2012 PRAIRIE ISLAND NUCLEAR GENERATING PLANT

INITIAL LICENSE EXAMINATION

ADMINISTRATIVE FILES

Xcel Energy®

JUL 19 2012

L-PI-12-064
NUREG-1021

Regional Administrator, Region III
U S Nuclear Regulatory Commission
2443 Warrenville Road, Suite 210
Lisle, Illinois 60532-4352

Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

2012 Initial Operator Licensing Examination Security Agreement Forms

Pursuant to NUREG-1021, Revision 9, Supplement 1, Operator Licensing Examination Standards for Power Reactors, section ES-201, Initial Operator Licensing Examination Process, the facility licensee must submit the original examination security agreement forms to the NRC's regional office for retention after the examinations are complete.

Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), submits the original signed examination security agreements as Enclosure 1.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

James E. Molden
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosures (1)

cc: Dell McNeil, US NRC Region III, with enclosure
Hironori Peterson, US NRC Region III, without enclosure

JUL 23 2012

1717 Wakonade Drive East • Welch, Minnesota 55089-9642
Telephone: 651.388.1121

ENCLOSURE 1

Original Signed Security Agreements (Form ES-201-3)

From the 2012 Prairie Island Nuclear Generating Plant (PINGP)

Initial Licensing Training (ILT) Examinations

5 pages follow

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 5/14 & 5/21/12 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

2. Post-Examination

To the best of my knowledge, I did not divulge to any unauthorized persons any information concerning the NRC licensing examinations administered during the week(s) of 5/14 - 5/21/12. From the date that I entered into this security agreement until the completion of examination administration, I did not instruct, evaluate, or provide performance feedback to those applicants who were administered these licensing examinations, except as specifically noted below and authorized by the NRC.

	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Travis Ouret	Gen Sup OPS Training		9/9/11		5/24/12	
2.	John DuBose	OPS Instructor		9/9/11		5/24/12	
3.	Michael Petersen	Gen Sup NRC Exams		9/9/11		5/24/12	NO BADGE REQ.
4.	Gerald Gore	OPS Instructor		9/9/11		7/2/12	
5.	Shawn Sarrasin	OPS Instructor		9/9/11		5/24/12	
6.	Allison D Boyer	BPA - Maint a Tech		9/9/11		5/24/12	
7.	Karen Coulson	BPA - OPS Trng		9/9/11		5/24/12	
8.	Bryan Wooster	Ops Inst.		10/3/11		5/25/12	
9.	Theresa Priem	BPA-TC		12/16/11		5/24/12	
10.	Steve Schmidt	SM		1-17-12		5/24/12	
11.	Todd Strain	STA		1-17-12		7/2/12	
12.	James Camber	LRO		1-17-12		7-2-12	
13.	Dave Webb	LRO		1-17-12	No longer employed at XCEL		
14.	Brian Johnson	SM		1/17/12		5/25/12	
15.	Jeff Zadra	RO		1/17/12		5/24/12	

NOTES:

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE	NOTE
1.	Brad Churchill	Shift Supervisor		1-17-12		7-2-12	
2.	Dean Simonson	Lead RO		1-17-12		7-2-12	
3.	RANDALL S PORTER	Shift Supervisor		1/24/12		5/30/12	
4.	GENE DAMMANN	SM		1/24/12		5/30/12	
5.	Jason FOX	RO		1/24/12		5/30/12	
6.	Jason Strickland	Control Room Supervisor		1/24/12		5/30/12	
7.	Paul Finholm	Shift Supervisor (CSR)		1-24-12		5-30-12	
8.	Brian Berkman	LICO		1/24/12		5/30/12	
9.	Jim Carver	Shift Supv. / WCC Supv		1-24-12		6-21-12	
10.	Jeff Human	Shift Supervisor		1-28-12		6-19-12	
11.	CHRIS GREGSON	Shift Supervisor		1-28-12		6/19/12	
12.	Ray York	RO		1/28/12		6/19/12	
13.	Kevin Spuhler	RO		1-28-12		6-19-12	
14.	Dale E Johnson	Control Room Supervisor		1-31-12		6/4/12	
15.	MARK DAVIS	CONTROL RM SUP/STA		1-31-12		6/4/12	

NOTES:

1. Pre-Examination

I acknowledge that I have acquired specialized knowledge about the NRC licensing examinations scheduled for the week(s) of 5/14/12 + 5/21/12 as of the date of my signature. I agree that I will not knowingly divulge any information about these examinations to any persons who have not been authorized by the NRC chief examiner. I understand that I am not to instruct, evaluate, or provide performance feedback to those applicants scheduled to be administered these licensing examinations from this date until completion of examination administration, except as specifically noted below and authorized by the NRC (e.g., acting as a simulator booth operator or communicator is acceptable if the individual does not select the training content or provide direct or indirect feedback). Furthermore, I am aware of the physical security measures and requirements (as documented in the facility licensee's procedures) and understand that violation of the conditions of this agreement may result in cancellation of the examinations and/or an enforcement action against me or the facility licensee. I will immediately report to facility management or the NRC chief examiner any indications or suggestions that examination security may have been compromised.

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	PRINTED NAME	JOB TITLE / RESPONSIBILITY	SIGNATURE (1)	DATE	SIGNATURE (2)	DATE NOTE
1.	Joe Julian	RO		1-31-12		6/25/12
2.	Mark Jenkin	SS		1-31-12		6/4/12
3.	Steve Jones	LRO		1-31-12		6/4/12
4.	Richard Meyer	LRO		1-31-12		6-4-12
5.	Jonathan Johnson	STA/SS		2-7-12		6-12-12
6.	William Bodin	SM		2/7/12		6/12/12
7.	EW Heineman	SRO		2-7-12		6/12/12
8.	Nathan Bibus	SS		2/7/12		6/12/12
9.	GREG BOEK	RO		2-7-12		5/25/12 7-012
10.	JEFF HANSON	RO		2/7/12		5/25/12
11.	JACK EDWARDS	LRO		2-7-12		6-12-12
12.	Steve Ingalls	SM		2-7-12		6-12-12
13.	Scott Wirtz	Sim Engr		8-Feb-2012		5/24/12
14.	Jeff Gehlhar	Sim Engr		2/8/2012		5/24/2012
15.	Tim Hendel	SS		2-14-12		6-20-12

