

Northeast
Utilities System

107 Selden Street, Berlin, CT 06037

Northeast Utilities Service Company
P.O. Box 270
Hartford, CT 06141-0270
(203) 665-5000

October 23, 1995

Docket No. 50-336
B15403

Re: 10CFR50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 2
Additional Information Regarding
Proposed Revision to Technical Specifications
Cycle-Specific A.C. Sources Allowed Outage Time Extension

On October 6, 1995, Northeast Nuclear Energy Company (NNECO) proposed to amend the Millstone Nuclear Power Station, Unit No. 2 Technical Specifications by extending the Allowed Outage Time (AOT) when an offsite circuit is inoperable from the current 72 hours to seven days for the remainder of Cycle 13.⁽¹⁾ This change would avert a Millstone Unit No. 2 shutdown should offsite power obtained from the Millstone Unit No. 1 cross-tie become unavailable for more than 72 hours.

In a telephone conversation on October 12, 1995, the NRC Staff identified the need for the following additional information regarding the proposed revision to the Technical Specifications:

- Description of the scope of work to be performed on the Millstone Unit No. 1 electrical cross-tie equipment, including drawings, an estimate of man-hours for each task, the potential for exceeding the current 72 hour AOT, and the potential for the work to cause an inadvertent loss of normal power to Millstone Unit No. 2;
- Description of any compensatory actions that would enhance the reliability of the other sources of A.C. power to Millstone Unit No. 2 when the Millstone Unit No. 1 cross-tie is unavailable, including restricting work on the 345 kV lines into the Millstone Unit No. 2 switchyard, the Millstone Unit

(1) J. F. Opeka letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 2, Proposed Revision to Technical Specifications Cycle-Specific A.C. Sources Allowed Outage Time Extension," dated October 6, 1995.

ADD 11

No. 2 reserve station service transformer, and the Millstone Unit No. 2 diesel generators, which can be otherwise postponed;

- Details regarding the dominant sequences affecting overall Millstone Unit No. 2 plant risk when the Millstone Unit No. 1 cross-tie is unavailable.

Attachment 1 to this letter transmits the requested additional information regarding the proposed license amendment as listed above.

Also, NNECO had previously requested that the NRC Staff process and issue the proposed amendment prior to November 5, 1995, when the work on the relevant electrical cross-tie equipment was scheduled to start. Presently, work on the cross-tie equipment has been rescheduled and is not expected to begin prior to November 29, 1995. Accordingly, NRC action on the proposed amendment by November 22, 1995, will provide ample time to avert a potential Millstone Unit No. 2 shutdown should the Millstone Unit No. 1 cross-tie become unavailable for more than 72 hours.

Additionally, NNECO requested that the original proposed change be applicable for the remainder of Millstone Unit No. 2 Cycle 13 (which is currently scheduled to end in May 1997). The NRC staff, however, considers that if the proposed AOT extension to 7 days is approved it should be limited to the immediate need (i.e., the upcoming Millstone Unit No. 1 outage). Accordingly, NNECO agrees to further revise the proposed Technical Specifications change to Section 3.8.1.1 by replacing the words "Except that for Cycle 13 only" with "During the Millstone Unit No. 1 Refueling Outage 15."

In view of the above limitation on the applicability of the proposed AOT extension, NNECO has also revised the proposed change to the Technical Specification BASES section as a footnote to page B 3/4 8-1 which reads as follows:

"A probabilistic safety assessment has examined the affect of extending the allowed outage time to seven (7) days for the electrical cross-tie from Unit 1 to Unit 2 during the Unit 1 Refueling Outage 15. The results show that the increase in risk is acceptable provided that two diesel generators are available."

Attachment 2 to this letter is a copy of the revised marked-up version of the appropriate sections of the current Technical Specifications. Attachment 3 is the retyped Technical Specifications sections.

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It should be emphasized that the additional information provided by this letter and the revised Technical Specifications changes do not alter the content or conclusion of the safety assessment, the environmental consideration or the determination of no significant hazards consideration previously provided in our letter to the Staff of October 6, 1995. Specifically, NNECO has determined that the proposed change does not involve any significant affect on public health and safety.

The following is an amplification to NNECO's commitment B15380.1 Other statements within this letter are provided for information only.


B15403.1 NNECO will limit work on the other sources of A.C. power to Millstone Unit No. 2 when the electrical cross-tie to Millstone Unit No. 1 is unavailable during the upcoming Millstone Unit No. 1 Refueling Outage 15. This includes work on the 345 kV lines, the switchyard, the Millstone Unit No. 2 RSST, and the Millstone Unit No. 2 diesel generators. This restriction will be enforced as part of our on-line maintenance risk reduction program.

If there are any additional questions regarding this submittal, please contact Mr. Mario Robles at (203) 440-2073.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: J. F. Opeka
Executive Vice President

BY: 
E. A. DeBarba
Vice President

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
P. D. Swetland, Senior Resident Inspector, Millstone Unit
Nos. 1, 2, and 3

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Subscribed and sworn to before me

this 23rd day of October, 1995

Sherry E. Sherman

Date Commission Expires: 8/31/98

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Attachment 1

Millstone Nuclear Power Station, Unit No. 2

Additional Information Regarding
Proposed Revision to Technical Specifications
Cycle-Specific A.C. Sources Allowed Outage Time Extension

October 1995

**Additional Information Regarding
Proposed Revision to Technical Specifications
Cycle-Specific A.C. Sources Allowed Outage Time Extension**

WORK TO BE PERFORMED ON UNIT 1 ELECTRICAL CROSS-TIE EQUIPMENT

Bus 4160-14H is scheduled to be de-energized for 48 hours, beginning November 29, 1995, and ending November 30, 1995. The workscope includes inspecting, cleaning, and testing the buswork and cubicle. Power-Vac circuit breakers from this bus will also be inspected, serviced (i.e., preventative maintenance) and tested. Specific manhours for each task are not relevant.

The likelihood for exceeding the 72 hour Allowed Outage Time (AOT) in the Unit 2 Technical Specifications for this bus is considered small. Unit 1 personnel believe that the scheduled works fits within the outage window. In the unlikely event that unanticipated problems arise, personnel from General Electric's Apparatus Service Center will be on-site to help expedite the resolution of these problems.

A review of the work to be performed on bus 14H indicates that there is no potential for causing a Unit 2 loss of normal power (LNP) since no Unit 2 LNP circuitry is located in this area. Drawings showing the 14H bus are also provided herein.

