig per SOP-102, Section III.C., by performing step 2.1 and 2.2 so that a reactor coolant pump may be started for plant heatup.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 8

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant has been in long term cold shutdown due to refueling. The RCS is in solid plant conditions with RCS pressure at < 50 psig and the RHR system in operation.

INITIATING CUES: The CRS directs that RCS pressure be increased to 350-425 psig per SOP-102, Section III.C., by performing step 2.1 and 2.2 so that a reactor coolant pump may be started for plant heatup.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
No No Ensure RCP seal leakoff valves are open.

STEP STAXDARD:
PVT-8141 A (B,C) A (B) (C) SEAL LKOFF
indicate OPEN.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 2
No No Monitors RCS pressure

STEP STAXDARD:
RO observes pressure changes via
PI-402, RCS WR PRESS PSIG and/or
PI-402A, RCS WR PRESS PSIG.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 3
No No Ensure normal letdown available.

STEP STANDARD:
LCV-459 and 460, PVT-8152, LTDN LINE
ISOL, and 8149A, B, C, LTDN ORIFICE A
(B) (C) ISOL indicate OPEN.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 4
Yes Yes Adjust PCV-145 controller to increase RCS pressure.

STEP STANDARD:
Decreases PCV-245 controller output to close PCV-145.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 5
No Yes Monitor RCS pressure meters andlor recorders tu observe trend in RCS pressure.

STEP STANDARD:
Monitors N.R and/or W.R. RCS pressure meters and recorders to determine increase in RCS pressure above 50 psig.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 6
No No Establish RCP Seal Water Return,

STEP STANDARD:
Verify MVT-8112 SEAL WTR TRN ISOL is open and open MVT-8100, SEAL WPR RTN ISOL

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 7
No No Maintain Seal injection Flow.

STEP STANDARD:
Adjusts HCV-186, INJ FLOW, as required to keep seal injection Row between 6 and 13 gpm.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 8
Yes Yes Adjust PCV-145 controller to maintain RCS pressure at 350-425 psig.

STEP STANDARD:
Adjusts PCV-145 controller output to maintain RCS pressure at 350-425 psig.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 9
No No Monitor RCS pressure meters andlor recorders to observe trend in RCS pressure.

STEP STANDARD:
Monitors N.R. andlor W.R. RCS pressure meters and recorders to determine RCS pressure stable at 350-425 psig.

CUES: SAT
UNSAT
COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-S-002

DESCRIPTION: OPERATE THE CVCS SYSTEM TO INCREASE RCS PRESSURE

IC SET: 165

INSTRUCTIONS:

1. Startup simulator in IC set 165 and go to run.
2. Setup RO's IPCS CRT to display 5 on keypad.

COMMENTS:

C. CQCS OPERATION FOR RCS PRESSURE CONTROL AND
CLEANUP WITH THE RHR SYSTEM IN SERVICE

REFERENCE USE

Procedure Segments May Be Performed From Memory.
Must Verify Work Following Each Segment.

1.0 INITIAL CONDITIONS

- 1.1 The WCS has been filled per SOP-101.
- 1.2 CVCS status is **as** follows:
- a. Charging, Seal Injection, and Letdown via the RHR System are in service per Section III.
 - b. One of the following conditions exists:
 - 1) The RCS **is** solid with RCS pressure being maintained **at** less than 50 psig.
 - 2) The RCS **is** solid with RCS pressure being maintained between 350 psig **and** 425 psig.
- 1.3 Reactor Makeup control is in AUTO and **set** to provide blended flow **at** the same boron concentration as the RCS per SOP-106.
- 1.4 The RHR System *is* in service per SOP-115
- 1.5 VCT status **is** as follows:
- a. Suction for the Charging Pumps is from the VCT
 - b. Level **is** between 20% and 70%
 - c. Nitrogen blanket on the VCT has been established per Section IV.

2.0 INSTRUCTIONS

- 2.1 Ensure the following are open:
- PVT-8141A, A SEAL LKOFF.
 - PVT-8141B, B SEAL LKOFF.
 - PVT-8141C, C SEAL LKOFF.
- 2.2 Increase RCS pressure as follows:
- Monitor the following:
 - PI-402, RCS WR **PRESS** PSIG.
 - PI-402A, WCS WR **PRESS** PSIG
 - Ensure the following are open to establish normal Letdown flow:
 - LCV-459, LTDN LINE ISOL.
 - LCV-460, LTDN LINE ISOL.
 - PVT-8152, LTDN LINE ISOL
 - PVT-8149A, LTDN ORIFICE A ISOL.
 - PVT-8149B, LTDN ORIFICE B ISOL.
 - 6)** PVT-8149C, LTDN ORIFICE C ISOL.
 - Adjust PCV-145, LO PRESS LTDN, to initiate RCS pressurization,
 - When RCS pressure is greater than 50 psig, perform the following:
 - Ensure MVT-8112, SEAL WTR RTN ISOL, is open.
 - Open MVT-8100, SEAL WTR RTN ISOL.
 - Monitor the following:
 - FI-130A, A RCP INJ FLO GPM.
 - FI-127A, B RCP INJ FLO GPM.
 - FI-124A, C RCP INJ FLO GPM.

- 4) FR-154A, RCP SL LKOFF HI RANGE.
- 5) FR-154B, RCP SL LKOFF LO RANGE

NOTE 2.2.f

When in Mode 5 or 6, Seal Injection flow may be throttled between 2 and 20 gpm to each secured Reactor Coolant Pump. It may be desirable to throttle closer to 2 gpm to each secured Reactor Coolant Pump in order to compensate for the poor throttling characteristics of FCV-122 during low Charging flow conditions.

- f. Adjust HCV-186, INJ FLOW, to maintain between 6 gpm and 13 gpm Seal Injection as WCS pressure increases.
 - g. Adjust PCV-145, LO PRESS LTDN, to stabilize the RCS at the desired pressure.
- 2.3 Set PCV-145, LO PRESS LTDN, setpoint to maintain the desired pressure.
 - 2.4 Place PCV-145, LO PRESS LTDN, in AUTO.
 - 2.5 Set LCV-1158, LTDN DIVERT, setpoint to 7.0 and place in AUTO.
 - 2.6 Adjust TCV-144, CC TO LTDN HX, potentiometer as necessary to maintain the desired VCT temperature and place in AUTO. Refer to VCS Curve Book, Figure VII.15.
 - 2.7 If chemistry is not within limits or if adding hydrazine, place TCV-143, LTDN TO VCT OR DEMIN, to the VCT position.
 - 2.8 Monitor the following indicators to verify proper Letdown operation consistent with RCS conditions:
 - a. FI-150, LO PRESS LBN FLOW GPM, less than 120 gpm.
 - b. PI-145, LO PRESS LTDN PRESS PSIG, less than 425 psig.
 - c. TI-143, HX (DIVERT CNTRL) TEMP °F, less than 135°F.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-S-003

**START AND LOAD "B" EMERGENCY DIESEL
GENERATOR**

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

ALTERNATE

TASK:

064-003-01-01 LOAD THE DIESEL GENERATOR

TASK STANDARD:

"B" Diesel Generator is started and leaded to 4150-4250 KW, and then tripped and the engine shutdown when high temperature occurs. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

SSCB-IV-7
SOP-306

DIESEL GENERATOR POWER FACTOR, CURRENT VS. LOAD
EMERGENCY DIESEL GENERATOR

TOOLS:

EVALUATION TIME

15

TIME CRITICAL

No

10CFR55: 45(a)8

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT:

UNSAT:

QUESTION GRADE:

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power with normal AC power available to all busses. "B" D/G is to be started and loaded for monitoring cylinder temperatures. All local steps have been completed.

INITIATING CUES: CRS directs starting and loading of "B" D/G to 4150-4250 KW per SOP-306, EMERGENCY DIESEL GENERATOR: Section IV.B, steps 2.3 thru 2.10.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power with normal AC power available to all busses. "B" D/G is to be started and loaded for monitoring cylinder temperatures. All local steps have been completed.

INITIATING CUES: CRS directs starting and loading of "B" DIG to 4150-4250 KW per SOP-308, EMERGENCY DIESEL GENERATOR; Section IV.B, steps 2.3 thru 2.10.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ

STEP: 1

No No

Verify Annunciator XCP-637 1-2, DG B
AUTOSTART NOT READY, is clear.

STEP STANDARD:

Verifies Annunciator XCP-637 1-2, DG B
AUTOSTART NOT READY, is clear.

cum:

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 2

No No

The READYFOR AUTO START light is
illuminated at the D/G Local Control Panel

STEP STANDARD:

Calls the IB operator and verifies the
"READY FOR AUTO START" light is lit at
the "B" D/G Local Control Panel.

CUES:

When requested, as the IB operator, inform the operator that the "READY FOR
AUTO START" light is lit at the "B" D/G Local Control Panel.

SAT

UNSAT

COMMENTS:

CR SEQ

STEP: 3

No Yes

Place "B" Diesel Generator TEST switch to
START.

STEP STANDARD:

Momentarily rotates "B" Diesel Generator
TEST switch to the START position.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 4
No Yes Verify BIG starts and accelerates to 58.9 - 61.1 Hertz and 6700-7600 volts.

STEP STANDARD:
DG B VOLTS indicates 6700-7600 volts and FREQUENCY indicates 58.9 - 61.1 Hertz.