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1.	Mark Haren	NLPE+RO		2-14-12		6-19-12	
2.	LARRY HORTON	NLPEC + RO		2/14/12		6/19/12	
3.	Bob Carlson	SS/STA		2-14-12		7-19-12	
4.	Mark Loosbrock	SM/SS/STA		2/29/12		6/5/12	
5.	Wayne Epperson	SM/SS		3/19/12		7/2/12	
6.	J. M Kopsh	RO		3/19/12		6/12/12	
7.	Richard M. MARTIN	NLPEO & RO		4-18-12		5-31-12	
8.	Stephen Seilhymer	SM		4-19-12		6/20/12	
9.	MARK A. SCHIMMEL	SITE V.P.		4/20/12	see next page		
10.	CHAD M BOEGEMAN	OPS INST.		5-14-12		5/29/12	
11.	MICHAEL FISH	OPS TRG SUPERVISOR		5/14/12		5/24/12	
12.	Joe Gorman	OPS Instructor		5/17/12		5/24/12	
13.	ROSS E. CALDWELL	MAINT. A/C REPAIR		5/17/12		6-4-12	
14.	Aaron Larson	MAINT A/C Repair		5/17/12		6/4/12	
15.	~~Wa~~						

NOTES:

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3.	Bob Graham	SS/STA		2-14-12		7-19-12
4.	Mark Hoosbrock	SM/SS/STA		2/29/12		6/5/12
5.	Wayne Eppen	SM/SS		3/19/12		7/2/12
6.	Jim Kopsh	RO		3/19/12		6/12/12
7.	Richard M. MARTIN	NLPED & RO		4-18-12		5-31-12
8.	Stephen Seilhymer	SM		4-19-12		6/12/12
9.	MARK A. Schimmel	SITE V.P.		4/20/12		7/9/12
10.	CHAD M BOEGEMAN	OPS INST.		5-14-12		5/29/12
11.	MICHAEL PUSH	OPS TRG SUPERVISOR		5/14/12		5/29/12
12.	Joe Gorman	OPS Instructor		5/14/12		5/29/12
13.	ROSS E. CALDWELL	MAINT. A/C REPAIR		5/17/12		6-4-12
14.	Aaron Larson	MAINT A/C Repair		5/17/12		6/4/12
15.	Mark	SITE V.P.		6/6/12		

NOTES: Schimmel

MCS 7/9/12

Facility: Prairie Island U1/U2 Date of Exam: May 22, 2012 Exam Level: RO ☒ SRO ☒

Item Description	Initials a	b	c
1. Clean answer sheets copied before grading	MGB	N/A	DM
2. Answer key changes and question deletions justified and documented	MGB	N/A	DM
3. Applicants' scores checked for addition errors (reviewers spot check > 25% of examinations)	MGB	N/A	DM
4. Grading for all borderline cases (80 ±2% overall and 70 or 80, as applicable, ±4% on the SRO-only) reviewed in detail	MGB	N/A	DM
5. All other failing examinations checked to ensure that grades are justified	MGB	N/A	DM
6. Performance on missed questions checked for training deficiencies and wording problems; evaluate validity of questions missed by half or more of the applicants	MGB	N/A	DM

	Printed Name/Signature	Date
a. Grader	M. Bielby / Michael E Bielby	6/8/12
b. Facility Reviewer(*)	n/a	n/a
c. NRC Chief Examiner (*)	D. McNeil / Dwight R. McNeil	06/08/2012
d. NRC Supervisor (*)	T. Bloomer / T. Bloomer	6/12/12

(*) The facility reviewer's signature is not applicable for examinations graded by the NRC; two independent NRC reviews are required.

The following pages were hand delivered to the chief examiner and comprise the Prairie Island Nuclear Generating Plant post-examination comments. No cover letter was provided with the submission.

2012 Prairie Island NRC ILT Exam Feedback

Question #54

Student Comment:

MV-32314 & MV-32315 close at 80# in their respective air receivers (121 & 123), 121 and 122 Air Compressors are normally running, with 123 in standby. Without knowing receiver pressures, it is reasonable to assume that 123 Receiver lowered blow 80# before 121 receiver, closing MV-32315, isolating the leak and allowing 121 Receiver pressure to recover before dropping below 80#. If this is the case, answer C is also correct.

Prairie Island Response:

Disagree with student comment. Stem of the question clearly indicates a header pressure on both Instrument Air headers that would result in their associated isolation valves closing.

Attached:

Question 54
QF-1040-13, Exam Feedback Form

Xcel Energy

EXAM FEEDBACK FORM

Initiator's Name: JOSHUA TALBOT ID: N157109 Date: 23MAY12

Evaluation ID: _____ Question No. 54

Comments & Recommendations MV-32314 & MV-32315 CLOSE at 80# IN THEIR RESPECTIVE AIR ~~Acc~~ RECEIVERS (121&123). 121&122 AIR COMPRESSORS ARE NORMALLY RUNNING, WITH 123 IN STANDBY. WITHOUT KNOWING RECEIVER PRESSURES, IT IS REASONABLE TO ASSUME THAT 123 RECEIVER LOWERED BELOW 80# BEFORE 121 RECEIVER, CLOSING MV-32315, ISOLATING THE LEAK AND ALLOWING 121 RECEIVER PRESSURE TO RECOVER BEFORE DROPPING BELOW 80#. IF THIS IS THE CASE, ANSWER C IS ALSO CORRECT.

DO NOT WRITE BELOW THIS LINE
(for Training Department Use Only)