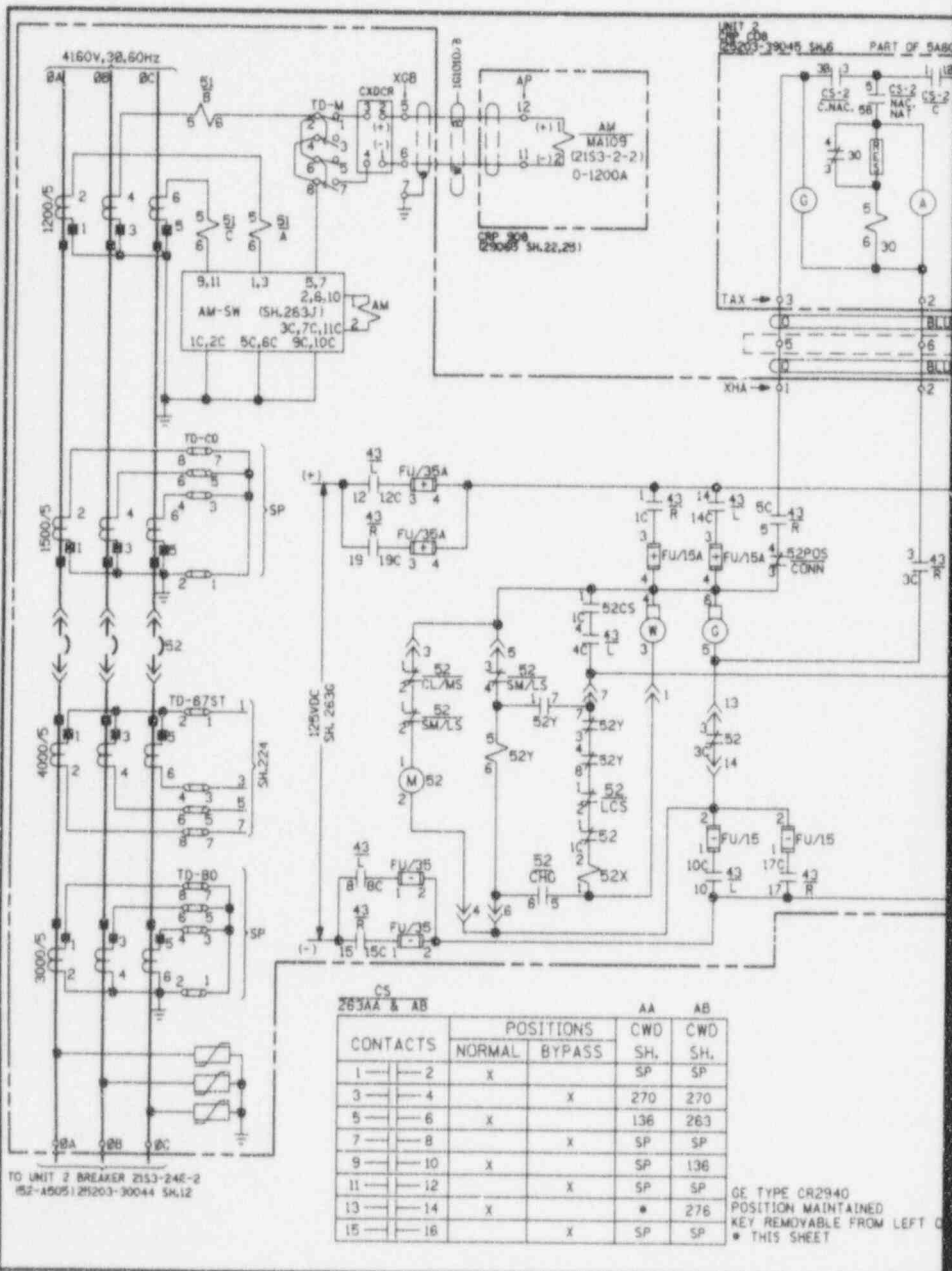
ACTIONS TO ENHANCE RELIABILITY OF A.C. POWER TO UNIT 2

In order to monitor and control the risk of varying plant configurations, Unit 2 has instituted an on-line risk monitoring program. This program quantifies the risk attributed to maintenance and surveillance activities using the Unit 2 probabilistic risk assessment model on a forward-looking weekly basis. On a daily basis, changes to the work schedule are evaluated to account for any changes that may occur during the course of the week. As such, this program will consider maintenance activities on the Unit 1 to Unit 2 cross-tie and will ensure planned maintenance and surveillance activities are carefully managed to minimize plant risk.

When the electrical cross-tie to Millstone Unit No. 1 is unavailable during the upcoming Unit 1 refueling outage 15, NNECO will limit work on the other sources of A.C. power to Unit 2. This includes work on the 345 kV lines, the switchyard, the Unit 2 reserve station service transformer, and the Unit 2 diesel generators. This restriction will be enforced as part of the on-line maintenance risk monitoring program described above.

DOMINANT SEQUENCES AFFECTING PLANT RISK WHEN CROSS-TIE UNAVAILABLE

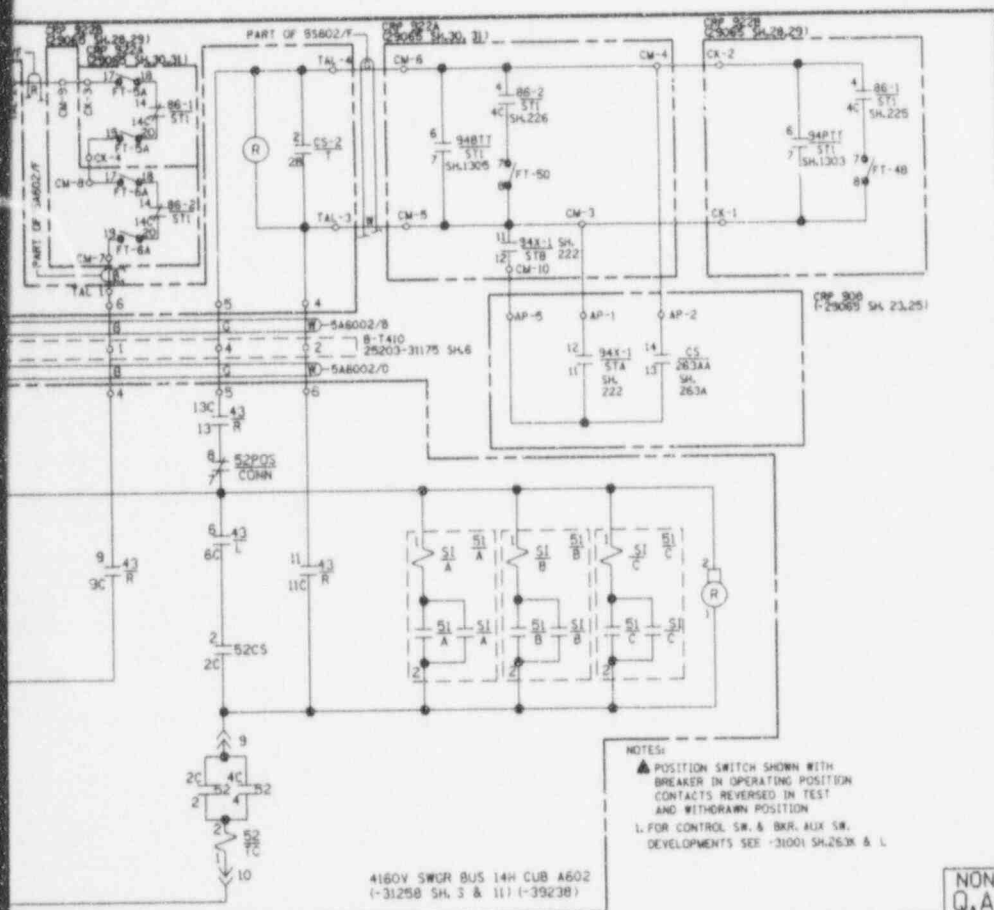
Also provided herein are the dominant sequences associated with requantifying the Unit 2 LNP event tree with A.C. power recovery scenarios modified to reflect the configuration when the Unit 1 cross-tie is unavailable. The increase in the frequency of Core Melt Frequency (CMF) due to an LNP is approximately 10 percent. In other words, with the MP1 cross-tie unavailable, the contribution that an LNP initiating event has to CMF increases from approximately 25 percent of the baseline CMF ($3.41\text{E-}05$ event/year) to 35 percent of the baseline CMF. As shown, the emergency diesel generators and auxiliary feedwater system are important to these sequences.



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263AA & AB		POSITIONS		CWD	CWD
CONTACTS		NORMAL	BYPASS	SH.	SH.
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3	4		X	270	270
5	6	X		136	263
7	8		X	SP	SP
9	10	X		SP	136
11	12		X	SP	SP
13	14	X		*	276
15	16		X	SP	SP