CUES:
BOOTH CUE: IBAO report 'B' DG looks good after start
COMMENTS:

SAT
UNSAT

CR SEQ STEP: 5
Yes Yes Place the DG B SYNC SEL switch in DSL.

STEP STANDARD:
DG B SYNC SEL switch indicates DSL.

CUES:
CRS directs BOP to load " BDG per Section II, Precaution 2.g. When examinee mentions that he is waiting 3-5 minutes for pressures and temperatures to stabilize inform examinee that he may continue without waiting the 3-5 minutes referenced by the procedure.
COMMENTS:

SAT
UNSAT

CR SEQ STEP: 6
No No Ensure VOLT REG switch is in AUTO.

STEP STANDARD:
VOLT REG switch for the 'B' D/G indicates AUTO.

CUES:

COMMENTS:

SAT
UNSAT

CR SEQ STEP: 7
No No Monitor voltage on 1DB SYNC VOLTS and SYNC VOLTS.

STEP STAADARD:
Locates 1DB SYNC VOLTS and SYNC VOLTS meters and monitors voltage.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 8
Yes No Adjust SYNC VOLTS to slightly higher than 1DB SYNC VOLTS using VOLT REG RAISE LOWER.

STEP STANDARD:
VOLT REG RAISE LOWER switch used to adjust BG 'B' SYNC VOLTS slightly higher than 1DB SYNC VOLTS.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 9
Yes No Adjust Diesel Generator "B" frequency to cause synchroscope to rotate slowly in the FAST direction using SPEED switch.

STEP STANDARD:
DG 'B' SPEED switch used to adjust D/G speed so that SYNCHROSCOPE rotates slowly in the FAST direction.

CUES: SAT
UNSAT
COMMENTS:

CR

SEQ

STEP: 10

Yes Yes

When synchroscope is in proper position, close BUS 1DB DG FEED breaker.

STEP STANDARD:
When synchroscope is between 11 o'clock and 12 o'clock, closes BUS 1DB DG FEED breaker.

CUES:

SAT

COMMENTS:

UNSAT

CR

SEQ

STEP: 11

No Yes

Verify breaker 1DB DG FEED breaker closed.

STEP STANDARD:
Bus 1DB DG FEED breaker indicates red light ON, green light OFF.

CUES:

SAT

COMMENTS:

UNSAT

CR

SEQ

STEP: 12

No Yes

Adjust load to 850-1250 KW using SPEED switch and maintain for 3-5 minutes

STEP STANDARD:
D/G 'B' KILOWATTS indicates 850-1250 KW for 3-5 minutes. DG B VOLTS indicates 6840-7344 volts and DG AMPS indicates ±100 amps.

CUES:

SAT

When examinee mentions that he is waiting 3-5 minutes for pressures and temperatures to stabilize inform examinee that he may continue without waiting the 3-5 minutes referenced by the procedure.

COMMENTS:

UNSAT

CR SEQ STEP: 13

No Yes Adjust load to 2150-2550 KW using SPEED switch and maintain for 3-5 minutes.

STEP STANDARD:

D/G 'B' KILOWATTS indicates 2150-2550 KW for 3-5 minutes. **DG B VOLTS** indicates 6840-7344 volts and **DG AMPS** indicates ÷ 100 amps. D/G 'B' indicates 2150 - 2550 KW for 3-5 minutes.

CUES:

When examinee mentions that he is waiting 3-5 minutes for pressures and temperatures to stabilize, inform examinee that he may continue without waiting the 3-5 minutes referenced in the procedure.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 14

Yes Yes Adjust load to between 4150 and 4250 KW using SPEED switch.

STEP STANDARD:

D/G 'B' KILOWATTS indicates 4150-4250 KW 6800-7400 VOLTS.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 15

No Yes Place D/G 'B' SYNC SEL switch in OFF.

STEP STANDARD:

DG B SYNC SEL switch indicates OFF.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 16

Yes No Annunciator XCP 637, 6-3 DG B ENG TEMP TRBL is received.

STEP STANDARD:

Operator reviews ARP for XCP 637, 6-3 and dispatches the DG operator to investigate.

CUES:

DG operator reports receipt of XCP 5202, 1-2 HIGH LUBE OIL TEMPERATURE and reports that LUBE OIL TEMP TO ENGINE on the "B" DG gauge board reads 170 degrees F and increasing. If the operator requests permission to begin decreasing load on "B" DG, prompt him to begin a normal load reduction using SOP 306, step 2.6.b using normal time limits.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 17

Yes No Annunciator XCP 637, 2-5 DG B ENG TRBL SHUTDN is received.

STEP STANDARD:

Refers to ARP for XCP 637, 2-5 and notes that the diesel should have shutdown. ARP further directs that the operator ensure "B" DG is shutdown.

CUES:

DG Operator reports receipt of XCP 5202, 6-3 ENGINE TROUBLE SHUTDOWN, but the diesel engine continues to run at full load and LUBE OIL TEMP TO ENGINE on the "B" DG gauge board now reads 176 degrees F and still increasing.

SAT

UNSAT

- If the operator requests permission to trip the "B" DG under full load, CRS directs that load be rapidly reduced using SOP 306, step 2.6.b as a guide only.
- if the operator trips "B" DG under full load due to a trip condition being exceeded without receiving a trip, proceed to step 21 of this JPM and continue.

Three actions can be taken here:

- A) Operator may trip the EDG from the MCB.
- B) Operator may have local operator trip the EDG locally.
- C) Operator may rapidly unload the EDG and then trip from the MCB/Locally

COMMENTS:

CR	SEQ	STEP:	18	STEP STANDARD:
No	No	Unload Diesel Generator B by holding the SPEED Switch in LOWER until load is 50 KW.		DG B KILOWATTS indicates less than 100 KW.

CUES:

SAT
UNSAT

COMMENTS:

CR	SEQ	STEP:	19	STEP STANDARD:
No	No	Using the VOLT REG RAISE-LOWER Switch, reduce KILOVARS to minimum.		DG B KILOVARS indicates approximately zero KVARs.

CUES:

SAT
UNSAT

COMMENTS:

CR	SEQ	STEP:	20	STEP STANDARD:
No	No	Open BUS 1DB DG FEED Breaker.		BUS 1DB DG FEED breaker green light is LIT.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 21
No No Momentarily place the EXCITER Switch in SHUTDN.

STEP STANDARD:
DG B AMPS and VOLTS decrease to zero, and FREQUENCY decreases to minimum.

CUES: SAT
UNSAT

COMMENTS:

CR SEQ STEP: 22
No No Momentarily place the TEST Switch in STOP.

STEP STANDARD:
TEST Switch is placed in the STOP position.

CUES: SAT
BG " B operator reports that the "B" DG engine is shutdown.
UNSAT
COMMENTS:

Examiner ends JPM at this point,

JPM SETUP SHEET

JPM NO: NRC-S-003

DESCRIPTION: START AND LOAD "B" EMERGENCY DIESEL GENERATOR

IC SET: 166

INSTRUCTIONS:

1. Trigger 1 – ANN – DG034
2. Trigger 2 – ANN – DG037 (trigger once ARP for first Annunciator (trigger #1) is evaluated or if cued by examiner)
3. Trigger 3 – MAL EPS 006B - **to be used if Local operator is directed to trip B EDG locally**
4. Trigger 4 – LOA EPS 128 - **to be used if Local operator directed to reset B EDG exciter locally**
5. When student is ready - RUN

COMMENTS:

1. PURPOSE/SCOPE

1. This procedure provides guidelines and instructions for the operation of the Emergency Diesel Generators.
2. 10CFR50.59 is applicable to this procedure. Additionally, the provisions of 10CFR50.65.a(4), 10CFR50, Appendix B, and SAP-630 are applicable.

CHG
A

II. PRECAUTIONS

1. Operability Precautions:

- a. When the REMOTE/LOCAL/MAINT Switch is in MAINT, the Diesel Generator is inoperable per Tech Specs.



- b. ESF Load Sequencer impact on Diesel Generator Operability:

- 1) De-energizing the Sequencer in Modes 1 through 4 renders the associated Diesel Generator inoperable.
- 2) In Mode 5 or 6, Diesel Generator operability is maintained when the associated ESF Load Sequencer is de-energized. However, the affected ESF Bus loss of voltage and degraded voltage relays should be disabled per STP-506.005 to provide Diesel Generator overload protection against an undervoltage start signal.

CHG
B

- c. To maintain separate offsite circuit operability in Modes 1 through 4, one of the following conditions must be met ~~for~~ XSW1DA and XSW1DB:

- 1) Both NORM FEED BREAKERS must be closed.
- 2) Both ALP FEED BREAKERS must be closed.

- d. The Emergency Diesel Generators are not to be used to supplement the offsite power sources for voltage correction or supplying additional power to the system. Per FSAR Section 8.3.1.1.2.4, they are only tied to the bus with offsite power for testing.

- e. The Diesel Generator Start Log, Attachment IV of SAP-204, must be maintained to record Diesel Generator start and loading attempts in accordance with NRC Reg Guide 1.108.