Resolution & Comments: Question ID: _____

☐ No Action Required ☐ Evaluation Change ☐ Question Change

References: _____

Resolved By _____ _____
Instructor Date

Reviewed By: _____ _____
SME Date

Approved By: _____ _____
Training Supervisor Date

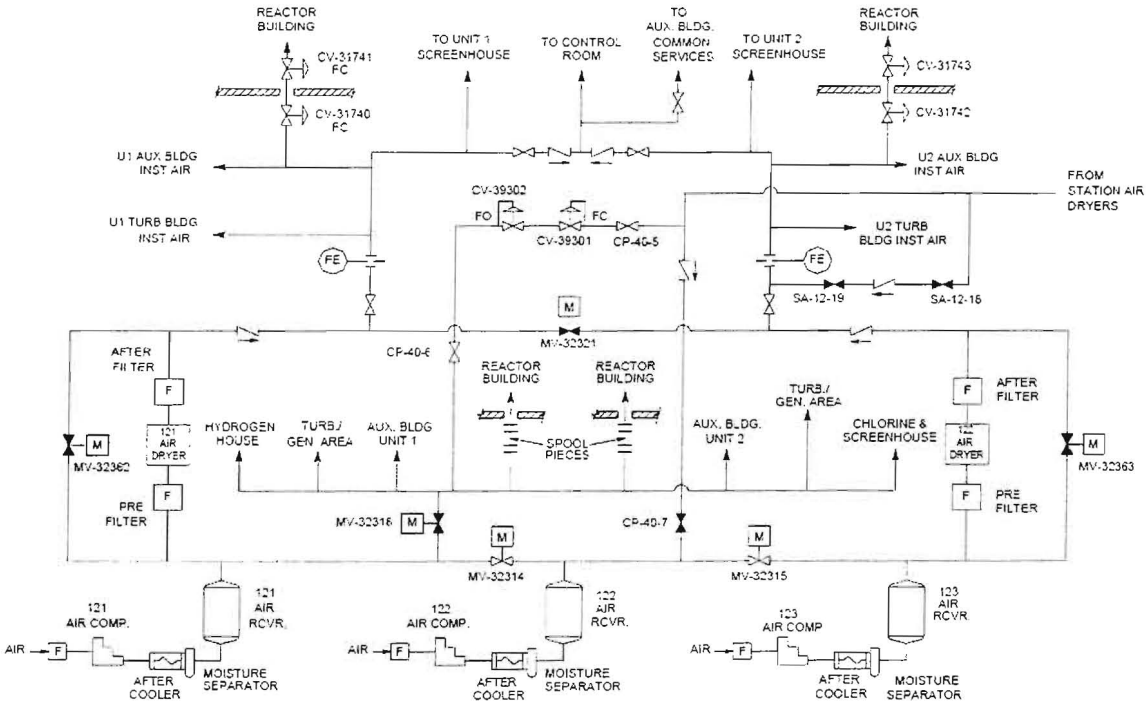
(Provide copy to initiator and file with exam key.)

Question# 054

Given the following conditions:

- There is a leak on Unit 2 Instrument Air to Containment.
- A Instrument Air Header Pressure dropped to 73 psig.
- B Instrument Air Header Pressure dropped to 74 psig.

- Unit 2 Instrument Air pressure continues to lower.
- Unit 1 Instrument Air pressure is rising.



INSTRUMENT AND STATION AIR SYSTEM

Which of the following could jeopardize the UNIT 1 instrument air supply?

a. Opening MV-32321, 11/21 INSTR AIR HDR ISOL VLV.

b. Opening MV-32314, INSTR AIR HDR ISOL VLV A.

c. Opening MV-32315, INSTR AIR HDR ISOL VLV B.

d. Closing CP-40-7, STATION AIR RECEIVE X-CONN TO INSTRUMENT AIR.

Question #54

Student Comment:

MV-32314 is and has been a valve open breaker motor [open] valve for some time. Therefore, per the question, by MV-32315 opening would also be a correct answer. Recommend accepting 2 correct answers.

Prairie Island Response:

Agree with student comment. Recommend accepting 'A' and 'C' as correct answers. Multiple unique circumstances led to this recommendation.

1) MV-32314 has been Valve Open Breaker Open since August of 2010 (almost 2 years).
2) During the performance of the exam, the candidate submitting the feedback asked if their response to a question should be based on theory or "how the plant would actually react." The response given was to refer the candidate to the rules read at the beginning of the exam. Specifically the following passage:

   "Finally, answer all questions based on actual plant operation, procedures, and references. If you believe that the answer would be different based on simulator operation or training references, you should answer the question based on the *actual plant*."

3) Interview with candidate indicates choice of Distractor 'C' was based on these considerations.

With these extenuating circumstances, Prairie Island believes it is appropriate to accept 'A' and 'C' as correct answers in this instance.

Attached:

Question 54
QF-1040-13, Exam Feedback Form
Copy of the Candidates question with Exam Administrators response
Work Order/Clearance Order associated with MV-32314

Xcel Energy

EXAM FEEDBACK FORM

Initiator's Name: C. Olson ID: Olsc21 Date: 5-23-12

Evaluation ID: 2012 NRC RO test Question No. 54

Comments & Recommendations

MV-32314 is and has been a valve open Breaker Motor Valve ~~some~~ for some time. Therefore, per the question, by MV-32315 opening would also be a correct answer. Recommend accepting 2 correct answers

DO NOT WRITE BELOW THIS LINE
(for Training Department Use Only)

Resolution & Comments: Question ID: _____

☐ No Action Required ☐ Evaluation Change ☐ Question Change

References: _____

Resolved By _____ _____
Instructor Date

Reviewed By: _____ _____
SME Date

Approved By: _____ _____
Training Supervisor Date

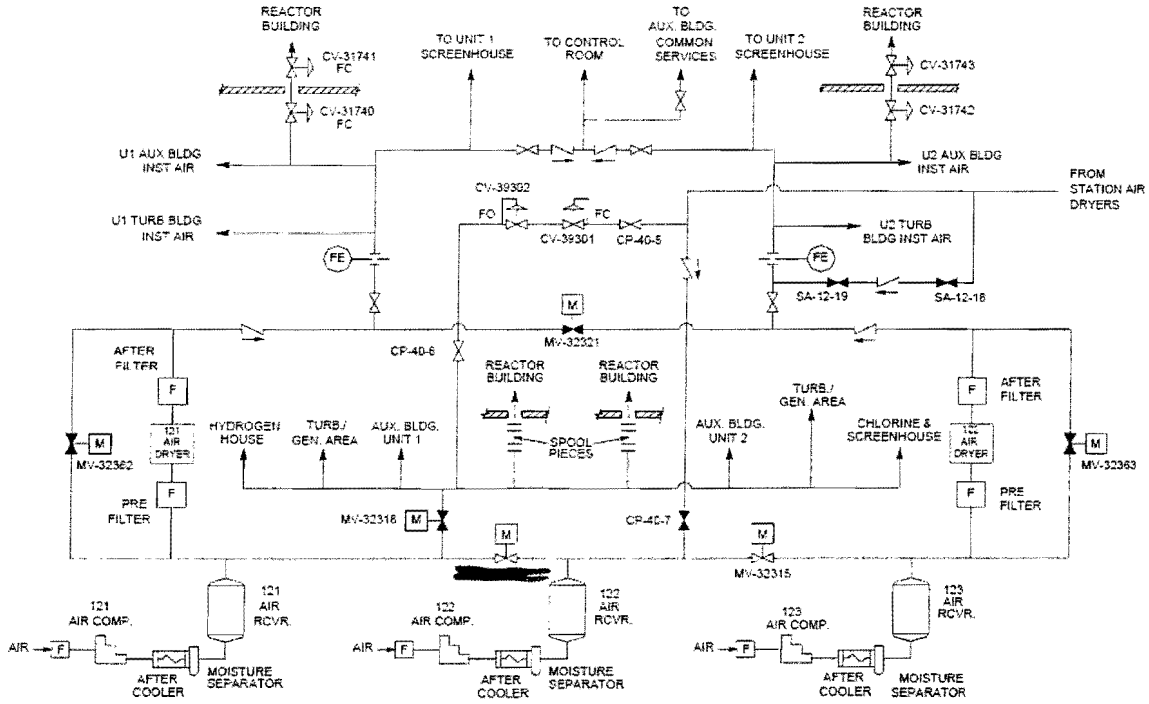
(Provide copy to initiator and file with exam key.)