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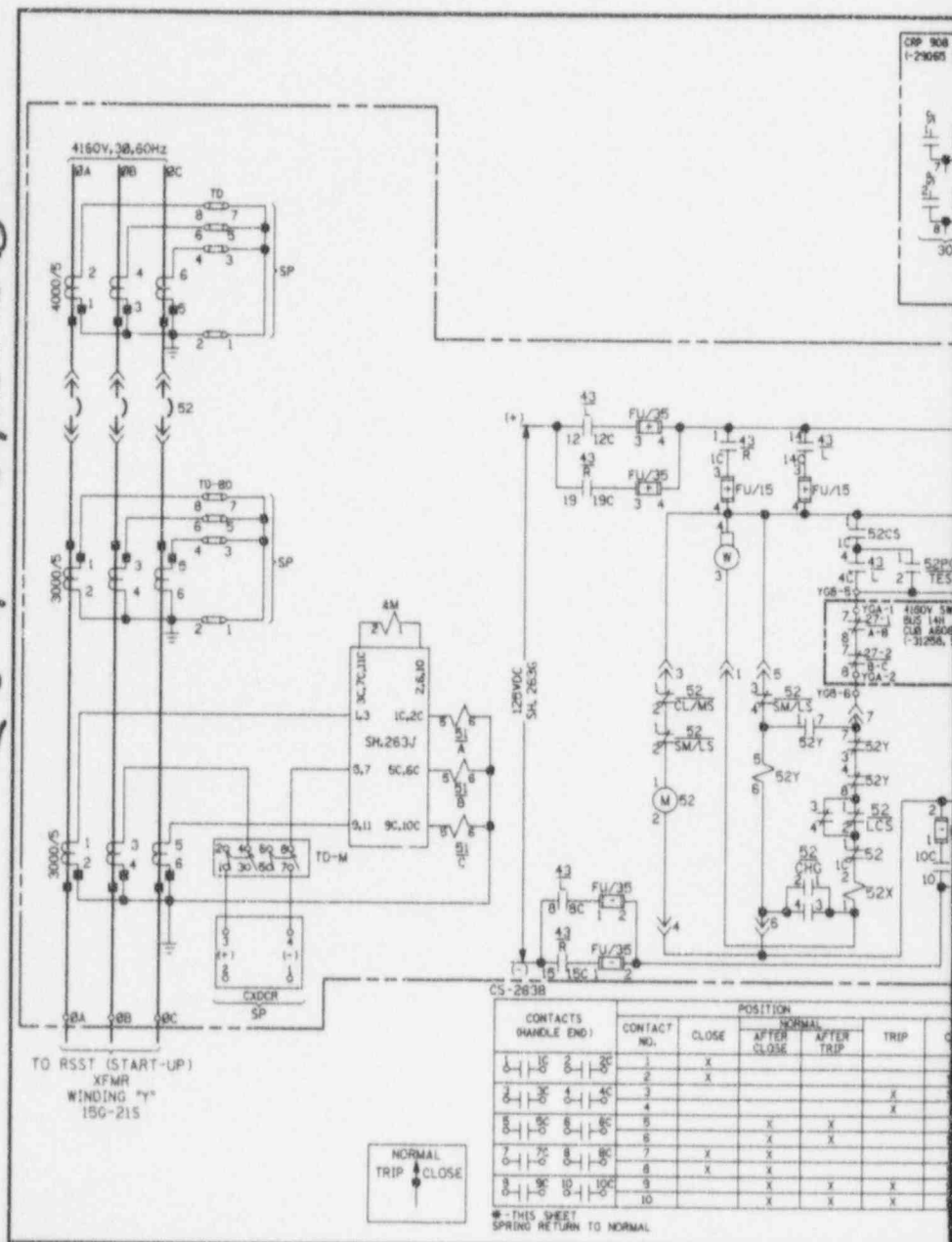
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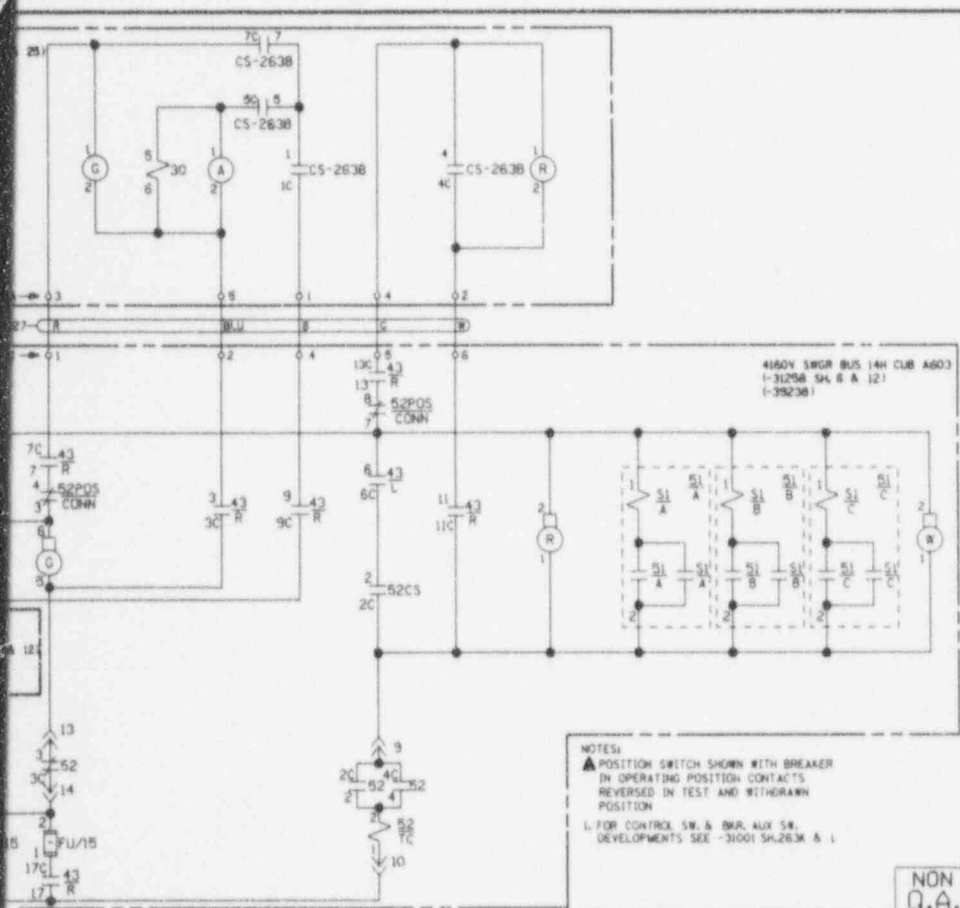
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N/A		4	3-13 95	INCORPORATED DMI-S-103-93 PER DCR MI-S-079-95	DM	GJK	GAT	GAT		FOR	NORTHEAST NUCLEAR ENERGY CO.		
90-098		3	5-12 94	INCORPORATED DMI-S-932-94 625-94 PER DCR MI-S-2330-93	DM	JKY	GAT	GAT	TITLE	WILLSTONE UNIT 1			
80-135		2	9-11 89	AS BUILT PER DCR MI-S-1048-89	GT	JKY	GAT	RJH	4160V SWGR BUS 14H CUB A602 14H TO U2 BUS 24E TIE				
83-156		1	8-23 89	AS BUILT PER DSR MI-S-1062-88	GT	JKY	GAT	RJH	WATERFORD, CONN.				
M/F P.A.*		NO DATE		REVISIONS		BY	CHK	APP	APP	DATE 2-3-88	DATE 8-23-89	DATE 8-24-89	DATE 8-24-89
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FOR NORTHEAST NUCLEAR ENERGY CO.

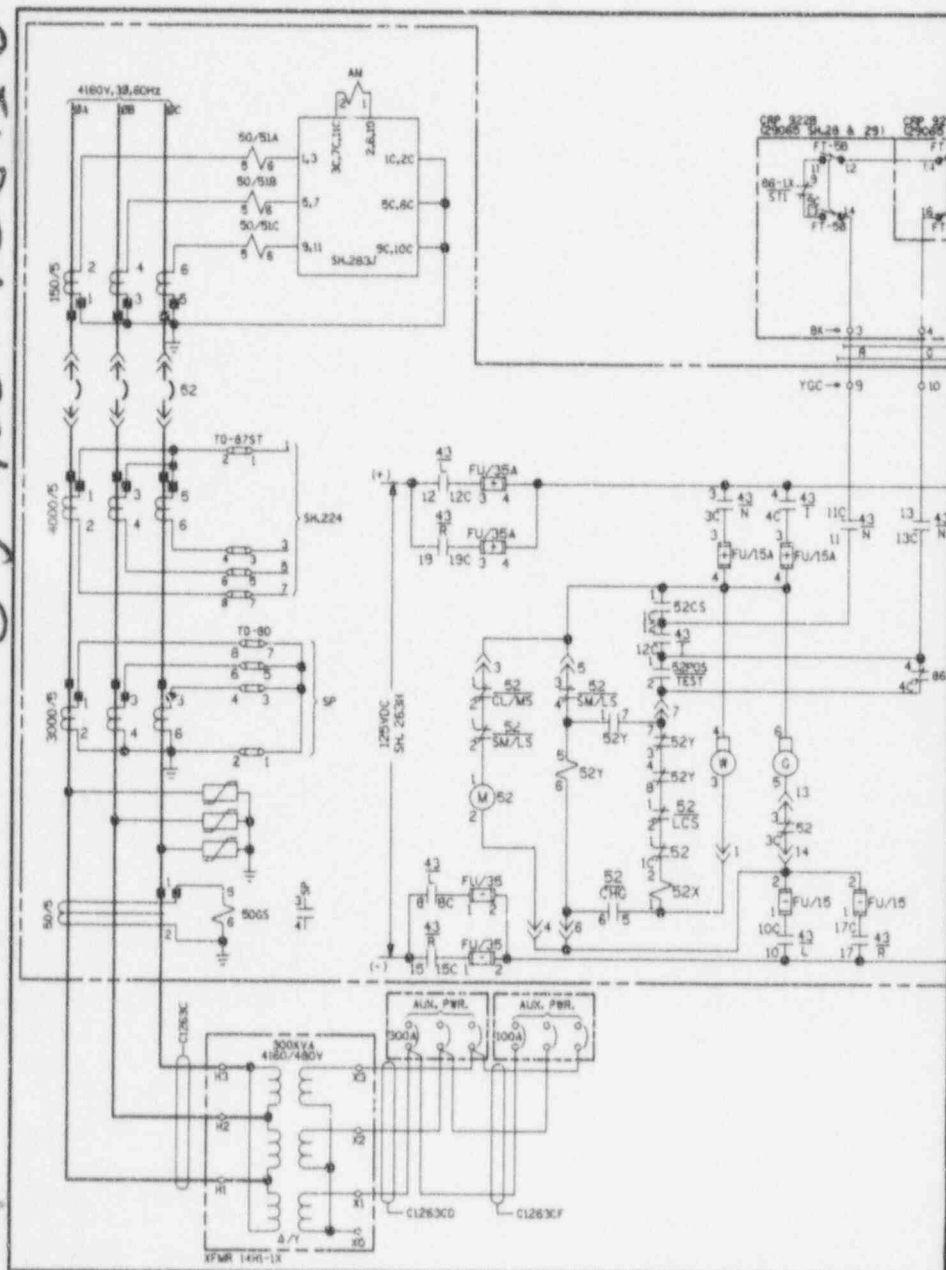
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WILLSTONE UNIT 1
4160V SWGR BUS 14H CUB A603
RST FEED TO 14H
WATERFORD, CONN.