2. Loading And Unloading Precautions:

- a. When loaded, shifting Diesel Generator control between LOCAL and REMOTE control will result in load cycling due to governor droop loss resulting in possible engine trip, test start relay drop out, and disabling of the associated engine and generator protective devices.
- b. Diesel Generator load should be limited to the following ratings:
 - 1) 4250 KW continuous.
 - 2) 4676 KW for two hours out of 24 hours for one year.
 - 3) 4676 KW for seven days.
 - 4) 5100 KW for 30 minutes, however, the maximum fuel rack step is set at 912% (4760 KW) per Colt Industries recommendation via letter dated December 3, 1985.
- c. If load must be maintained greater than 4150 KW, it should be monitored at the EMERGENCY DIESEL GENERATOR A(B) RWI Recorder, due to the increased accuracy of these instruments.

NOTE 2.d

Ambient temperature is the outside air temperature and is, therefore, assumed to be the cylinder air intake temperature.

- d. The Emergency Diesel Generator must be operated within the constraints of the following table:

AMBIENT TEMPERATURE (°F)	(1) 100% LOAD (KW)	(2) 110% LOAD (KW)
90	4250	4676
95	4235	4659
100	4221	4644
105	4207	4627
110	4193	4613

- 1) Applies only when the Emergency Diesel Generator has been operated for seven consecutive days at greater than 100% load.

- 2) Applies anytime the Emergency Diesel Generator is loaded. The 110% Load Limit may be exceeded provided the following time and load restrictions are enforced:
 - a) The 110% Load Limit value is not exceeded for greater than 30 minutes.
 - b) The 30 minute loading limit stated in Precaution 2.b.4) is not exceeded.
 - e. Whenever a Diesel Generator is operated at less than 850 KW for greater than four hours, load to at least 2125 KW for at least 1/2 hour.
 - f. Whenever a Diesel Generator is operated at less than 850 KW for greater than 18 hours, load to at least 2125 KW for at least one hour.
 - g. If time permits, the following loading and unloading guidelines should be followed:
 - 1) Run the Diesel Generator at no load for three to five minutes.
 - 2) Adjust load to between 850 KW and 1250 KW and maintain for three to five minutes.
 - 3) Adjust load to between 2150 KW and 2550 KW and maintain for three to five minutes.
 - 4) Adjust load to between 4650 KW and 4250 KW.
 - 5) Reduce load gradually, holding at the same intervals as during loading.
3. Fuel Oil And Lube Oil Precautions:
- a. Never operate a Diesel Generator with lube oil pressure less than 70 psig.

- b. Observe the following limitations when adding lube oil:
 - 1) With the Diesel Generator in standby, lube oil level should be maintained greater than 2 inches above the add mark to allow for level drop following startup and to provide a minimum of one to two days lube oil usage during operation without requiring an oil addition. Lube oil level drops approximately 1/2 inch following startup and expected usage per the manufacturer is 3/4 to 1 inch per day.
 - 2) With the Diesel Generator running, maintain oil level, if practical, above the add mark to preclude actuation of the low level alarm.
 - 3) Oil additions should be limited to less than 110 gallons (2 drums) and level increases to less than three inches. One inch of level is equal to 35 gallons.
 - 4) Oil should not be filled above the lower FULL mark.
- c. Contact Mechanical Maintenance for assistance when lube oil is to be added to the Diesel Generator lube oil sump.
- d. The Diesel Fuel Oil Transfer Bump suction strainers should be shifted and cleaned when the differential pressure exceeds 2.5 psid.

CHG
1

4. General Operating Precautions:

- a. Before any engine cranking, ensure the following:
 - 1) Manual barring device is removed.
 - 2) Turning motor is disengaged.
- b. During an emergency start, if the DGA(B) GEN TRBL alarm is initiated, attempt to reset it by depressing the GEN RELAYS RESET Pushbutton.
- c. In the event of severe vibration or unusual noise, shut down the engine
- d. Diesel Generator operation with the REMOTE/LOCAL/MAINT Switch in the MAINT position results in the disabling of Diesel Generator protective trip functions normally only disabled during Emergency Starts. Management approval is required prior to operation of the Diesel Generator with the REMOTE/LOCAL/MAINT Switch in the MAINP position.

**B. OPERATION OF DIESEL GENERATOR 5
FROM THE CONTROL ROOM
IN THE TEST START MODE**

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

1.0 INITIAL CONDITIONS

- 1.1 The PRECAUTIONS of Section II have been reviewed.
- 1.2 Diesel Generator ~~3~~ is prepared to start per Section III.

2.0 INSTRUCTIONS

C01

- ↓ 2.1 Verify the Diesel Generator B cylinders are free of fluid as follows (BB-436):
 - a. Place the REMOTE/LOCAL/MAINT Switch in MAINT.
 - b. Verify the fuel injection racks move freely.
 - e. Open all 12 cylinder test cocks.
 - d. Place ~~the fuel~~ rack in the NO FUEL position by one of the following methods:
 - 1) Hold the Stop Lever in the STOP position.
 - 2) Place the Stop Lever in the STOP position and install the Fuel Rack Stop Lever Blocking Device.

CAUTION 2.1 e

Personnel should stand clear of the Diesel Generator sides when barring the engine due to high pressure exhaust air from the test cocks.

NOTE 2.1 e

Some discharge, such as a spray or mist, is expected from the cylinder petcocks and air start distributor. Excessive discharge resulting in accumulation of fluid in the area indicates a potential leak in the cylinders. If excessive fluid *is* found in one or more cylinders, the Diesel Generator must be declared inoperable and an MWR written to find and repair the source of leakage.

- e. While observing the cylinder test cocks to detect the possibility of fluid leakage into the cylinders, bar the engine over by **one** of the following methods:
 - 1) Starting air by momentarily depressing the TEST START Pushbutton.
 - 2) Starting air by using the spanner wrench on the top of one of the Main Air Start Valves on the engine.
 - 3) Barring device motor.
 - 4) Manually using a wrench attached to the shaft end.
- f. Remove the Stop Lever from STOP by **one** of the following methods:
 - 1) If the Stop Lever **was** held in the STOP position, release the Stop Lever from the STOP position.
 - 2) If the Fuel Rack Stop Lever Blocking Device was installed, remove the Blocking Device and release the Stop Lever from the STOP position.
- g. Close all 12 cylinder test cocks.
- h. Place the Diesel Generator B REMOTE/LOCAL/MAINT Switch in REMOTE.

C01



- 2.2 If XTF0004, UNIT 4 ENGINEERED SAFEGUARD TRANSFORMER, is in service and Diesel Generator B will be paralleled to the 115KV line, perform one of the following:

NOTE 2.2.a

Immediately prior to and during the time the XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, AUTO-OFF-MANUAL Switch is placed in OFF, 115KV Bus voltage should be verified and recorded to be within the limits specified in OAP-106.1 for the present transformer configuration with the regulator out of service. If the OAP limits are exceeded, the dispatcher should be notified to restore 115KV Bus voltage to within the limits.

- a. With XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, in service: perform the following:
 - 1) Record the initial 115KV Bus voltage per OAP-106.1
 - 2) Place the XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, AUTO-OFF-MANUAL Switch in OFF.
- b. With XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, out of *service*, ensure XES0008, 7.2KV TRANSFER & DISC SWITCHES, Transfer Switch is in the LOAD position.

CAUTION 2.3 through 2.7

The REMOTE/LOCAL/MAINT Switch should not be operated anytime the Diesel Generator is running.

- 2.3 To start Diesel Generator B, perform the following:
- a. Verify the diesel is ready to be started as indicated by the following:
 - 1) DG B AUTOSTART NOT READY (XCP-637 1-2), Annunciator is clear.
 - 2) The READY FOR AUTO START Light is illuminated at the Diesel Generator B Local Control Panel.
 - b. Momentarily place the Diesel Generator B TEST Switch to START.

- c. Verify the Diesel Generator starts and stabilizes between the following:
 - 1) 58.9 Hz and 61.1 Hz.
 - 2) 6700 volts and 7600 volts.

NOPE 2.4

- a. If time permits, the loading guidelines established in Section II should be followed.
- b. The Diesel Generator **short** term rating of 5100 KW should not be exceeded.

2.4 If the Diesel Generator is to be loaded, perform the following:

- a. Place the DG B SYNC SEL Switch in DSL
- b. Ensure the VOLT REG Switch is in AUTO.
- c. Using the VOLT REG WISE-LOWER Switch, adjust Diesel Generator B SYNC VOLTS to slightly higher than 1DB SYNC VOLTS.
- d. Using the SPEED Switch, adjust Diesel Generator B frequency to cause the SYNCHROSCOPE to rotate slowly in the FAST direction (clockwise),
- e. When the SYNCHROSCOPE passes 11 o'clock and slowly approaches 12 o'clock, close BUS 1DB DG FEED Breaker.
- f. Using the SPEED Switch, adjust lead as necessary while monitoring the following:
 - 1) KILOWATTS Meter.
 - 2) AMPS Meters.
 - 3) KILOVARS Meter.
- g. Place the DG B SYNC SEL Switch in OFF.
- h. Using the VOLT REG RAISE-LOWER Switch, adjust KILOVARS.

CAUTION 2.5

While operation in this configuration is not prohibited by Tech Specs, the time spent separated from Offsite Power should be limited to that required for troubleshooting.