Question# 054

Given the following conditions:

- There is a leak on Unit 2 Instrument Air to Containment.
- A Instrument Air Header Pressure dropped to 73 psig.
- B Instrument Air Header Pressure dropped to 74 psig.

- Unit 2 Instrument Air pressure continues to lower.
- Unit 1 Instrument Air pressure is rising.



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a. Opening MV-32321, 11/21 INSTR AIR HDR ISOL VLV.

b. Opening MV-32314, INSTR AIR HDR ISOL VLV A.

c. Opening MV-32315, INSTR AIR HDR ISOL VLV B.

d. Closing CP-40-7, STATION AIR RECEIVE X-CONN TO INSTRUMENT AIR.

Chris

#61 0855

Is this question Theory or how ~~to~~ the plant would actually react.

ANSWER:

- REFER TO POLICIES AND GUIDELINES STEP 7 of PART B (LAST 2 sentences)

Facility : PI Unit: 0 WORK REQUEST

Request Date : 08/11/10 Time: 12:02 00059659
Requestor : BYSTROM E
WR Status : ACTIONED Priority : 3 PRINTED: 05/23/2012
Job Type : CC PAGE : 1

Defect/Request: REPLACE MV-32314, STA AIR HDR ISOL MV A

Work Against Information:

Unit:0 Equip ID: MV-32314 Equip Type: MV System:SA
Name:STA AIR HDR ISOL MV A
Mfr : Model:
Serial : UTC #: TS/SLC Rel: N
Location : IN 3" LINE E.3/8.5
Eq Tag: Eq Alt Tag:
Deficiency Tag/Locn:33299 ON MV-32314

Work Planning Details:

Planner : Need Date : 02/14/2011
A Mode : Train : Ops Review : Y
Discipline: MECH Unit Cond Rq: ANY LCO : N

Work Authorization:

SRO Authorization: _____Date:_____
(PassPort ID/Signature)

Reqs/Regs Value Comments

Work Request Attributes:	Value	UOM	Type	Notes
A.4 MANAGEMENT PRIORITY	48		ATRB	-
ARDEC	CC		ATRB	-
AR ITEM NO	01245144		ATRB	-

Additional Description/Work to be Performed:
valve yolk broke while actuating
see also CAP 1245144 and attached photos
valve is in the open position with no air leakage noted
The component that broke was determined to be a coupling between the actuator shaft and the valve stem. The coupling was observed to fail at the start of

trying to close the valve as PMT for a breaker PM. Coupling did not move, s
o valve should be open. Actuator shaft was observed to rotate in the clockwi
se direction (when looking at the valve from the top) while trying to close t
he valve.
*** Disconnected actuator from valve and had operations operate the actuator,
at which time it worked correctly. We then tryed to manually operate the
valve and discovered it to be froze in the open position. Progress to work
order to replace the valve. Niebeling and Prigge.

==========

Work Plan Approval:

Approved By : N129672 Date : 08/20/10 Time : 13:30

Facility : PI Unit: 0 WORK REQUEST

Request Date : 08/11/10 Time: 12:02 00059659
Requestor : BYSTROM E
WR Status : ACTIONED Priority : 3 PRINTED: 05/23/2012
Job Type : CC PAGE : 2

Additional Description/Work to be Performed:

Work Completion Comments:

Completed By: _____ Date: _____
Supervisor Approval: _____ Manhours: _____
(PassPort ID/Signature)

CLEARANCE ORDER BOUNDARY

Facility : PI Unit : 0 Op System: SA System: SA
Division : Area : Class :

Equipment Type : MV Component Type :
Equipment Number: MV-32314 Component Number:
Equipment : MV-32314 STA AIR HDR ISOL MV A
0 TURB 705 IN 3" LINE E.3/8.5
Work Against: E EQUIPMENT
Facility : PI Unit: 0 Op System : System:
Work Item : Equip. List: UTC:
Mfg./Mod. :
Name :
Client :
Location : IN 3" LINE E.3/8.5

C/O Title : MV-31314 COUPLING FAILED

Prepared By : DVSM09 DAVIS M A
Assigned To :

Tag Type	Number	Tag Type	Number	Tag Type	Number
CTS	1				

Total Tags: 1

Topic : DESCRIPTION **Last Updated By** : BJRB01
Last Updated Date: 01/27/2011

WO-00411786

Topic : PLACEMENT INSTR **Last Updated By** : BJRB01
Last Updated Date: 01/27/2011

Topic : PLANT IMPACT **Last Updated By** : BJRB01
Last Updated Date: 01/27/2011

CHECKLIST ACTIONS

Chk List	Chk Seq	Action	Tag Type	Tag No.	Required Position
001	001	HANG	CTS	0001	OPEN