BY DLM	CHKD. JKY	APP. GJF	APP. RJH
DATE 2-3-88	DATE 8-23-89	DATE 8-24-89	DATE 8-24-89
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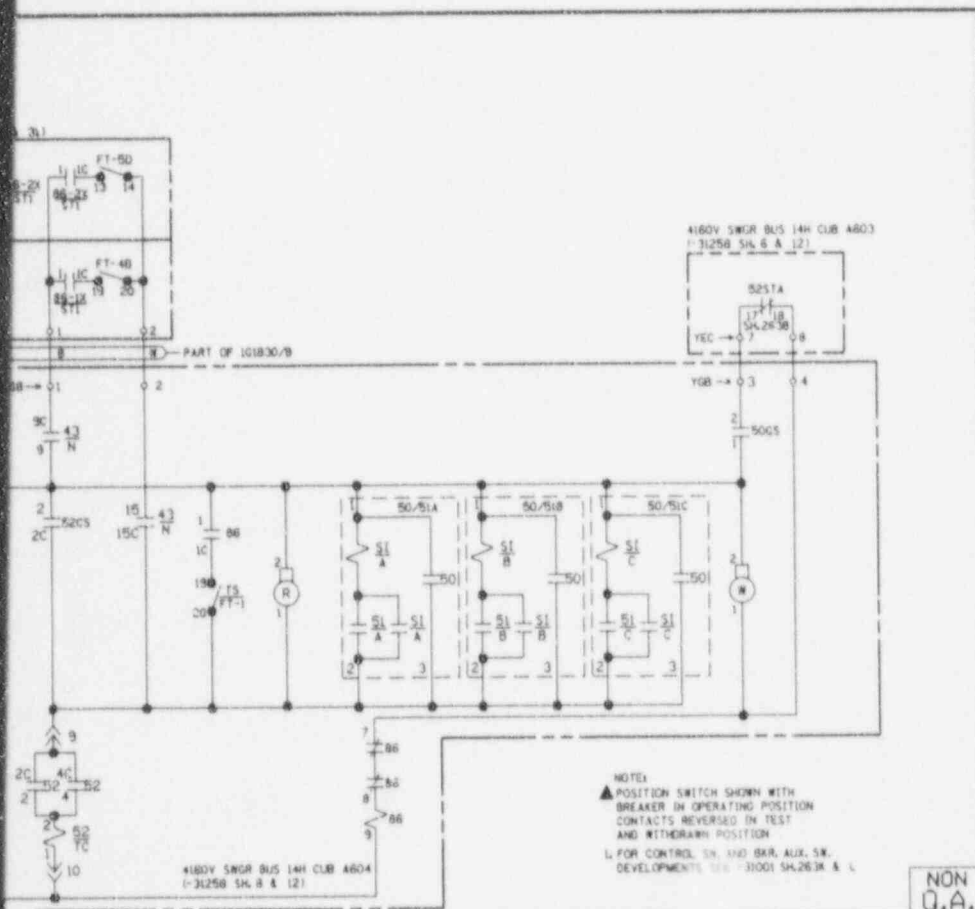
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4160V SWGR BUS 14H CUB A604
300KVA SHUTDOWN XFMR (14H1-1X)

WATERFORD, CONN.

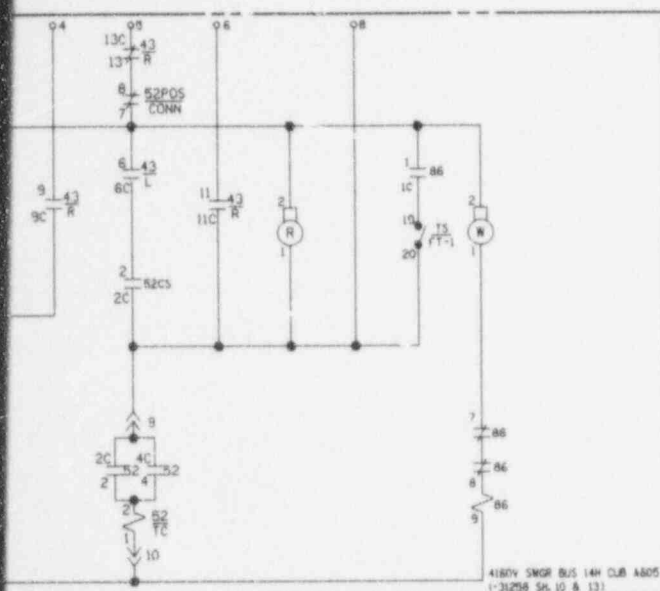
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									DATE 8-14-88	DATE 8-23-89	DATE 8-24-89	DATE 8-24-89	
									SCALE NONE	DWG NO	25202-31001 SH.263C		
ME	P.A.*	NO	DATE	REVISIONS		BY	CHK	APP	APP	P.A.* 83-156			

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▲ POSITION SWITCH SHOWN WITH
BREAKER IN OPERATING POSITION
CONTACTS REVERSED IN TEST
AND WITHDRAWN POSITION
1. FOR CONTROL, SW. AND BKA. AUX. SW.
DEVELOPMENTS SEE -31001 SH.2630 & 1