- 2.5 If it is desired to divorce XSW1DB from Offsite Power, perform the following:
- a. Utilizing Enclosure D, estimate the present load on XSW1DB.
 - b. Using the SPEED Switch, adjust Diesel Generator B load until the estimated XSW1DB load is being carried by Diesel Generator B.
 - c. Open one of the following as appropriate for the Offsite Power source currently in parallel with the Diesel Generator:
 - 1) BUS 1DB NOKM FEED Breaker.
 - 2) BUS 1DB ALT FEED Breaker.
 - d. Using the SPEED Switch, adjust Diesel Generator B as necessary to maintain frequency between 59.5 Hz and 60.5 Hz.
 - e. Using the VOLT REG RAISE-LOWER Switch, adjust Diesel Generator B as necessary to maintain voltage between 6700 VAC and 7605 VAC.
 - f. When time permits, perform the following:
 - 1) Direct I&C to connect a Fluke 45 to V-DFB with the following settings (inside MCB):
 - a) AC volts.
 - b) AUTO.
 - c) Medium rate.
 - 2) Using the VOLT REG RAISE-LOWER Switch, adjust Diesel Generator B as necessary to maintain voltage between 114.11 VAC and 120.68 VAC by Fluke 45 indication (between 6846.3 VAC and 7240.5 VAC).

2.6 If the Diesel Generator output breaker is closed and Diesel Generator B is no longer required as a source of power, perform the following:

- a. If the Diesel Generator is the only power source supplying XSWIDB, perform the following to parallel with Offsite Power:
 - 1) Place the BG B SYNC SEL Switch in one of the following positions **as** appropriate:
 - a) NORM-- allows paralleling with the 230 KV offsite source.
 - b) EMERG-- allows paralleling with the 115 KV offsite source.
 - 2) Using the VOLT REG RAISE-LOWER Switch, adjust Diesel Generator B SYNC VOLTS to slightly lower than 1DB SYNC VOLTS.
 - 3) Using the SPEED Switch, adjust Diesel Generator B frequency to cause the SYNCHROSCOPE to rotate slowly in the SLOW direction (counter-clockwise).
 - 4) When the SYNCHROSCOPE indicator passes 1 o'clock and slowly approaches 12 o'clock, close **one** of the following as appropriate for the synchroscope position selected:
 - 1) BUS 1DB NORM FEED Breaker.
 - 2) BUS 1DB ALT FEED Breaker.

NOTE 2.6.b

If time permits, the unloading guidelines established in Section II should be followed.

- b. If the Diesel Generator is running in parallel with an Offsite Power source, perform the following:
 - 1) Unload Diesel Generator B by holding the SPEED Switch in LOWER until load is 50 KW.
 - 2) Using the VOLT REG RAISE-LOWER Switch, reduce KILOVARs to minimum.
 - 3) Open BUS 1DB DG FEED Breaker.

- 4) Ensure DG B VOLTS indicates between 6700 volts and 7600 volts.
- 5) Momentarily place the EXCITER Switch in SHUTDN.

NOTE 2.6.b.6)

The VOLT REG RAISE-LOWER Switch should not be adjusted for the remainder of this procedure.

- 6) Verify the steady-state no-load voltage for Diesel Generator B as follows:
 - a) Momentarily depress the EMERG START Pushbutton.
 - b) Verify DG B VOLTS indicates between 6700 volts and 7600 volts.
 - c) Momentarily depress the EMERG START OVRIDE Pushbutton.
 - d) Momentarily place the Diesel Generator B TEST Switch in START.

2.7 To return Diesel Generator B to standby status, perform the following:

- a. Momentarily place the EXCITER Switch in SHUTDN.
- b. Momentarily place the TEST Switch in STOP.
- c. Unless directed otherwise, prepare the Diesel Generator for automatic operation as follows:
 - 1) Depress the GEN RELAYS RESET Pushbutton.
 - 2) Momentarily place the EXCITER Switch in RESET.
 - 3) Depress the ENG SHUTDN RESET Pushbutton.
 - 4) Verify DG B AUTOSTART NOT READY (XCP-637 1-2) Annunciator is clear.
 - 5) The READY FOR AUTO START light is illuminated at the Diesel Generator B Local Control Panel.

- 2.8 If Diesel Generator **B** has been run for greater than or equal to an hour, perform the following steps to check for and remove any accumulated water in the fuel oil Day Tank (BB-436):
- a. Place the following switches in OFF:
 - 1) FO XFER PUMP A.
 - 2) **FO** XFER PUMP B.
 - b. Allow sufficient time for the water to settle.
 - c. Ensure a drain hose is installed downstream of XVT30955-DG, HI ISOL VLV FOR TEST CONNECTION.
 - d. Open XVT30955-DG, HI ISOL VLV FOR TEST CONNECTION.
 - e. Unlock and throttle open XVT00990B-DG, DG FUEL OIL DAY TANK B BRAIN VALVE.
 - f. When Diesel Generator B Bay Tank is free of water, perform the following:
 - 1) Close and lock XVT00990B-DG, DG FUEL OIL DAY TANK B BRAIN VALVE.
 - 2) Close XVT30955-DG, HI ISOL VLV FOR TEST CONNECTION.
 - g. Place the following switches in AUTO:
 - 1) FO XFER PUMP A.
 - 2) FO XFER PUMP 5.

NOTE 2.9

If the Band Indicator HIGH or LOW light is lit, the Voltage Regulator will step when placed in AUTO.

- 2.9 If XTF0006, XTF0004 7.2KV VOLTAGE REGULATOR, is in service, ensure the AUTO-OFF-MANUAL Switch *is* in AUTO.
- 2.10 If previously installed, direct I&C to disconnect the Fluke **45** from V-DGB (inside MCE).

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-S-004

MITIGATE THE CONSEQUENCES OF A TOTAL LOSS OF
SERVICE WATER

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 10

TASK:

000-062-05-01

RESPOND TO LOSS OF NUCLEAR SERVICE WATER

TASK STANDARD:

Plant is stabilized pending evaluation. 'B' and 'C' RCPs have been tripped. B CCW Loop has been placed in service without loss of cooling to the running RCP. **The use** of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations

PREFERRED EVALUATION LOCATION

SIMULATOR

PREFERRED EVALUATION METHOD

PERFORM

REFERENCES:

SOP-118

COMPONENT COOLING SYSTEM

AOP-I 17.1

TOTAL LOSS OF SERVICE WATER

TOOLS:

YELLOW HIGHLIGHTER

SOP-118, SECTION III.B., ACTIVE LOOP SWAPOVER

EVALUATION TIME

10

TIME CRITICAL No

No 10CFR55: 45(a)8

CANDIDATE:

IM E START

TIME FINISH

PERFORMANCE RATING:

SAT:

UNSAT:

QUESTION GRADE

PERFORMANCE

EXAMINER:

SIGNATURE

DATE _____

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS. AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL **BE** SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Mode 3 ready to startup. Both running **SW** pumps have tripped. The running HVAC chiller units have tripped on high temperature. Attempts to restore at least one train of SW have failed

INITIATING CUES: The CRS has directed the NRQATC to respond to a total **loss of** service water, per AOP-117 ■ **TOTAL LOSS OF SERVICE WATER**, and complete steps 12-14.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 10

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Mode 3 ready to startup. Both running SW pumps have tripped. The running HVAC chiller units have tripped on high temperature. Attempts to restore at least one train of SW have failed.

INITIATING CUES: The CRS *has* directed the NROATC to respond to a total loss of service water, per AOP-147.2, TOTAL LOSS OF SERVICE WATER, and complete steps 12-14

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1
Yes **Yes** Minimize CCW heatup by stopping 'B' and 'C' RCPs.

STEP STANDARD:
Secures 'B' and 'C' RCPs by taking control switch to hip position and verifying green light lit.

CUES: **SAT**
When asked examiner informs examinee that the CRS concurs with securing two **UNSAT** RCPs and directs securing 'B' and 'C' RCPs per SOP-10? section 4A.
COMMENTS:

CR SEQ STEP: 2
No Yes Checks RCP A temperatures

STEP STANDARD:
Displays ZZ RCP BRG on IPCS monitor to verify: RCP motor bearing temperature < 195øF, bower seal water bearing temperature < 225øF.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ STEP: 3
No **Yes** Minimize CCW heatup by alternating operation of Component Cooling Water loops.

STEP STANDARD:
Perform an active CCW loop switchover per SOP-118, section 3B step 2.3.

CUES: **SAT**
Examiner states that the NROATC has been directed to perform an active CCW loop switchover by CRS. **UNSAT**
COMMENTS:

CR	SEQ	STEP:	4	STEP STANDARD:
Yes	Yes	Place XPP-000IC, PUMP C, TRAIN A, in PULL TO LOCK.		The B Train Hand switch for C Component Cooling Water Pump is in Pull To Lock.

CUES:

SAT
UNSAT

COMMENTS:

CR	SEQ	STEP:	5	STEP STANDARD:
No	Yes	Align XPP-000IC PUMP C, to Train B per Attachment VB with the exception of racking in CCW pump C breaker.		Direct the AB Operator to complete Attachment VB with the exception of racking up the breaker for C CCW Pump on B Train.

cum:

Racking up the breaker is a separate direction from the NROATC in a later step in the procedure. Racking up the breaker for C CCW Pump at this time does not constitute a failure of this JPM.