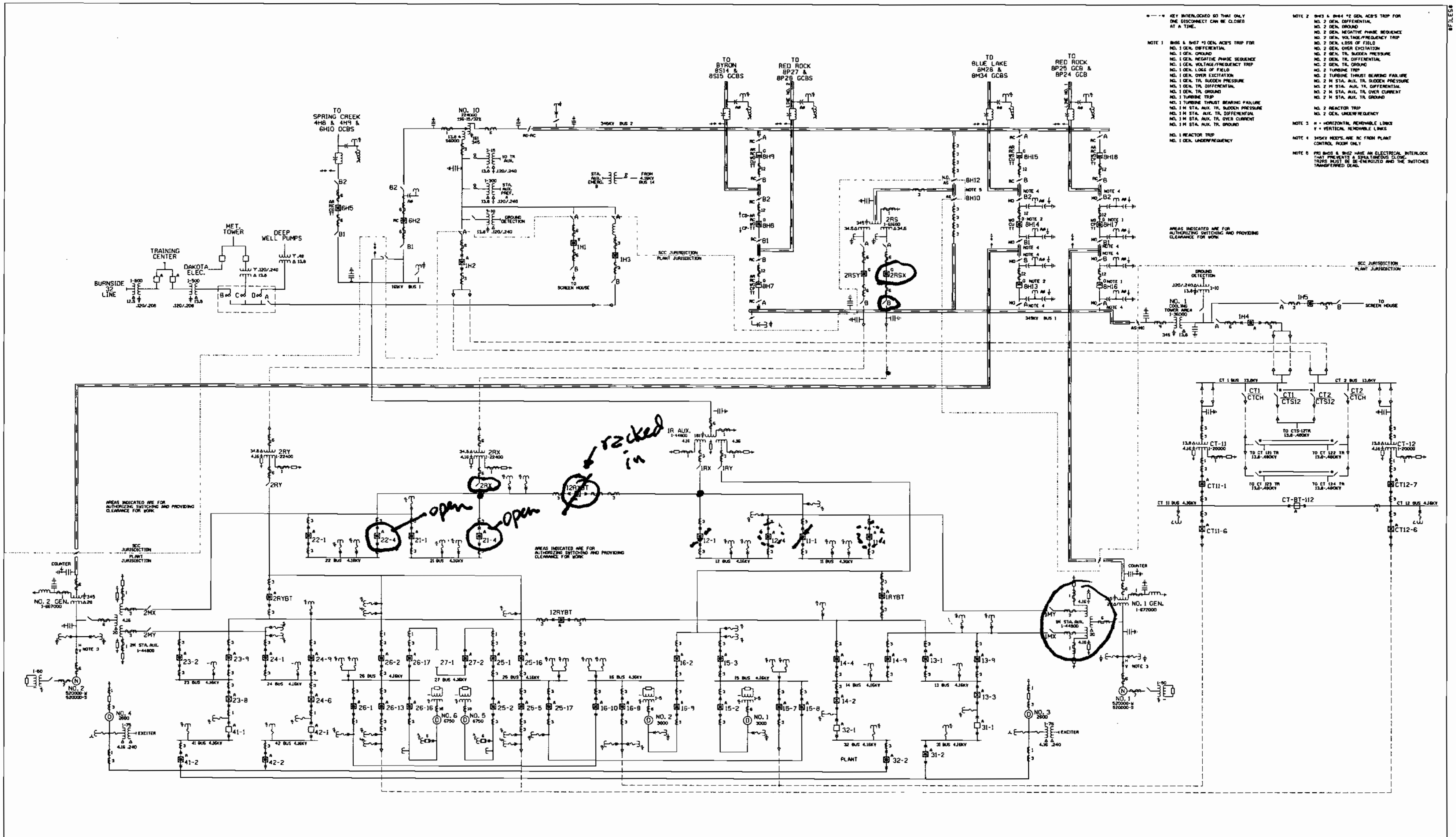
Equip: CS-46129 STA AIR HDR ISOL A MV-32314 OP/AUTO/CL CS
0 CONTROL PANEL A
ACTUATOR TO VALVE STEM COUPLING FAILED.

CLEARANCE ORDER PRINCIPAL EQUIPMENT

Facility : PI Unit : 0 Op System: SA System: SA
Division : Area : Class :

Equipment Type : MV Component Type :
Equipment Number: MV-32314 Component Number:
Equipment : STA AIR HDR ISOL MV A

***** END OF REPORT *****



THE PLANT SUBSTATION COORDINATOR MUST BE CONTACTED PRIOR TO MAKING ANY CHANGES TO THIS OPERATING ONELINE DIAGRAM.

AREA NOT OTHERWISE INDICATED IS SCC JURISDICTION FOR AUTHORIZING SWITCHING AND PROVIDING CLEARANCE FOR WORK. INTERJURISDICTIONAL SWITCHING DIRECTION PROVIDED BY SCC.

THIS MAP/DOCUMENT IS A TOOL TO ASSIST EMPLOYEES IN THE PERFORMANCE OF THEIR JOBS.YOUR PERSONAL SAFETY IS PROVIDED FOR BY USING SAFETY PRACTICES, PROCEDURES AND EQUIPMENT AS DESCRIBED IN THE SAFETY TRAINING PROGRAMS, MANUALS AND SPARS.

NSP OPERATING AREA ENGINEERING Minneapolis, MN

PRAIRIE ISLAND SUBSTATION

SUBSTATION & PLANT OPERATING ONE-LINE DIAGRAM

651-388-6563

WELCH MN PRI

Xcel Energy

SCALE NONE

NE-119871

REV H

SIGNIFICANT NUMBER 6006

2910

Question #18

Student Comment:

Both answers "a" and "b" of question 18 could be correct, since they are both allowed line ups in C20.3 AOP4 and 2C20.5. Both C20.3 AOP4 and 2C20.5 require action be taken in accordance with Attachment 1 of each procedure to prevent overloading 1R transformer when it is supplying bus 21 and 22. Attachment 1 of both procedures allows disabling the M to R transfer. Attachment 1 of 2C20.5 (which is directed by C20.3 AOP4) gives specific instructions about how to disable the M to R transfer. Not only is disabling the M to R transfer allowed, but this is how Prairie Island implements the attachment. On 7/1/2011, bus 11 was deenergized following a Unit 1 reactor trip since the M to R transfer had been disabled due to 1R transformer being lined up to supply Unit 2 buses. There is nothing in Prairie Island procedures that would allow distinguishing between answer "a" or "b" being correct, since both are allowed line ups.

Prairie Island Response:

Agree with student comment. Recommend accepting 'A' and 'B' as correct answers. Review of procedures (attached) determined that procedurally there is no preference in the line up of the 1RX transformer during the performance of this procedure. Stem of the question does not imply a line up or preference as to buses to remain powered.

Attached:

Question 18
QF-1040-13, Exam Feedback Form
C20.3 AOP4, Electric Power System Operating Restrictions and Limitations Loss of 2RX Transformer
2C20.5, Unit 2 – 4.16KV System,
Section 5.9, Transfer of 4.16KV Buses 21 and 22 to 1R Transformer from 2RX Transformer
Attachment 1, Guidance to Limit Loading on 1R

Question # 018

Given the following conditions:

- Both Units were operating at 100% power.
- 2RX transformer was taken out of service due to an oil leak.
- C20.3 AOP4, Electrical Power System Operating Restrictions and Limitations Loss of 2RX Transformer, actions for removing 2RX from service are complete.

- Unit 1 trips.

Which of the following correctly shows the power supplies to the listed buses?