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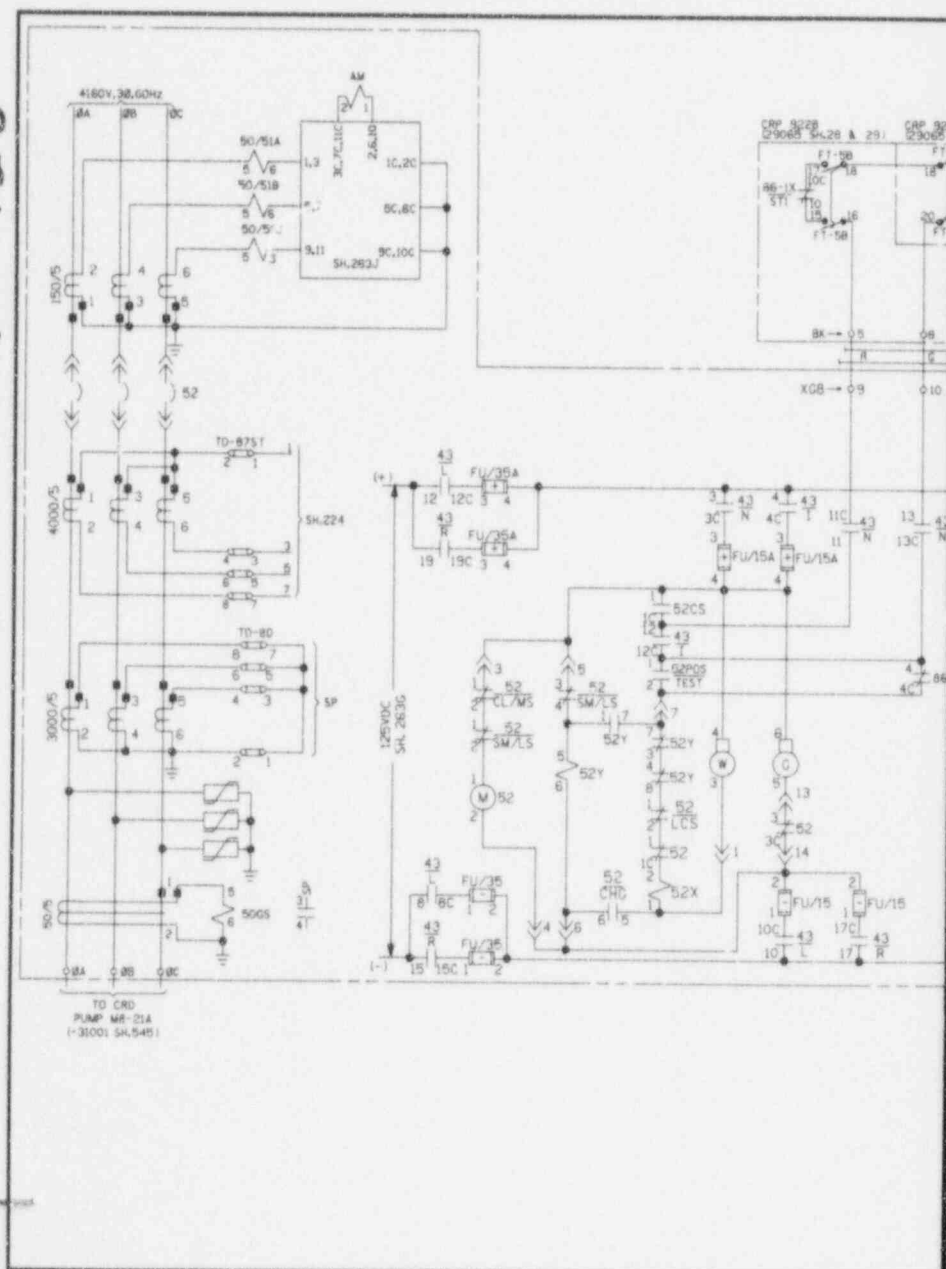
FOR NORTHEAST NUCLEAR ENERGY CO.

TITLE
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4160V SWGR BUS 14H CUB A605
SPARE
WATERFORD, CONN.

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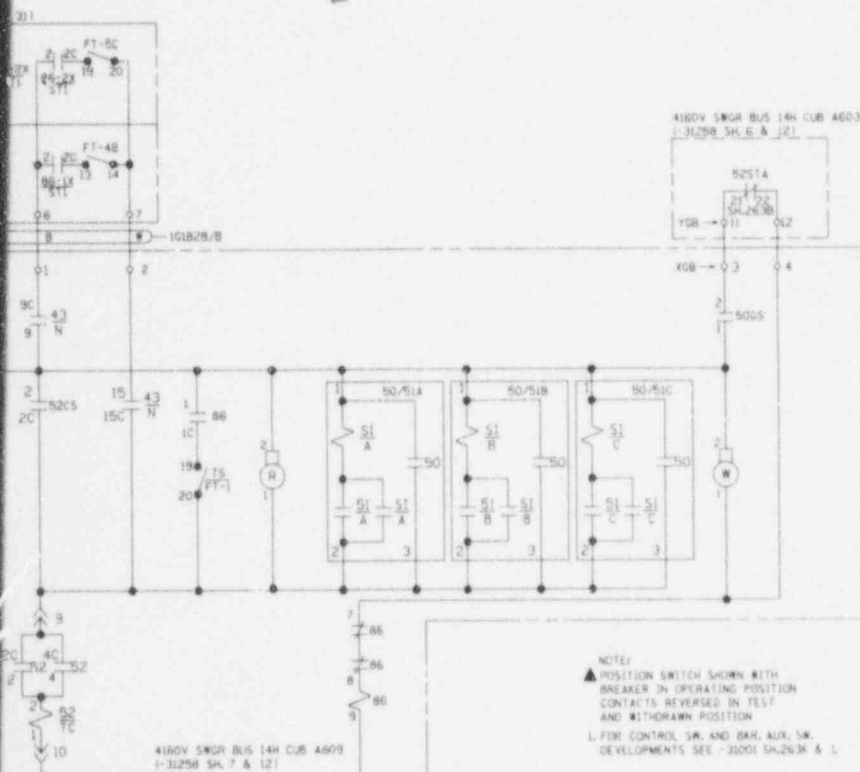
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P.A.*	83-156						

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NOTE:
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BREAKER IN OPERATING POSITION
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AND WITHDRAWN POSITION
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TITLE MILLSTONE UNIT 1

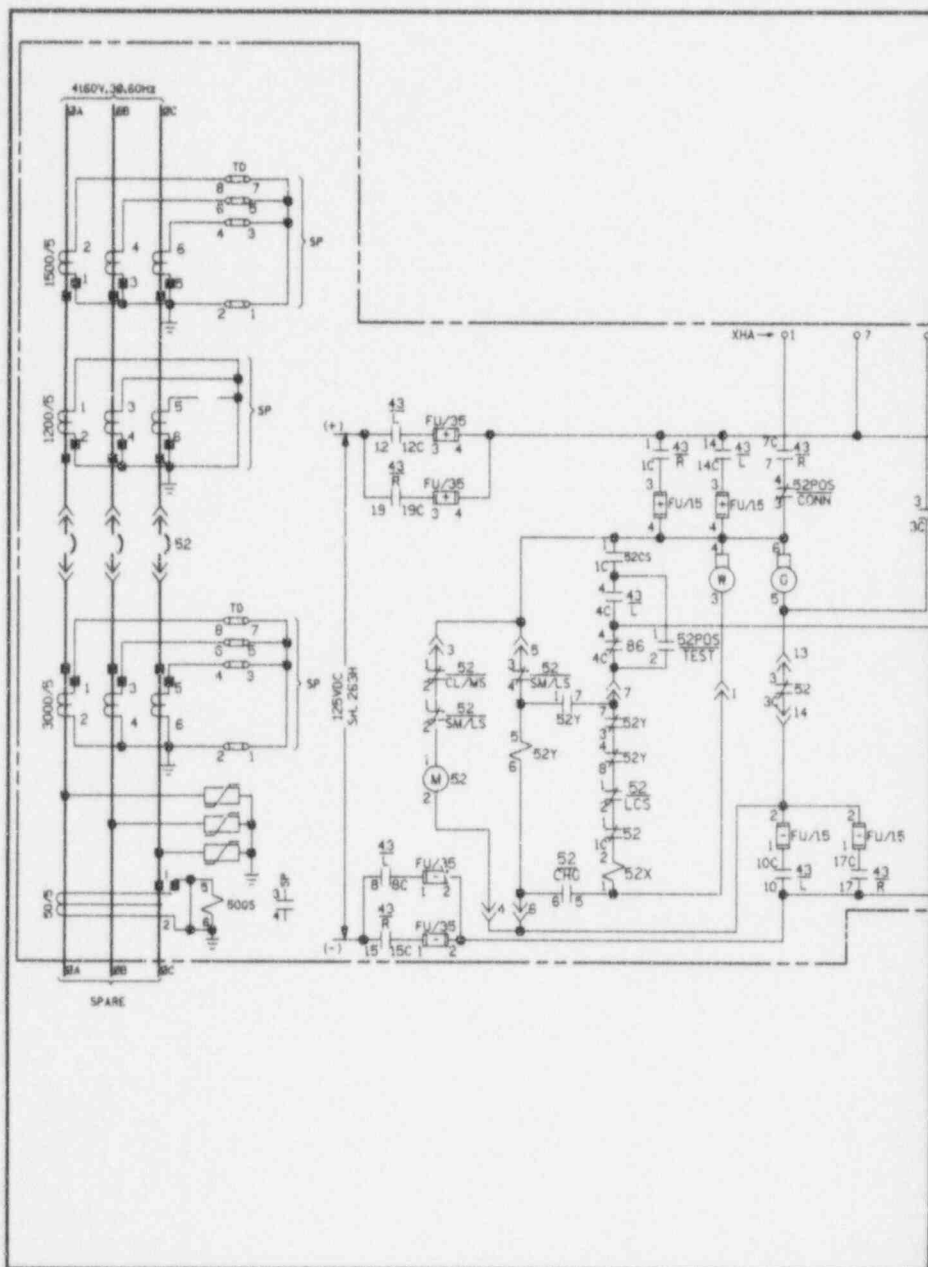
4160V SWGR BUS 14H CUB A603
EMERG FEED TO A CRD PUMP (MB-21A)

WATERFORD, CONN.