SAT
UNSAT

COMMENTS:

CR	SEQ	STEP:	6	STEP STANDARD:
No	Yes	Verify CCW to the RHR HX B is open.		The red light for MVB-9503B, CC TO RHR HX B , is lit and the green light is off.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 7
Yes Yes Start B CCW Pump.

STEPSTAXDARD:
Indicated by the red light for B CCW Pump lit and the green light off

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 8
Yes Yes Start MVB-9503B in the closed direction.

STEP STANDARD:
Start MVB-9503B CC TO RHR HX B, stroking in the closed direction as indicated by bath the red and green lights being lit.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 9
Yes Yes When flow is indicated on FI-7044 between 5000 and 4000 gpm Open MVB-9687B/9525B and MVB-9524B/9526B; and Close MVB-9524A/9526A; MVB-9587A/9525A; and Open MVB-9503A.

STEP STANDARD:
Indicated by the red fight on the hand switches for MVB-9687B/9525B, MVB-9524B/9526B being lit and the green light on the hand switches for MVB-9524A/9526A and MVB-9687A/9625A being lit, and the red fight on the hand switches for MVB-9503A

CUES:

The valves listed in this step must be operated in rapid succession to prevent loss of flow or excessive flow perturbations in the non-essential loop and should be operated by Train sequence as indicated. Auto closure of the CCW valves to the RB or Thermal Barrier constitutes a failure of this JPM.

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 10
No No Rack in the C CCW Pump breaker on Train B.

STEP STANDARD:
Direct the A0 to Rack in the breaker for B Train power to C CCW Pump per Attachment VB. Indicated by the green light on the B Train switch for C CCW Pump being lit.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 11
No No Place XPP-0001C Switch in After-Stop.

STEP STANDARD:
Place the hand switch for C CCW Pump in the Normal After-Stop position.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 12
No No Direct the AB Operator to verify flow for RML2B is greater than 1 gprn.

STEP STANDARD:
The A5 Operator reports that flow is greater than 1 gprn.

CUES: SAT
UNSAT
COMMENTS:

CR SEQ STEP: 13

Yes Yes Ensure the following valves have not auto closed due to high flow.

STEP STANDARD:

Ensure that MVG-9625, MVG-9626, MVG09583, and MVT-9593A (B) (C) are open as indicated by the red lights on the switches being lit and no alarms indicating closure are received.

CUES:

Not recognizing closure of these valves should constitute as a failure of this JPM.
This concludes this JPM.

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-S-004

DESCRIPTION: MITIGATE THE CONSEQUENCES OF A TOTAL LOSS OF SERVICE WATER

IC SET: 167

INSTRUCTIONS:

1. Startup simulator in IC set 167
2. Trigger 1 - align CCW Pump C to B train
3. Trigger 2 - Rack up C CCW Pump on B train

COMMENTS:

FOR TRAINING USE ONLY

SOP-118
REVISION 15

B. ACTIVE LOOP SWITCHOVER

Continuous Use

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

1.0 INITIAL CONDITIONS

- 1.1 Service Water is supplying cooling to the Component Cooling Heat Exchangers per SOP-117.

CAUTION 2.8

- a. If XPP-0001C, PUMP C, is aligned to either loop electrically, the following conditions must be met for automatic start of one of the pumps in the particular loop following an SI or Blackout:
 - 1)** For XPP-0001A(B), PUMP A(B), to start:
 - a) XPP-0001A(B), PUMP A(B), Switch must be *in* After-Start, or
 - b) XPP-0001C, PUMP C, Breaker must be racked down.
 - 2)** For XPP-0001C, PUMP C, to start
 - a) XPP-00016, PUMP C, Switch must be in After-Start, or
 - b) XPP-0001A(B), PUMP A(B), Breaker must be racked down.
- b. If XPP-0001C, PUMP C, is not operating and is aligned electrically to the non-operating loop, that loop **is** inoperable.

2.0 INSTRUCTIONS

NOTE 2.1

If XPP-0001C, PUMP C, is the only operable pump in the offgoing active loop, Step 2.1 should be omitted.

- 2.1 Align XPP-0001C, PUMP C, to the oncoming active loop **as** follows:
- a. If XPP-0001A(B), PUMP A(B), is the standby pump in the offgoing active loop, perform the following:
 - 1)** Start XPP-0001A(B), PUMP A(B).
 - 2)** Secure XPP-0001C, PUMP C, TRAIN A (TRAIN B).
 - b. Place XPP-00016, PUMP C, TRAIN A and TRAIN B, in PULL TO LOCK.

- c. Perform one of the following:
 - 1) Align XPP-0001C, PUMP C, to Train A per Attachment VA with the exception of racking in XSW1DA 07, 66 PUMP C XPPOOOIC-CC.
 - 2) Align XPP-0001C, PUMP C, to Train B per Attachment VB with the exception of racking in XSW1DB 11, CC PUMP C XPPOOOIC-CC.

2.2 Establish Train A as the active loop as follows:

- a. Ensure MVB-9503A, CC TO RHR HX A, is open.
- b. Start one of the following in slow speed:
 - 1) XPP-0001A, PUMP A.
 - 2) XPP-0001C, PUMP C TRAIN A.

CAUTION 2.2.c and 2.2.d

Failure to complete Step 2.2.d in a timely manner after reducing RHR Heat Exchanger flow will result in a loss of flow through the running CCW Pump or excessive flow perturbations in the CCW non-essential loop.

- e. Start MVB-9503A, CC TO RHR HX A, stroking in the closed direction.
- d. When flow, as indicated on FI-7034, HX A FLOW GPM, is between 5000 gpm and 4080 gpm, perform the following in rapid succession:
 - 1) Open MVB-9687A/9525A, LP A NON-ESSEN LOAD ISOb.
 - 2) Open MVB-9524A/9526A, LP A NON-ESSEN LOAD ISOL.
 - 3) Close MVB-9524B/9526B, LP B NON-ESSEN LOAD ISOL.
 - 4) Close MVB-9687B/9525B, LP B NON-ESSEN LOAD ISOL.
 - 5) Open MVB-9503B, CC TO RHR HX B.

- e. If XPP-0001C, PUMP C, is the standby pump on Train A, perform the following:
 - 1) Rack in XSW1DA 07, CC PUMP C XPPOOOIC-CC to complete Attachment VA.
 - 2) Place XPP-0001C, PUMP C, TRAIN A, in After-Stop.
- f. Locally verify greater than 1 gpm sample flow on RML0002A, LIQUID RAD MON COMPONENT COOLING (IB-412)
- g. Ensure the following valves have not automatically closed due to high flow:
 - 1) MVG-9625, CC TO RB
 - 2) MVG-9626, CC TO RB.
 - 3) MVG-9583, FROM XS LTDN HX.
 - 4) MVT-9593A(B)(C), FROM RCP A(B)(C) THERM BARF?
- h. Transfer the inservice Charging Pump to Train A per SOP-102.
- i. Secure the running Train B Component Cooling Water Pump in the off going active loop:
 - 1) XPP-0001B, PUMP B.
 - 2) XPP-OOOIC, PUMP C TRAIN B
- j. Ensure XPP-58A(B)(C), CCBP A(B)(C) are aligned as follows (MCB):
 - 1) One pump is in AUTO and operating.
 - 2) One pump is in AUTO and not operating.
 - 3) One pump is in OFF.

CHG
A

2.3 Establish Train B as the active loop as follows:

- a. Ensure MVB-9503B, CC TO RHR HX B. is open.
- b. Start one of the following in slow speed:
 - 1) XPP-000IB, PUMP B.
 - 2) XPP-0001C, PUMP C TRAIN B.

CAUTION 2.3.c and 2.3.d

Failure to complete Step 2.3.d in a timely manner after reducing RHR Heat Exchanger flow will result in a loss of flow through the running CCW Pump or excessive flow perturbations in the CCW non-essential loop.

- c. Start MVB-9503B, CC TO RHR HX B, stroking in the closed direction
- d. When flow, as indicated on FI-7044, HX B FLOW GPM, is between 5000 gpm and 4000 gpm, perform the following in rapid succession:
 - 1) Open MVB-9687B/9525B, LP B NON-ESSEN LOAD ISOL.
 - 2) Open MVB-9524B/9526B, LP B NON-ESSEN LOAD ISOL.
 - 3) Close MVB-9524A/9526A, LP A NON-ESSEN LOAD ISOL
 - 4) Close MVB-9687A/9525A, LP A NON-ESSEN LOAD ISOL.
 - 5) Open MVB-9503A, CC TO RHR HX A.
- e. If XPP-000IC, PUMP C, is the standby pump on Train B, perform the following:
 - 1) Rack in XSWIDB 11, CC PUMP C XPP000IC-CC CCW PUMP C to complete Attachment VB.
 - 2) Place XPP-000IC, PUMP C, TRAIN B in After-Stop.
- f. Locally verify greater than 1 gpm sample flow on RML0002B, LIQUID RAD MON COMPONENT COOLING (IB-412).