	Bus 11	Bus 12	Bus 21	Bus 22
a.	1RX	1RX	2M	2M
b.	de-energized	de-energized	2M	2M
c.	1RY	1RY	2RY	2RY
d.	de-energized	de-energized	1RX	1RX

Xcel Energy

EXAM FEEDBACK FORM

Initiator's Name: NICHOLAS MOODY ID: n155116 Date: 5/23/2012

Evaluation ID: 2012 NRC Exam Question No. 18

Comments & Recommendations

Both answers "a" and "b" of question 18 could be correct, since they are both allowed line ups in C20.3 AOP4 and 2C20.5. Both C20.3 AOP4 and 2C20.5 require action be taken in accordance with Attachment 1 of each procedure to prevent overloading 1R transformer when it is supplying bus 21 and 22. Attachment 1 of both procedures allows disabling the M to R transfer. Attachment 1 of 2C20.5 (which is directed by C20.3 AOP4) gives specific instructions about how to disable the M to R transfer. Not only is disabling the M to R transfer allowed, but this is how Prairie Island implements the attachment. On 7/1/2011, bus 11 was deenergized following a Unit 1 reactor trip since the M to R transfer had been disabled due to 1R transformer being lined up to supply Unit 2 buses. There is nothing in Prairie Island procedures that would allow distinguishing between answer "a" or "b" being correct, since both are allowed line ups.

DO NOT WRITE BELOW THIS LINE
(for Training Department Use Only)

Resolution & Comments: Question ID: _____

☐ No Action Required ☐ Evaluation Change ☐ Question Change

References: _____

Resolved By _____ _____
Instructor Date

Reviewed By: _____ _____
SME Date

Approved By: _____ _____
Training Supervisor Date

(Provide copy to initiator and file with exam key.)

C	ELECTRIC POWER SYSTEM OPERATING RESTRICTIONS AND LIMITATIONS LOSS OF 2RX TRANSFORMER	NUMBER: C20.3 AOP4 REV: 6 Page 1 of 6

CONTINUOUS USE

- *Continuous use of procedure required.*
- *Read each step prior to performing.*
- *Mark off steps as they are completed.*
- *Procedure SHALL be at the work location.*

PORC REVIEW DATE:	OWNER:	EFFECTIVE DATE:
5/6/09	D. Smith	5/12/09

TABLE OF CONTENTS

Section	Title	Page
1.0	PURPOSE	3
2.0	PROCEDURES	3
2.1	Symptoms	3
2.2	Automatic Actions	3
2.3	Immediate Manual Actions	3
2.4	Subsequent Manual Actions	3
2.5	Recovery Actions	4
3.0	ATTACHMENTS	5
4.0	REFERENCES	5
4.1	Developmental References	5
4.2	Implementing References	5

LIST OF ATTACHMENTS

Attachment 1 Loading Limitations On Loss Of 2RX Transformer 6

1.0 PURPOSE

Restore plant 4.16kV buses to an analyzed configuration upon loss of 2RX Transformer or upon imminent loss of 2RX Transformer. This procedure assumes the plant was in the normal electrical configuration with both units at power immediately prior to the loss or potential loss of 2RX Transformer.

2.0 PROCEDURES

2.1 Symptoms

Any or a combination of the following:

- Loss of voltage to 2RX Transformer.
- Annunciator **47506-0201**, 2RX RESERVE AUX XFMR LOCKED OUT
- Annunciator **47506-0101**, 2R RESERVE AUX XFMR SUDDEN PRESSURE TRIP

2.2 Automatic Actions

Trips and locks out the following upon sensing a protective relay operation:

- **BKR 2RSX**, 2RS XFMR 34.5 FEED to 2RX XFMR
- **BKR 21-4**, BUS 21 SOURCE FROM 2RX XFMR
- **BKR 22-4**, BUS 22 SOURCE FROM 2RX XFMR
- **BKR 12RXBT** BUSTIE BUS 1RX/BUS 2RX

2.3 Immediate Manual Actions

NONE

2.4 Subsequent Manual Actions

NONE

2.5 Recovery Actions

NOTE:	No change is required to the Security Analysis voltage setpoint.

2.5.1 **Notify** Technical Engineering of the loss of 2RX Transformer and **request** their support in recovery. _____

2.5.2 **Record** the following information for later evaluation:

- Control Room alarms and relay targets
- Local alarms and relay targets _____

In the Plant

2.5.3 **Verify BKR 21-4** is OPEN. _____

2.5.4 **Verify BKR 22-4** is OPEN. _____

2.5.5 **Verify BKR 12RXBT** is OPEN. _____

In the Substation

2.5.6 **Verify/OPEN 2RSX**, 34.5KV GCB, by observing the green indicating light illuminated on Panel 23E. _____

2.5.7 **Verify** locally that **2RSX** is OPEN. _____

2.5.8 **OPEN 2RSX-B/DISC SW**, 2RSX RES AUX XFMR 34.5KV B DISC. _____

In the Plant

CAUTION:	**WITH THE COMPLETION OF THE FOLLOWING STEPS, BUSES 21 AND 22 MAY POTENTIALLY BE SUPPLIED BY THE 1RX TRANSFORMER. WITH BUSES 21 AND 22 CROSS TIED TO UNIT 1, THE 1RX WINDING MAY BECOME OVERLOADED IN THE EVENT OF A PLANT TRIP AND THE SUBSEQUENT AUTOMATIC TRANSFER OF THESE BUSES FROM 2M. REFER TO ATTACHMENT 1 FOR GUIDANCE TO LIMIT OVERLOADING.**

2.5.9 **Perform** 2C20.5, Section 5.9, Transfer of 4.16KV Busses 21 and 22 to 1R Transformer from 2RX Transformer up to the step which closes 12RXBT. _____

2.5.10 **Reset** the 2RX lockout. _____

2.5.11 **Complete** the transfer of Busses 21 and 22 to 1R Transformer from 2R Transformer per 2C20.5, Section 5.9. _____

3.0 ATTACHMENTS

Attachment 1 – Loading Limitations On Loss Of 2RX Transformer

4.0 REFERENCES

4.1 Developmental References

4.1.1 NSP System Control Center Policies and Procedure Number 2.16.3, Rev. 0

4.1.2 Voltage Support Agreement Letter

4.1.3 Plant/Substation Metering & Relaying Diagrams:

- NF-40002-1, 2, 3, 4, 5
- NF-40003
- NF-40831
- NF-43702
- NF-43766
- NF-92199
- NF-92200
- NF-94841

4.2 Implementing References

2C20.5, Unit 2 - 4.16kV System

Attachment 1 Loading Limitations On Loss Of 2RX Transformer

PURPOSE

This instruction will provide direction and guidance in mitigating the potential for overloading the 1RX transformer winding and the associated bus duct when the 12RXBT bus tie is required to be used due to loss of the 2RX transformer.