BY DLM	CHKD JKY	APP C.J.F.	APP R.J.H.
DATE 3-14-88	DATE 8-23-89	DATE 8-24-89	DATE 8-24-89
SCALE NONE	DWG NO. 25202-31001 SH.263E		
P.A.* 83-156			

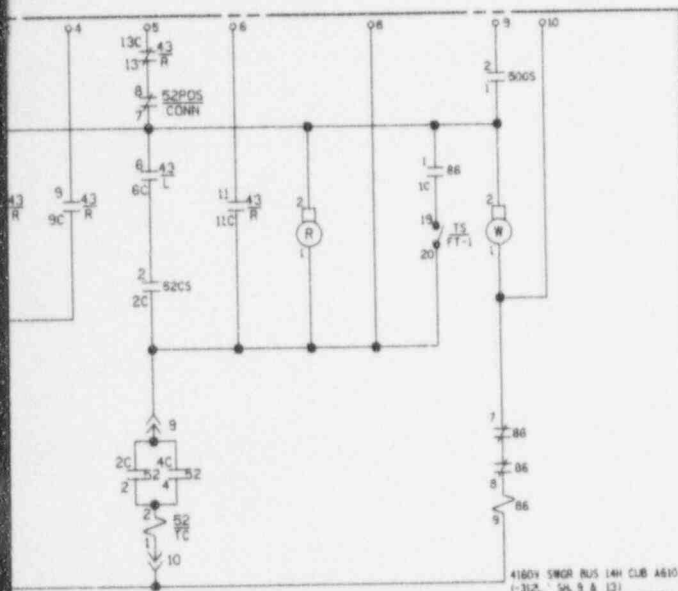
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NOTE:
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BREAKER IN OPERATING POSITION
CONTACTS REVERSED IN TEST
AND WITHDRAWN POSITION
1. FOR CONTROL SW. AND BKR. AUX. SW.
DEVELOPMENTS SEE -31001 SH.263X & L

NON
Q.A.

CAD

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REVISIONS DURING CONSTRUCTION

P.A.*

Northeast Utilities System

FOR NORTHEAST NUCLEAR ENERGY CO.



TITLE

WILLSTONE UNIT 1
4160V SWGR BUS 14H CUB A610
SPARE

WATERFORD, CONN.

BY

DLM

CHKD.

JXY

A.P.

G.J.F.

APP

R.J.H.

DATE 3-8-88

DATE 8-23-89

DATE 8-24-89

DATE 8-24-89

SCALE NONE

OWG NO.

25202-31001 SH.263F

P.A.* 83-156

MF

P.A.*

NO DATE

REVISIONS

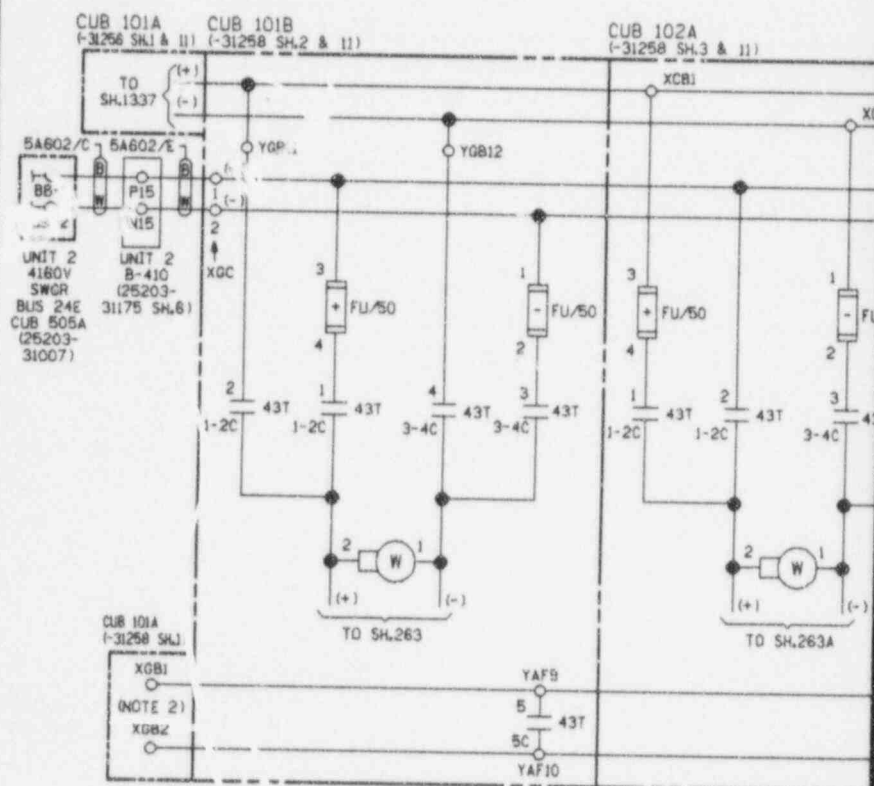
BY

CHK

APP

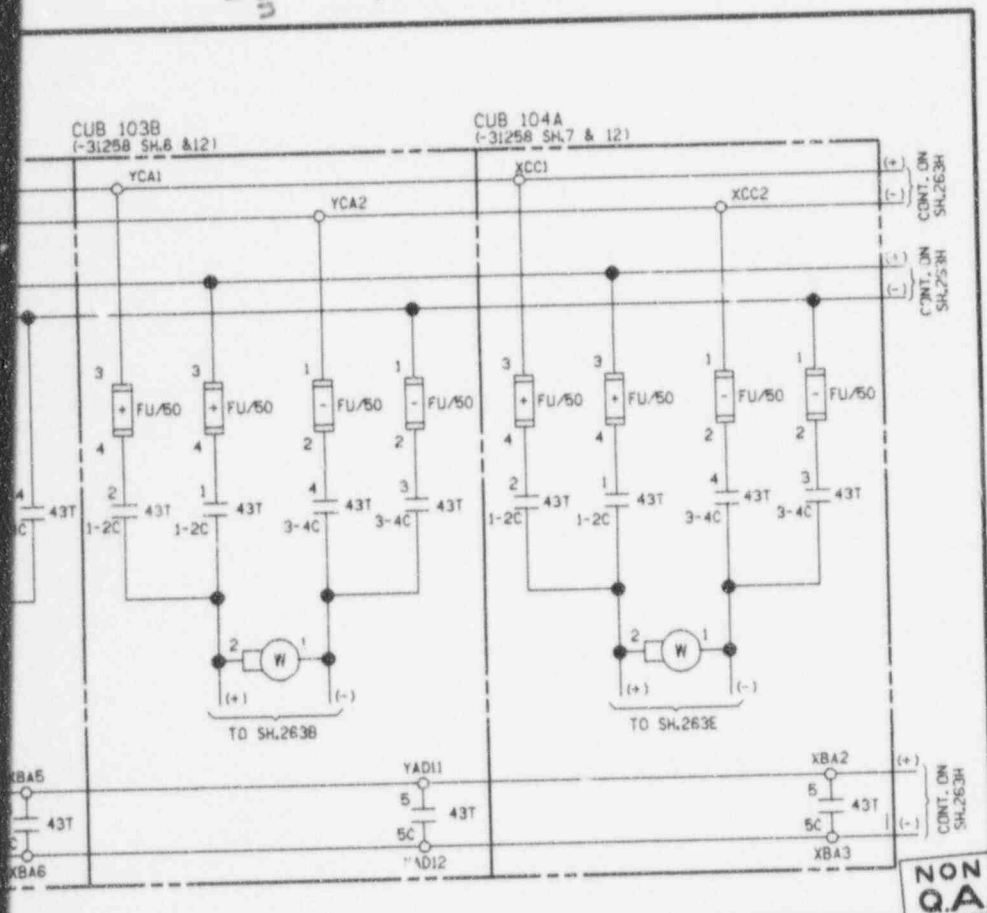
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C.A.D.

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REVISIONS DURING CONSTRUCTION P.A.*



NORTHEAST UTILITIES SERVICE CO.

FOR NORTHEAST NUCLEAR ENERGY CO.