- g. Ensure the following valves have not automatically closed due to high flow:
- 1) MVG-9625, CC TO RB.
 - 2) MVG-9626, CC TO RB.
 - 3) MVG-9583, FROM XS LTDN HX
 - 4) MVT-9593A(B)(C), FROM RCP A(B)(C) THERM BARR.
- h. Transfer the inservice Charging Pump to Train **B** **per** SOP-102.
- i. Secure the running Train A Component Cooling Water Pump in the off going active loop:
- 1) XPP-0001A, PUMP A.
 - 2) XPP-0001C, PUMP C TRAIN A.
- j. Ensure XPP-58A(B)(C), CCBP A(B)(C) are aligned as **follows** (MCB):
- 1) One pump is in AUTO and operating.
 - 2) One pump **is** in AUTO and not operating.
 - 3) One pump is in OFF.

CHG
A

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPMNO:: NRC-S-005

ABNORMAL ROD CONTROL SEQUENCE

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 8

TASK:

TASK STANDARD:

Reactor Operator identifies Rod Sequencing error and performing the required action to identify true rod position and correcting indication as prescribed in SOP-403, ROD CONTROL AND POSITION INDICATING SYSTEM

PREFERRED EVALUATION LOCATION

PREFERRED EVALUATION METHOD

SIMULATOR

PERFORM

REFERENCES: **SOP-404**

ROB CONTROL AND POSITION INDICATING SYSTEM

TOOLS:

EVALUATION TIME 10 **TIME CRITICAL** No **10CFR55:** 45a4

CANDIDATE:

TIME START

TIME FINISH:

PERFORMANCE RATING:

SAT UNSAT

QUESTION GRADE

PERFORMANCE

EXAMINER:

SIGNATURE

DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE **THE** NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is at 75% power per GOP-4A Power Operation (Mode 1, Ascending). Rod control is still in manual following performance of STP-102.002, Power Range Heat Balance.

INITIATING CUES: CRS directs RO to match Tavg-Tref by manually adjusting rods.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 8

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: Plant is at 75% power per GOP-4A Power Operation (Mode 1, Ascending). Rod control is still in manual following performance of STP-102.002, Power Range Heat Balance.

INITIATING CUES: CRS directs RO to match Tavg-Tref by manually adjusting rods.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR	SEQ	STEP:	1	STEP STAXDARD:
No	No	Withdraws control rods to adjust Tavg		Rods manually withdrawn.

CUES:	SAT
RO should identify Control Bank 'D' GP 2 rods appear to be stepping out before GP 1, or that GP 2 indicates 2 steps > GP 1	UNSAT

COMMENTS:

CR	SEQ	STEP:	2	STEP STANDARD:
Yes	No	Observes Control Bank 'D' GP 2 rod sequence.		Identifies GP 2 moving out of sequence.

CUES:	SAT
CRS directs operator use SOP-403, ROD CONTROL AND POSITION INDICATING SYSTEM, Section V.C starting with Step 2.9 tu identify and correct the position indication problem.	UNSAT

COMMENTS:

CR	SEQ	STEP:	3	STEP STANDARD:
No	No	Without passing through the AUTO position, select the affected Rod Bank on the ROD CNTRL BANK SEL Switch.		Select Bank D

CUES:	SAT
Operator should not pass through auto while selecting Rod Bank - this is critical.	UNSAT

COMMENTS:

CR SEQ STEP: 4

No No Ensure the two groups of the affected bank are at the same height by inserting the rods one half step at a time until Group 1 moves.

STEP STANDARD:

Match Rod height until GP 1 moves

CUES:

CRS directs RO is to use DRPI indication in this step.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 5

No No At XCL3-CR, LOGIC CABINET (IB-463), obtain the reading from the Bank Overlay Unit Counter Display. Read Bank Overlay counter

STEP STANDARD:

CUES:

Give examinee Bank Overlay date (attached) for current DRPI rod height. IB operator

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 6

No No At XCA4-CR, PIA CONVERTER CABINET, perform the following:

1) **Rotate** the Bank Position Display Switch to the affected bank.
2) Obtain the reading from the **BANK POSITION DISPLAY**.
3) Rotate the Bank Position Display Switch to **DISPLAY OFF**.

STEP STANDARD:

Obtains **P/A** converter for Bank D from IB operator.

CUES:

IB operator reports P/A reading for Bank D for current DRPI rod height (attached).

SAT

UNSAT

COMMENTS:

<i>CR SEQ</i>	<i>STEP:</i>	<i>STEP STANDARD:</i>
No No	7 Using the following determine the actual position of the affected bank: 1) DRPI 2) The reading obtained from the Bank Overlap Unit counter display. 3) The reading obtained from the BANK POSITIONDISPLAY on the P/A Converter. 4) The unaffected Group Demand Step Counters.	Determine actual position which would be equal to what DRPI is reading CURRENTLY.

CUES: After data obtain, RO may request correlation of bank overlap data to group D rod height -CRS informs him I&C correlation is "KEY value for current DRPI"
SAT
UNSAT
RO may be prompted for recommendation on what rod height is.
If recommendation made, direct as CRS to continue with procedure.

COMMENTS:

<i>CR SEQ</i>	<i>STEP:</i>	<i>STEP STANDARD:</i>
Yes No	8 Using the UP/DN Pushbuttons, set the affected Groups Demand Step Counters to the value determined in Step 2.9.e.	Makes adjustment to Control Bank D GP 1 and/or GP 2. Group position indication to equal value stated in previous step.

CUES: Both GP 1 and GP 2 group position indications should equal DRPI indication.
SAT
UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-S-005

DESCRIPTION: ABNORMAL ROD CONTROL SEQUENCE

IC SET: 172

INSTRUCTIONS:

1. When student is ready:

Ensure that:

Bank D Group 1 position demand-156 steps

Bank D Group 2 position demand-197 steps

Group 2 needs to be the first group to step out

DRPI needs to be at 198 steps

Tavg must be $< T_{ref}$ (approx. 0.8F - 1.3F)

RUN

COMMENTS:

KEY

	Used in Step 5	Used in Step 6
Current Digital Rod Position Indication (DRPI)	Bank Overlap Unit Reading	PIA converter reading Bank D
180	564	180
186	570	186
192	576	192
198	582	198
204	588	204

NOTE :Setup will more than likely cause DRPI height to be at 192

FOR TRAINING USE ONLY

SOP-403
REVISION 10

C. MALFUNCTION OF THE BANK DEMAND STEP COUNTERS

CONTINUOUS USE

Continuous Use of Procedure Required.
Read Each Step Prior to Performing.

1.0 ENTRY CONDITIONS

- 1.1 CMPTR ROD SEQ (XCP-6202-6) Annunciator
- 1.2 Disagreement between Group 4 and Group 2 Demand Step Counters of greater than one step within any Rod Bank.
- 1.3 Disagreement between Group Demand Step Counters and Digital Rod Position Indication (DRPI) of greater than or equal to 12 Steps.

2.0 CORRECTIVE ACTIONS

- 2.1 Stop any changes in reactivity.
- 2.2 Place the ROD CNTRL BANK SEL Switch in MAN and minimize rod motion.
- 2.3 Adjust Pavg as required by adjusting Main Turbine load.
- 2.4 Refer to Technical Specifications 3.1.3.2.
- 2.5 Perform GTP-702, Attachment VI.C, Demand Position Indicator Inoperable.
- 2.6 Determine if the problem is due to the Group Demand Step Counters or misalignment of Control Rods.
- 2.7 Have the I&C Department investigate and correct the cause of the failure.

NOTE 2.8 and 2.9

Step 2.8 should be used if the affected Rod Bank is at its fully withdrawn position for the current cycle. Step 2.9 may be used as an alternate method.

2.8 Realign Group Demand Step Counters within a Rod Bank as follows:

- a. Using the UP/DN Pushbuttons, set the affected Group Demand Step Counter **to** read the same as the other Group Demand Counter in the affected Rod Bank.
- b. Without passing through the AUTO position, select the affected Rod Bank on the ROD CNTRL BANK SEL Switch.
- c. Withdraw rods in the affected Rod Bank until all the following conditions exist for the affected bank:

NOTE 2.8.e

The fully withdrawn rod height is specified in the Nuclear Design And Core Management Report.

CHG
A

- e. Drive rods in to the fully withdrawn position for the current core cycle
- f. Without passing through the AUTO position, select MAN on the ROD CNTKL BANK SEL Switch.
- g. If Bank D is the affected bank, have I&C reset the Bank Overlap Unit, XCL3-CR, LOGIC CABINET (IB-463), for the current rod position per the Station Curve Book, Figure V-15, Rod Control Overlap Computer Cumulative Steps Vs Control Bank Position.

- h. If any of the Control Rod Banks was the affected bank, reset the P/A Converter, XCA4-CR, P/A CONVERTER CABINET (IB-463), as follows:
 - 1) Rotate the Bank Position Display Switch to the affected bank position.
 - 2) Place the MANUAL/AUTOMATIC Switch in MANUAL
 - 3) Depress the UP or DOWN Button as required to reset the PIA Converter to indicate current bank position.
 - 4) Place the MANUAL/AUTOMATIC Switch in AUTOMATIC.
 - 5) Rotate the Bank Position Display Switch to DISPLAY OFF
- i. Perform a Rod Bank Update operation on the IPCS for the current rod positions.
- j. Return the ROD CNTRL BANK SEL Switch to the desired position.

2.9 Realign Group Demand Step Counters within a Rod Bank as follows.

- a. Without passing through the AUTO position, select the affected Rod Bank on the ROD CNTRL BANK SEL Switch.
- b. Ensure the two groups of the affected bank are at the same height by inserting the rods one half step at a time until Group 1 moves.