The bus duct that connects the 1RX transformer winding to the plant electrical system and the associated transformer winding is rated at 3000 amps maximum current. In the case when the 2RX transformer is out of service, we must cross tie from Unit 1 via the 12RXBT bus tie which can potentially cause the 1RX bus duct to exceed the maximum current rating.

GUIDANCE FOR OPERATION

The 12RXBT ties the large motor buses (11, 12, 21 and 22) together. The only loads supplied by these buses are the Reactor Coolant Pumps (RCPs) and the Feed Water Pumps (FWPs). The bus duct and the associated 1RX winding is designed for 2 RCPs and 2 FWPs as a maximum load, therefore whenever the 2RX transformer winding is not available and the 12RXBT is CLOSED, limit loading as per Table 1.

Table 1
Total Large Motors Running (Unit 1 + Unit 2)

3 RCPs – 0 FWPs		1 RCP – 1 FWP
2 RCPs – 2 FWPs		1 RCP – 0 FWPs
2 RCPs – 1 FWP		0 RCPs – 4 FWPs
2 RCPs – 0 FWPs		0 RCPs – 3 FWPs
1 RCP – 3 FWPs		0 RCPs – 2 FWPs
1 RCP – 2 FWPs		0 RCPs – 1 FWP

Table 1 lists all possible combinations of RCPs and FWPs (not necessarily allowed combinations by procedure) that will maintain an acceptable current loading of less than 3000 amps on the 1RX winding and bus duct. RCPs and FWPs that cannot be allowed to operate should be secured by placing control switches in OFF and/or PULLOUT with Safety Tags attached to prevent motors from starting and causing an overloaded condition on the 2RX transformer and bus duct.

4.2 Operating Limitations

4.16KV safeguards buses should be maintained between 4000 VAC and 4400 VAC for normal operations (this corresponds to 96.2% to 105.8% of 4160 VAC). Note that the safeguards bus restoration scheme degraded voltage allowable value (T.S.3.3.4.3.b SR) is ≥ 3944 V and ≤ 4002 V with a degraded voltage time delay of 8 ± 0.5 seconds.

4.3 Non-safeguards buses 21, 22, 23 and 24 should be between 3900 and 4400 VAC for normal operations. If the non-safeguard bus voltage is not within range, then contact the system engineer.

4.4 Both the bus ducts that connect the 1RX, 1RY, 2RX and 2RY transformer windings to the plant electrical system and the associated windings are rated at 3000 amps maximum current. In the case where any of these sources are out of service, we must cross tie from the opposite unit via the 4kV bus ties using the 12RXBT and 12RYBT tie breakers. The use of these cross ties can potentially cause the bus duct to exceed the maximum current rating. Follow guidance in Attachment 1 to this procedure to minimize any overloading.

s **4.5** Three AVAILABLE safeguards CL pumps must be maintained to satisfy equipment requirements in USAR Appendix I for HELB. Steps 5.19 and 5.20 ensure this availability by maintaining electrical independence for the pumps. The power sources considered for 12 CL Pump are Bus 15 (PNL 17) or Bus 25 (PNL 21); for 121 CL Pump Bus 25 or Bus 26; and for 22 CL Pump Bus 16 (PNL 12) or Bus 26 (PNL 22). Electrical independence would be compromised by either of the following:

- Bus 27 is aligned to Bus 25 and PNL 17 is aligned to alternate source PNL 21 at the same time (121 CL and 12 CL Pumps both from Bus 25)

  OR

- Bus 27 is aligned to Bus 26 and PNL 18 is aligned to alternate source PNL 22 at the same time (121 CL and 22 CL Pumps both from Bus 26)

4.6 Special Considerations

Visual determination of breaker operability in the past has proven unreliable. Consider cycling breaker to determine operability.

5.9 Transfer of 4.16KV Buses 21 and 22 to 1R Transformer from 2RX Transformer

NOTE:	**This section assumes busses 21 and 22 remain energized from 2M transformer. IF the busses are in any other configuration, THEN contact the System Engineer for a separate procedure, which should consider RCP and FWP status, AND AFWP auto-starts.**

CAUTION:	**WHILE PERFORMING THIS PROCEDURE, THE 2RX BUS DUCT TO BUSES 21 AND 22 WILL BE DEENERGIZED. THEREFORE, IF A UNIT TRIP OCCURS DURING THE PERFORMANCE OF THIS PROCEDURE, THEN THE REACTOR COOLANT PUMPS AND FEEDWATER PUMPS WILL BE DEENERGIZED.**

5.9.1 **Place CS-46829**, 4.16KV BUS 21 2RX XFMR, in "PULLOUT." _____

5.9.2 **Place CS-46830**, 4.16KV BUS 22 2RX XFMR, in "PULLOUT." _____

5.9.3 **Rack BKR 21-4**, 4.16KV BUS 21 2RX XFMR, to "DISCONNECT". _____

5.9.4 Independently **verify** that **BKR 21-4**, 4.16KV BUS 21 2RX XFMR, is in "DISCONNECT". _____ IV

5.9.5 **Rack BKR 22-4**, 4.16KV BUS 22 2RX XFMR, to "DISCONNECT". _____

5.9.6 Independently **verify** that **BKR 22-4**, 4.16KV BUS 22 2RX XFMR, is in "DISCONNECT". _____ IV

In the Bus 23/24 Room at the Bus Tie Relay and Control Panel:

5.9.7 **Verify BKR 12RXBT** is in "DISCONNECT". _____

5.9.8 **Verify BKR 12RXBT** Control Switch **72000-42** is in "PULLOUT." _____

5.9.9 In the Substation, **deenergize 2RX** 34.5KV/4.16KV Transformer, as follows:

A. **Notify** system dispatch of required transfer. _____

B. Using the control switch for 34.5KV **GCB 2RSX**, **OPEN 2RSX**. _____

C. **Verify BKR 2RSX** OPENS. _____

D. **OPEN 2RSX** 34.5KV A DISCONNECT. _____

E. **OPEN 2RSX** 34.5KV B DISCONNECT. _____

5.9.10 **OPEN 2RX**, 4.16KV DISCONNECT (located behind 4.16KV Bus 22). _____

5.9.11 **Check** zero volts on **7200056**, 2RX RES AUX XFMR VOLTMETER, (located in the Bus 23/24 Room at the Bus Tie Relay and Control Panel). _____