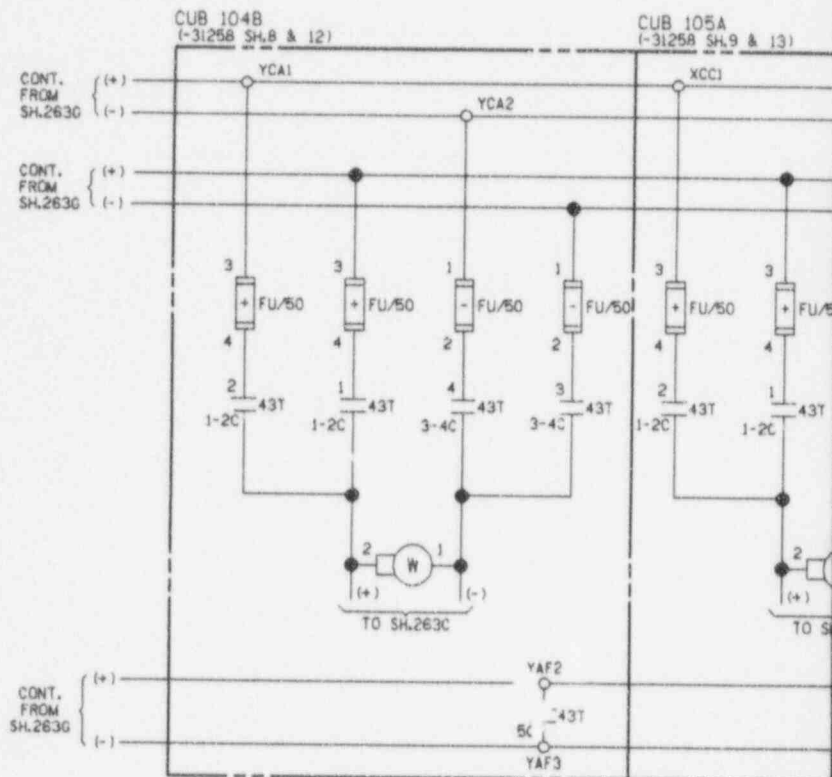
TITLE
MILLSTONE UNIT 1
4160V SWGR. BUS 14H 125VDC CONTROL
POWER FOR CUBS 101B, 102A, 103B & 104A
WATERFORD, CT.

BY DLW CHKD. JY APP. MGT APP. JY
DATE 9-15-87 DATE B-23-84 DATE 10-15-84 DATE 8-20-84
SCALE NONE DWG. NO. 25202-31001 SH.263G
P.A.* 83-156

83-156 1 8-15-87 AS BUILT PER DSR-M1-S-1062-88 GT
BY CHK APP APP

MR

9510260286-08



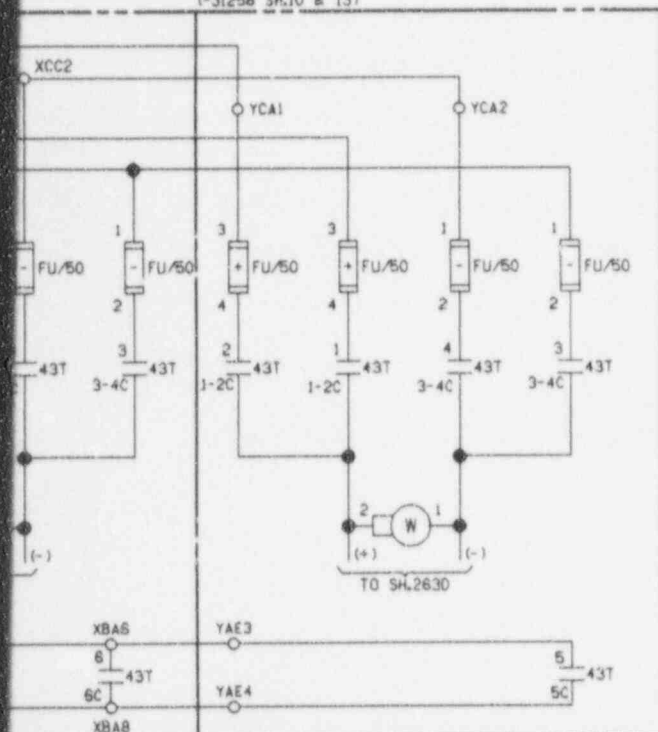
NOTE:

1. FOR SWITCH DEVELOPMENTS SEE -31001 SH.263K & L

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APERTURE
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CUB 105B
(-31258 SH.10 & 13)



NON
Q.A.

C.A.D.

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CONSTRUCTION MANUAL REVISIONS.

REVISIONS DURING CONSTRUCTION P.A.#



NORTHEAST UTILITIES SERVICE CO.

FOR NORTHEAST NUCLEAR ENERGY CO.

TITLE
MILLSTONE UNIT 1
4160V SWGR. BUS 14H 125VDC
CONTROL POWER FOR CUB'S 104B, 105A & 105B
WATERFORD, CT.

BY DLM CHKD. JY APP. H94 APP. CSH

DATE 9-15-87 DATE 2-23-88 DATE 6-14-88 DATE 7-17-88

SCALE NONE DWG. NO. 25202-31001 SH.263H

P.A.# 83-156

83-156 1 AS BUILT PER
DSR-MI-S-1062-88
P.A.# NO. DATE REVISIONS BY CHK APP APP

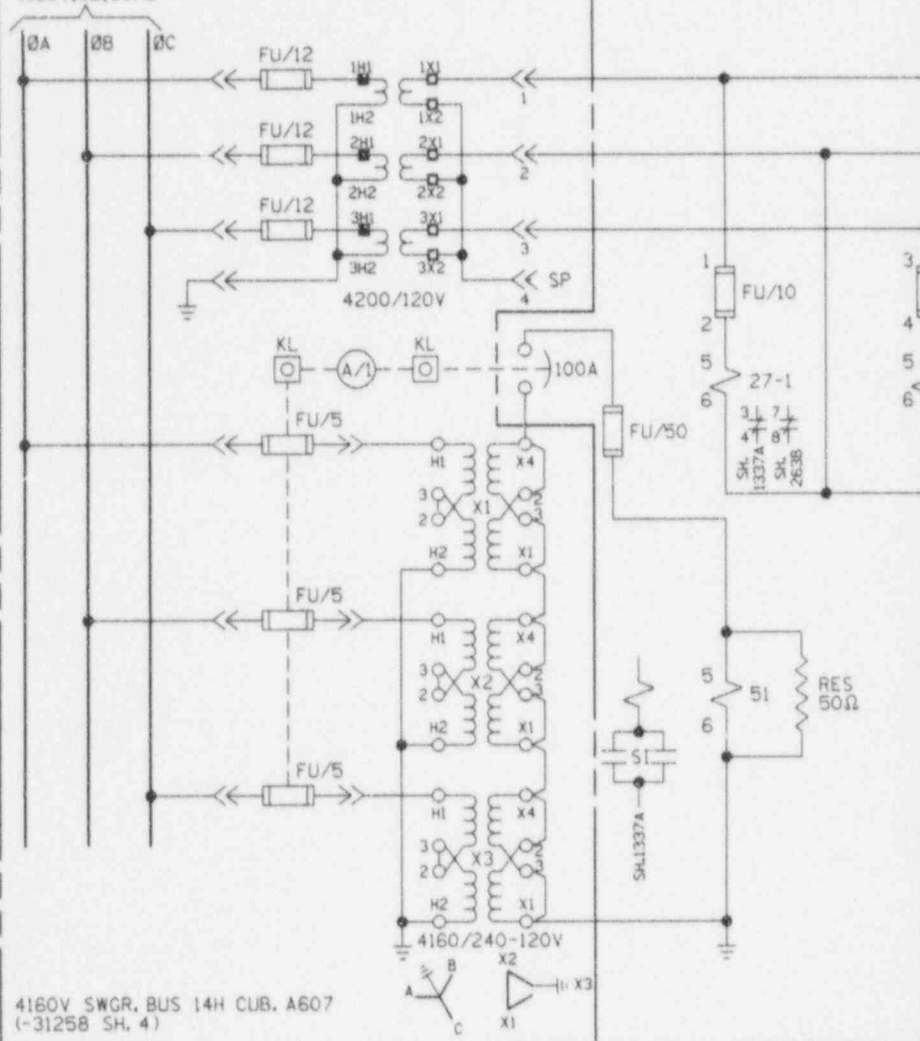
MR

□

9510260286-09

REVISIONS DURING CONSTRUCTION P.A.#

4160V, 3Ø, 60Hz



4160V SWGR, BUS 14H CLB. A607
(-31258 SH. 4)