NOTE 2.9.c. and 2.9.d

The Shutdown Banks have no display on the ~~PIA~~ CONVERTER CABINET and no input to the Bank Overlap Unit.

- c. At XCL3-CR, LOGIC CABINET (IB-463), obtain the reading from the Bank Overlap Unit Counter Display.

- d. At XCA4-CR, P/A CONVERTER CABINET, perform the following (B-463):
- 1) Rotate the Bank Position Display Switch to the affected bank.
 - 2) Obtain the reading from the BANK POSITION DISPLAY.
 - 3) Rotate the Bank Position Display Switch to DISPLAY OFF

CAUTION 2.9.e

If a determination of the actual bank position cannot be made using Step 2.9.e, Technical Specification 3.1.3.2 should be applied.

- e. Using the following, determine the actual position of the affected bank:
- 1) DRPI.
 - 2) The reading obtained from the Bank Overlap Unit counter display.
 - 3) The reading obtained from the BANK POSITION DISPLAY on the PIA Converter.
 - 4) The unaffected Group Demand Step Counters.
- f. Using the **UP/DN** Pushbuttons, set the affected Group Demand Step Counter to the value determined in Step 2.9.e.
- g. Perform a Rod Bank Update operation on the IPCS for the current rod positions.
- h. Return the ROB **CNTRL** BANK SEL Switch to the desired position.
- i. Perform Step 2.8 for the affected bank when that bank is at its fully withdrawn position.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-S-006

STEAM GENERATOR TUBE RUPTURE (DEPRESSURIZE
RCS TO < RUPTURED S/G PRESSURE)

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER:

THIS JPM IS APPROVED

ALTERNATE

TASK:

000-038-05-01 RESPOND TO STEAM GENERATOR TUBE RUPTURE

TASK STANDARD:

RCS pressure is reduced to less than ruptured S/G pressure with PZR level > 18% or PZR level > 68% or RCS subcooling < 30°F using PZR PORV. The use of applicable Human Performance Tools (3-way communications, self checking, peer checking, phonetic alphabet, etc) and industrial safety practices meets expectations.

PREFERRED EVALUATION LOCATION **PREFERRED EVALUATION METHOD**

SIMULATOR PERFORM

REFERENCES: EOP-4.0 STEAM GENERATOR TUBE RUPTURE

TOOLS:

EVALUATION TIME 10 **TIME CRITICAL** No 10CFR55: 45(a) 6

CANDIDATE: TIME START
TIME FINISH

PERFORMANCE RATING: SAT UNSAT
QUESTION GRADE PERFORMANCE

EXAMINER: SIGNATURE DATE
COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE **TASK** SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A Steam Generator Tube Rupture is in progress. S/G "C" has been isolated per EOP-4.0. An operator-initiated cooldown has been performed according to EOP-4.0, through step 21.

INITIATING CUES: Control Room Supervisor directs operator to depressurize the RCS, per EOP-4.0, STEAM GENERATOR TUBE RUPTURE, starting with step 22.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 7

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: A Steam Generator Tube Rupture is in progress. S/G 'C' has been isolated per EOP-4.0. An operator initiated cooldown has been performed according to EOQ-4.0, through step 21.

INITIATING CUES: Control Room Supervisor directs operator to depressurize the RCS, per EOP-4 0, STEAM **GENERATOR** TUBE RUPTURE, starting with step 22.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ

STEP: 1

STEP STANDARD:

No Yes Depressurize the RCS using normal spray valves PCV-444C and 444D.

Places PZR Spray PVC-444C & 444D controllers in MANUAL and increases output to 100% demand.

CUES:

SAT

Give examinee 1-2 minutes to familiarize himself with the control board indications and his place in the procedure. **UNSAT**

COMMENTS:

CR SEQ

STEP: 2

STEP STANDARD:

Yes Yes Identify failure of PCV-444D and PCV-444C to open.

Student identifies Spray Valves fail to open, when demand signal increased. Student goes to Alt. Action step, which depressurizes RCS using PZR PORV.

CUES:

SAT

Examinee recognizes ALTERNATE PATH goes to step 23.

UNSAT

COMMENTS:

CR SEQ

STEP: 3

STEP STANDARD:

No Yes Verify at least one PZR PORV is available

Student recognizes all PZR PORV's are available.

CUES:

SAT

Cue student if asked: All PZR PORV's are operable.

UNSAT

COMMENTS:

CR SEQ STEP: 4
Yes Yes Open one PZR PQRV until any termination criteria is met; RCS pressure < 'C' (ruptured) S/G pressure and PZR level > 18%; or PZR level > 68; or RCS subcooling < 30°F.

STEP STANDARD:
Recognizes from MCB indication that RCS pressure is less than 'C' S/G pressure with PZR level > 18% or PZR level > 68%.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 5
Yes Yes Close the PZR PQRV

STEP STANDARD:
Close the PZR PORV opened in previous step.

CUES:
If RCS pressure equals ruptured S/G pressure first and student continues to depressurize to 68% PZR level, this would constitute failure.

SAT
UNSAT

COMMENTS:

Examiner ends JPM at this point

JPM SETUP SHEET

JPM NO: NRC-S-006

DESCRIPTION: STEAM GENERATOR TUBE RUPTURE (DEPRESSURIZE RCS TO < RUPTURED S/G PRESSURE)

IC SET: 169

INSTRUCTIONS:

When student is ready:

RUN

COMMENTS:

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO:: NRC-S-007

LOSS OF POWER RANGE INSTRUMENT N-44

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 10

TASK:
000-034-05-01 RESPOND TO POWER RANGE INSTRUMENTATION CHANNEL FAILURE

TASK STANDARD:
N-44 has been removed from service (control power fuses removed) Control rod motion has been stopped (Bank selector switch placed in MAN).

PREFERRED EVALUATION LOCATION **PREFERRED EVALUATION METHOD**
SIMULATOR PERFORM

REFERENCES: AOP-401.10 POWER RANGE FAILURE

TOOLS:
EVALUATION TIME 15 **TIME CRITICAL** No **10CFR55:** 45(a)4

CANDIDATE: **TIME START:**
 TIME FINISH:

PERFORMANCE RATING: SAT: UNSAT:
 QUESTION GRADE: **PERFORMANCE**

EXAMINER: **SIGNATURE** **DATE**

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The reactor is at 75% power. All controls are in automatic.

INITIATING CUES: Respond to developing plant conditions.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 10

TIME

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The reactor is at 75% power. All controls are in automatic.

INITIATING CUES: Respond to developing plant conditions.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1

No Yes Identify power range channel 11-44 has failed.

STEP STANDARD:

Operator identifies N-44 has failed low by MCB indication.

CUES:

Examinees should utilize AOP-401.10, POWER RANGE FAILURE

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 2

Yes Yes Manually control rods.

STEP STANDARD:

Positions the ROD CNTRL BANK SEL switch to **MAN** position.

CUES:

Steps 2 and 3 are Immediate Operator Actions.

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 3

No No Stop any transients in progress

STEP STANDARD:

Verifies no load change is in progress.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 4
No No Maintain stable plant conditions.

STEP STANDARD:
Pzr pressure and Tavg maintained stable.

CUES:
Note: This ~~is~~ a continuous action step.
COMMENTS:

SAT
UNSAT

CR SEQ STEP: 5
No No Verify no testing **is** in prugress.

STEP STANDARD:
Looks at NI panel and/or **asks** examiner if any testing **is** in progress.

CUES:
Cue operator that no testing is in progress.
COMMENTS:

SAT
UNSAT

CR SEQ STEP: 6
Yes No Set the rod stop bypass switch for the failed channel to bypass and verifies bistable light lit.

STEP STANDARD:
Positions the **ROD STOP** BYPASS switch to the BYPASS **PR** N-44 position and verifies **XCP** 61 11 light 4-4 lit.

CUES:

COMMENTS:

SAT
UNSAT

CR SEQ STEP: 7
No No Maintain Tavg within 1°F of Tref.

STEP STANDARD:
Controls Tavg within 1°F of Tref with manual rods.

CUES: **SAT**
CUE TO OPERATOR: CWS directs you to insert rods to maintain Tavg with 1°F of Tref. inform CRS every 5 step interval. **UNSAT**
COMMENTS:

CR SEQ STEP: 8
Yes No Remove control power fuses from the **N-44** power range "A" drawer.

STEP STANDARD:
Control power fuses for the N-44 power range "A" drawer removed.

CUES: **SAT**
Instruct **NROATC** that the CRS has requested him to remove N-44 from service. **UNSAT**
COMMENTS:

CR SEQ STEP: 9
Yes No Remove instrument power fuses from the **N-44** power range "B" drawer.

STEP STANDARD:
instrument power fuses from the power range **N-44** power range "B" drawer removed.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ **STEP:** 10
No No Set the comparator defeat switch on the comparator and rate drawer to position associated with failed channel.

STEP STAXDARD:
Positions the comparator channel defeat switch to the N44 position.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ **STEP:** 11
No No Set upper section and lower section switches on the detector current comparator to position associated with the failed channel.

STEP STANDARD:
Upper and lower section switches on the detector current comparator indicate PR N44 position.

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ **STEP:** 12
No No Ensure NR-45 is selected to operable channels.

STEP STANDARD:
Selects pen 2 (delta I) to N42 (Delta Flux II).