5.9.12 **Check 7200039**, BUS 2RX IL WHI, is NOT LIT on **2RX** leg. _____

5.9.13 **Rack BKR 12RXBT** to "CONNECT". _____

5.9.14 **Check** approximately 4.16KV on **7200060**, 1RX RES AUX XFMR VOLTMETER. _____

5.9.15 **Place BKR 12RXBT** Control Switch **72000-42** to "CLOSE":

A. **Check BKR 12RXBT** indicates CLOSED on the control switch AND at cubicle. _____

B. **Check** approximately 4.16KV on **7200056**, 2RX RES AUX XFMR VOLTMETER. _____

C. **Check 7200039**, BUS 2RX IL WHI, is LIT on **2RX** leg. _____

CAUTION:	WITH THE COMPLETION OF THE FOLLOWING STEPS, BUSES 21 AND 22 MAY POTENTIALLY BE SUPPLIED BY THE 1RX TRANSFORMER. WITH BUSES 21 AND 22 CROSS TIED TO UNIT 1, THE 1RX WINDING MAY BECOME OVERLOADED IN THE EVENT OF A PLANT TRIP AND THE SUBSEQUENT AUTOMATIC TRANSFER OF THESE BUSES FROM 2M. REFER TO ATTACHMENT 1 FOR GUIDANCE TO LIMIT OVERLOADING.

5.9.16 **Rack BKR 21-4**, 4.16KV BUS 21 2RX XFMR, to "CONNECT". _____

5.9.17 **Rack BKR 22-4**, 4.16KV BUS 22 2RX XFMR, to "CONNECT". _____

5.9.18 **Place CS-46829**, 4.16KV BUS 21 2RX XFMR, in "NORMAL". _____

5.9.19 **Place CS-46830**, 4.16KV BUS 22 2RX XFMR, in "NORMAL". _____

Attachment 1 Guidance To Limit Loading On 1R

PURPOSE

This Instruction will provide direction and guidance in mitigating the potential for overloading the 1RX and 1RY transformer windings and the associated bus ducts when either the 12RXBT or the 12RYBT bus ties are required to be used due to loss of either the 2RX or 2RY transformers.

The bus ducts that connect the 1RX and 1RY transformer windings to the plant electrical system and the associated transformer windings are rated at 3000 amps maximum current. In the case when either the 2RX transformer or the 2RY transformer is out of service, we must cross tie from Unit 1 via the 12RXBT and/or the 12RYBT bus ties which can potentially cause the associated 1R bus ducts to exceed the maximum current rating.

GUIDANCE FOR OPERATION (2RX OUT OF SERVICE)

The 12RXBT ties the large motor buses (11, 12, 21 and 22) together. The only loads supplied by these buses are the Reactor Coolant Pumps (RCPs) and the Feed Water Pumps (FWPs). The bus duct and the associated 1RX winding is designed for 2 RCPs and 2 FWPs as a maximum load, therefore whenever the 2RX transformer winding is not available and the 12RXBT is closed, limit loading as per Table 1.

Table 1
Total Large Motors Running (Unit 1 + Unit 2)

3 RCPs – 0 FWPs		1 RCP – 1 FWP
2 RCPs – 2 FWPs		1 RCP – 0 FWPs
2 RCPs – 1 FWP		0 RCPs – 4 FWPs
2 RCPs – 0 FWPs		0 RCPs – 3 FWPs
1 RCP – 3 FWPs		0 RCPs – 2 FWPs
1 RCP – 2 FWPs		0 RCPs – 1 FWP

Table 1 lists all possible combinations of RCPs and FWPs (not necessarily allowed combinations) that will maintain an acceptable current loading of less than 3000 amps on the 1RX winding and bus duct. RCPs and FWPs that cannot be allowed to operate should be secured by placing control switches in OFF and/or PULLOUT with Secure tags attached to prevent motors from starting and creating an overloaded condition on the 2RX transformer and bus duct. It may be desirable to prevent the automatic CLOSURE of the R source breaker (in PULLOUT the breaker will CLOSE and immediately OPEN) during the M-to-R transfer. This may be accomplished by any one of the following:

- Rack the R source breaker to disconnect, or
- OPEN the R source breaker DC power knife switch, or
- OPEN the two knife switches associated with the R source breaker CLOSING during an M-to-R transfer (at relay panels 1G and1M [2G and 2M].

GUIDANCE FOR OPERATION (2RY OUT OF SERVICE)

The 12RYBT bus tie provides the ability to feed the Unit 2 Safeguard buses (25 and 26) and the normal buses (23 and 24, via the 2RYBT tie breaker) from the 1RY transformer. Typically, bus 26 will normally be aligned to the CT-12 transformer and will not enter into a loading concern for the 1RY winding and bus duct. Buses 23 and 24 (normal at power line-up from the 2M transformer) will automatically transfer to the 1RY source on a plant trip if the 2RY transformer is out of service and the 12RYBT is closed. Therefore loading on the 1RY winding must be limited to less than 3000 amps as soon as possible after the transfer.

Loading on the 1RY transformer and bus duct, for the condition of 2RY out of service, must be calculated indirectly using the meter reading from the 1R Transformer Phase Ammeter [41192-02, -03 or –04] located on E Panel by subtracting the current on the 1RX winding. This correction is necessary because the ammeter reading for the 1R transformer is estimated based on the motor configuration existing on the large motor buses. The total current is given in Table 1a or Table 1b.

Table 1a
Transformer 2RX In Service

Total Motors Running (Bus 11 + Bus 12)	Est. Total Current
2 RCPs – 2 FWPs	2859 Amps
2 RCPs – 1 FWP	2252 Amps
2 RCPs – 0 FWPs	1645 Amps
1 RCP – 2 FWPs	2099 Amps
1RCP – 1 FWP	1492 Amps
1 RCP – 0 FWPs	885 Amps
0 RCPs – 2 FWPs	1214 Amps
0 RCPs – 1 FWP	607 Amps

Table 1b
Transformer 2RX Out of Service

Total Motors Running (Buses 11 + 12 + 21 + 22)	Est. Total Current
3 RCPs – 0 FWPs	2405 Amps
2 RCPs – 2 FWPs	2859 Amps
2 RCPs – 1 FWP	2252 Amps
2 RCPs – 0 FWPs	1645 Amps
1 RCP – 3 FWPs	2706 Amps
1 RCP – 2 FWPs	2099 Amps
1 RCP – 1 FWP	1492 Amps
1 RCP – 0 FWPs	885 Amps
0 RCPs – 4 FWPs	2428 Amps
0 RCPs – 3 FWPs	1821 Amps
0 RCPs – 2 FWPs	1214 Amps
0 RCPs – 1 FWP	607 Amps