CUES: **SAT**
UNSAT
COMMENTS:

CR SEQ STEP: 13

No No Verify the **status** lights indicate the **bistables** trip.

STEP STANDARD:

Operator verifies that bistable lights for Channel IV, PR **RATE HI**, PR **LO** and Hi setpoints have energized to bright.

CUES:

SAT

UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SHEET

JPM NO: NRC-S-007

DESCRIPTION: ~~LOSS OF~~ POWER RANGE INSTRUMENT N-44

IC SET: 170

INSTRUCTIONS:

1. RUN
2. When student is ready

Activate

MAL-NIS003D SEVERITY = 0 RAMP = 5 (**N-44** Failure)

COMMENTS:

Rods will eventually (3 min.) restore Tavg to Tref (power rate mismatch signals die off, rods control on Tavg/Tref). Leaving **rods** in AUTO still constitutes failure, as further transients on the failed channel (e.g. trouble shooting) would produce more **uncontrolled** rod motion.

V.C. SUMMER NUCLEAR STATION JOB PERFORMANCE MEASURE

JPM NO: NRC-S-008

CONTROL ROOM EVACUATION (DUTIES OF NROATC)

APPROVAL: WRQ APPROVAL DATE: 4/8/2004

REV NO: 0

CANDIDATE

EXAMINER

THIS JPM IS APPROVED

Thursday, April 08, 2004

Page 1 of 10

TASK:

000-068-05-01 PERFORM CONTRQL ROOM EVACUATION

TASK STANDARD:

Reactor is tripped, Turbine is tripped, RCPs "B" and " C are tripped

PREFERRED EVALUATION LOCATION

PREFERRED EVALUATION METHOD

SIMULATOR

PERFORM

REFERENCES: AOP-600.1

CONTROL ROOM EVACUATION

TOOLS: AOPdOO.I

EVALUATION TIME 10 TIME CRITICAL No 10CFR55: 45(a)12

CANDIDATE:

TIME START:

TIME FINISH:

PERFORMANCE RATING:

SAT: UNSAT:

QUESTION GRADE: PERFORMANCE

EXAMINER:

SIGNATURE DATE

COMMENTS:

INSTRUCTIONS TO OPERATOR

READ TO OPERATOR:

WHEN I TELL YOU TO BEGIN, YOU ARE TO PERFORM THE ACTIONS AS DIRECTED IN THE INITIATING CUES. I WILL DESCRIBE THE GENERAL CONDITIONS UNDER WHICH THIS TASK IS TO BE PERFORMED AND PROVIDE THE NECESSARY TOOLS WITH WHICH TO PERFORM THIS TASK. BEFORE STARTING, I WILL EXPLAIN THE INITIAL CONDITIONS, WHICH STEPS TO SIMULATE OR DISCUSS, AND PROVIDE INITIATING CUES. WHEN YOU COMPLETE THE TASK SUCCESSFULLY, THE OBJECTIVE FOR THIS JOB PERFORMANCE MEASURE WILL BE SATISFIED.

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power, all controls in automatic. A ***bomb*** threat has been called in to the Control Room. The Shift Supervisor has directed a Control Room evacuation per AOP-600.1, CONTROL ROOM EVACUATION.

INITIATING CUES: The Shift Supervisor directs that the Control Room should be evacuated. The CRS directs the NROATC to complete Attachment I of AOP-600.1, starting with step 2.

HAND JPM BRIEFING SHEET TO OPERATOR AT THIS TIME!

Thursday, April 08, 2004

Page 3 of 10

TIME:

JPM BRIEFING SHEET

OPERATOR INSTRUCTIONS:

SAFETY CONSIDERATIONS:

INITIAL CONDITION: The plant is operating at 100% power, all controls in automatic. A bomb threat has been called in to the Control Room. The Shift Supervisor has directed a Control Room evacuation per AOP-600.1, CONTROL ROOM EVACUATION.

INITIATING CUES: The Shift Supervisor directs that the Control Room should be evacuated. The CRS directs the NROATC to complete Attachment I of AOQ-600.1, starting with step 2.

**HAND THIS PAPER BACK TO YOUR
EVALUATOR WHEN YOU FEEL THAT YOU
HAVE SATISFACTORILY COMPLETED THE
ASSIGNED TASK.**

STEPS

CR SEQ STEP: 1

Yes Yes Trip Reactor manually from the MCB.

STEP STANDARD:

Position the reactor trip switch (CS-CR01 or CS-CR01A) to the TRIP position

CUES:

Cue operator time is available to complete additional Control Room actions

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 2

No No Verify all reactor trip breakers open.

STEP STANDARD:

TRIP BKR A & B indicate red light OFF, green light ON.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 3

No No Verify all rod bottom lights lit.

STEP STANDARD:

All rod bottom lights are lit by DRPI indication.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 4
No No Verify reactor power level decreasing.

STEP STANDARD:
Reactor power level decreasing on N35 and N36 indication.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 5
No Yes Trip the main turbine from MCB.

STEP STANDARD:
Momentarily depresses EMERG TRIP pushbutton.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 6
No No Verifies turbine stop valves closed.

STEP STANDARD:
STM STOP VLVs indicate closed by lit indication on XCP-6114 status lights.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 7

No No Ensures GEN BKR open (after 30 second time delay).

STEP STANDARD:

GEN BKR indicates red light OFF, green light ON.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 8

No No Ensures generator field breaker is open.

STEP STANDARD:

GEN FIELD BKR indicates red light OFF, green light ON.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 9

No No Trips Exciter Field Control breaker.

STEP STANDARD:

EXC FIELD CNTRL indicates red light OFF, green light ON.

CUES:

SAT

UNSAT

COMMENTS:

CR SEQ STEP: 10
Yes No Stop RCP 'B'.

STEP STANDARD:
Stop XPP-0030B, RCP B, indicates red light OFF, green light ON.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEF: 11
No No Verlfy RCP 'A'is running,

STEP STANDARD:
XPP-0030A, RCP A, indicates red light ON, green light OFF, normal running amps.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEF: 12
No No Close pressurizer spray valve, PCV-444C

STEF STANDARD:
Manually closed PCV-444C, PZR SPRAY, and indicates red light OFF, green light ON.

CUES:

SAT
UNSAT

COMMENTS:

CR SEQ STEP: 13
Yes No Stop RCP 'C'.

STEP STANDARD:

Stop XPP-0030C, RCP C, indicates red light
OFF, green light ON.

CUES:

SAT
UNSAT

COMMENTS:

Examiner ends JPM at this point.

JPM SETUP SWEET

JPM NO: NRC-S-008

DESCRIPTION: CONTROL ROOM EVACUATION(DUTIES OF NROATC)

IC SET: 171

INSTRUCTIONS:

1. When student is ready: RUN

COMMENTS:

FOR TRAINING USE ONLY

DUTIES OF THE NROATC

AOP-600.1
REVISION 2
ATTACHMENT 1
PAGE 1 OF 2

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
1 Check if time is available to complete additional Control Room actions. <input type="checkbox"/>	1 COMPLETE Step 2 Alternative Actions. <input type="checkbox"/>
2 Trip the Reactor from the Main Control Board: <ul style="list-style-type: none"> • Trip the Reactor using either Reactor Trip Switch. <input type="checkbox"/> • Verify all Reactor Trip and Bypass Breakers are open. <input type="checkbox"/> • Verify all Rod Bottom Lights are lit. <input type="checkbox"/> • verify Reactor Power level is decreasing. <input type="checkbox"/> 	2 Locally perform the following: <ul style="list-style-type: none"> a) Trip all Reactor Trip Breakers in the Rod Drive MG Set Room (IB-463). <input type="checkbox"/> b) Trip the Main Turbine from the Turbine Front Standard (TB-463). <input type="checkbox"/> c) GO TO Step 9. <input type="checkbox"/>
3 Trip the Turbine/Generator from the Main Control Board: <ul style="list-style-type: none"> a. Trip the Main Turbine. <input type="checkbox"/> b. Verify all Turbine STM STOP VLVs are closed. <input type="checkbox"/> c. Ensure Generator Trip (after 30 second delay): <ul style="list-style-type: none"> 1) Ensure GEN BKR Is open. <input type="checkbox"/> 2) Ensure GEN FIELD BKR is open. <input type="checkbox"/> d. Trip the EXC FLD CHTRL. <input type="checkbox"/> 	3 Stop EHC Pumps A and B, and place in PULL TO LK NON-A. <input type="checkbox"/>
4 Stop XPP-0030B, PUMP B (RCP). <input type="checkbox"/>	
5 Verify RCP A is running. <input type="checkbox"/>	5 GO TO Step 8. <input type="checkbox"/>
6 Manually close PCV-444C, PZR SPRAY. <input type="checkbox"/>	
7 Stop XPP-0030C, PUMP C (RCP). <input type="checkbox"/>	

DUTIES OF THE NROATC

ACTION/EXPECTED RESPONSE	ALTERNATIVE ACTION
8 Verify the Main Turbine is tripped. <input type="checkbox"/>	8 Locally trip the Main Turbine from the Turbine Front Standard (TB-463). <input type="checkbox"/>
9 Report to CREP Room A. <input type="checkbox"/>	
10 Notify the BOP operator that the Reactor is tripped. <input type="checkbox"/>	