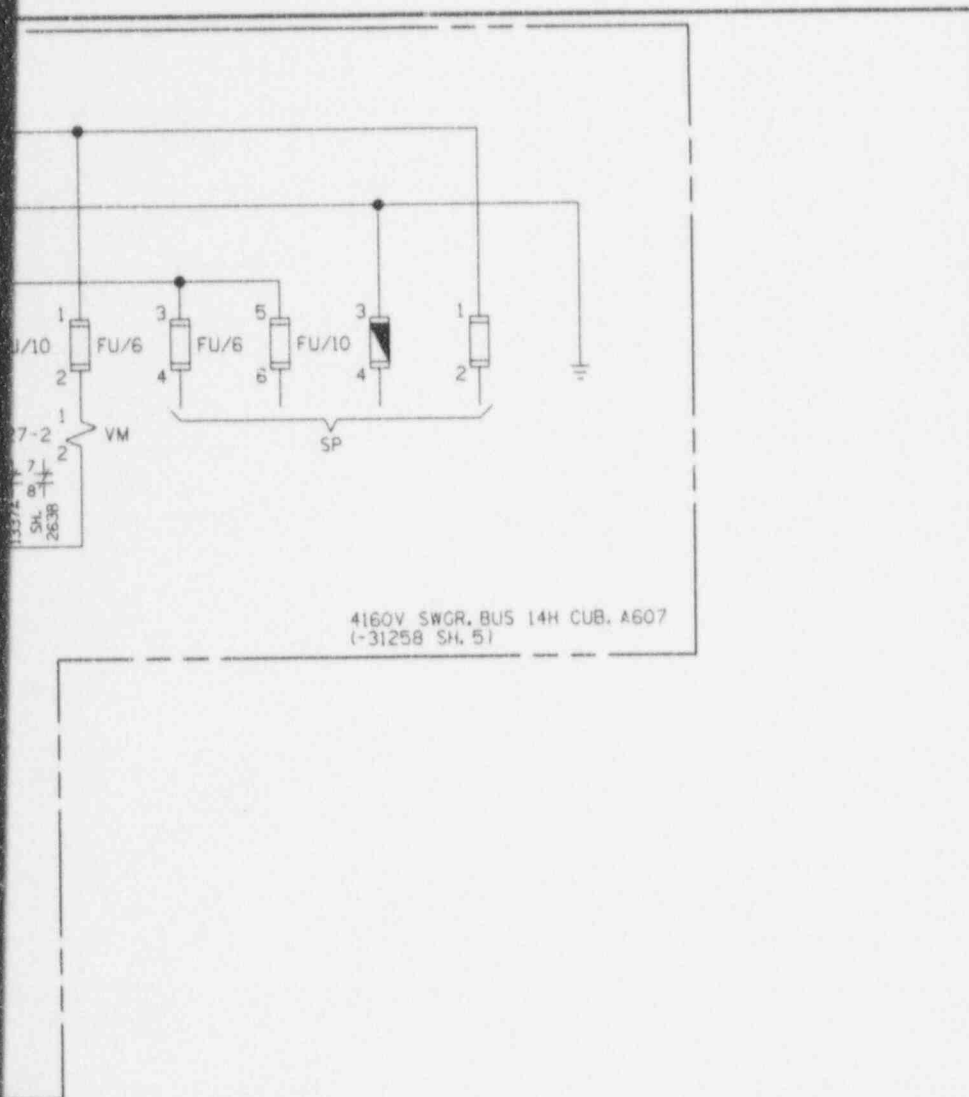
NOTES:

1. KL - KIRKLOCK SWITCH

NO.	DATE	REVISIONS	BY
N/A	2	9.12.95 INCORP. DMI-S-562-95 PER DCR-MI-S-221-95	DJH
B3-156	1	AS BUILT PER DSR-MI-S-1062-88	GT
MP P.A.#	NO.	DATE	REVISIONS

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NON Q.A.		CAD		Northeast Utilities System	
MANUAL REVISIONS TO THIS DOCUMENT WHEN AS-BUILT ARE PROHIBITED		FOR		NORTHEAST NUCLEAR ENERGY CO.	
TITLE		BY G.TARDIE	CHKD JKY	APP GJF	APP RH
MILLSTONE UNIT 1		DATE 8-9-89	DATE 2-23-89	DATE 2-24-89	DATE 2-24-89
4160V SWGR, BUS 14H CUBS A607, A608		SCALE N/A	OWC NO.	25202-31001 SH.263J	
AUXILIARY COMPARTMENT		P.A. 83-156			
POT. AND GRND XFMRs, UV RELAYS					
WATERFORD, CT					

Q1-9820920156

52STA

CONTACTS		POSITION		CUB. 101B	CUB. 102A	CUB. 103B	CUB. 104A	CUB. 104B	CUB. 105A	CUB. 105B
CRANK END	NO.	BKR. OPEN	BKR. CLOSED	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH
6-1-8	2-1-8	1-2	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	3-4	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	5-6	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	7-8	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	9-10	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	11-12	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	13-14	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	15-16	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	17-18	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	19-20	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	21-22	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	23-24	X	SP	SP	SP	SP	SP	SP	SP

S812-0226A92870010

43T

CONTACTS		POSITION		CUB. 101B	CUB. 102A	CUB. 103B	CUB. 104A	CUB. 104B	CUB. 105A	CUB. 105B
HANDLE END	NO.	UNIT 2	UNIT 1	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH
6-1-8	2-1-8	1	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	2	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	3	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	4	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	5	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	6	X	SP	SP	SP	SP	SP	SP	SP

S81-CD2135SM2V

52POS

CONTACTS		POSITION		CUB. 101B	CUB. 102A	CUB. 103B	CUB. 104A	CUB. 104B	CUB. 105A	CUB. 105B
CRANK END	NO.	BKR. IN	BKR. OUT	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH	CWO SH
6-1-8	2-1-8	1-2	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	3-4	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	5-6	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	7-8	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	9-10	X	SP	SP	SP	SP	SP	SP	SP
8-1-8	2-1-8	11-12	X	SP	SP	SP	SP	SP	SP	SP

S812-0226A92870010

NOTES:

1. Δ - 25203-31212 SH.119

83-156	1	AS BUILT PER	
MF P.A.*	NO. DATE	REVISIONS	

REVISIONS DURING CONSTRUCTION P.A.*

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CONTACTS		POSITION		CUB. 101B	CUB. 102A	CUB. 103B	CUB. 104A	CUB. 104B	CUB. 105A	CUB. 105B
HANDLE	NO.	TRIP	NORMAL	CLOSE	CWO	CWO	CWO	CWO	CWO	CWO
END					SP	SP	SP	SP	SP	SP
10-10-1	1			X	26.3	26.3A	26.3B	26.3C	26.3D	26.3E
10-10-2	2	X			26.3	26.3A	26.3B	26.3C	26.3D	26.3E

LAB303
RING RETURN TO NORMAL

2 BKR. AUX. SWITCHES

CONTACTS		POSITION		CUB. 101B	CUB. 102A	CUB. 103B	CUB. 104A	CUB. 104B	CUB. 105A	CUB. 105B
CRANK	NO.	BKR. OPEN	BKR. CLOSED	CWO	CWO	CWO	CWO	CWO	CWO	CWO
END				SP	SP	SP	SP	SP	SP	SP
10-10-1	1	X		26.3	26.3A	26.3B	26.3C	26.3D	26.3E	26.3F
10-10-2	2		X	26.3	26.3A	26.3B	26.3C	26.3D	26.3E	26.3F
10-10-3	3	X		26.3	26.3A	26.3B	26.3C	26.3D	26.3E	26.3F
10-10-4	4		X	26.3	26.3A	26.3B	26.3C	26.3D	26.3E	26.3F
10-10-5	5	X		SP	SP	SP	SP	SP	SP	SP
10-10-6	6		X	SP	SP	SP	SP	SP	SP	SP
10-10-7	7	X		SP	SP	SP	SP	SP	SP	SP
10-10-8	8		X	SP	SP	SP	SP	SP	SP	SP

NON
Q.A.

C.A.D.
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NORTHEAST UTILITIES SERVICE CO.
FOR NORTHEAST NUCLEAR ENERGY CO.

TITLE
MILLSTONE UNIT 1
4160V SWGR. BUS 14H
CONTROL SW. & TEST SW. DEVELOPMENTS SH.1
WATERFORD, CT

BY G. TARDIE
DATE 8-11-89
SCALE N/A
P.A.# B3-156

CHKD. JY
DATE 8-23-89
DWG. NO.
25202-31001 SH.263K

APP. JY
DATE 8-23-89

APP. JY
DATE 8-23-89

MR
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REVISIONS DURING CONSTRUCTION	P.A. #
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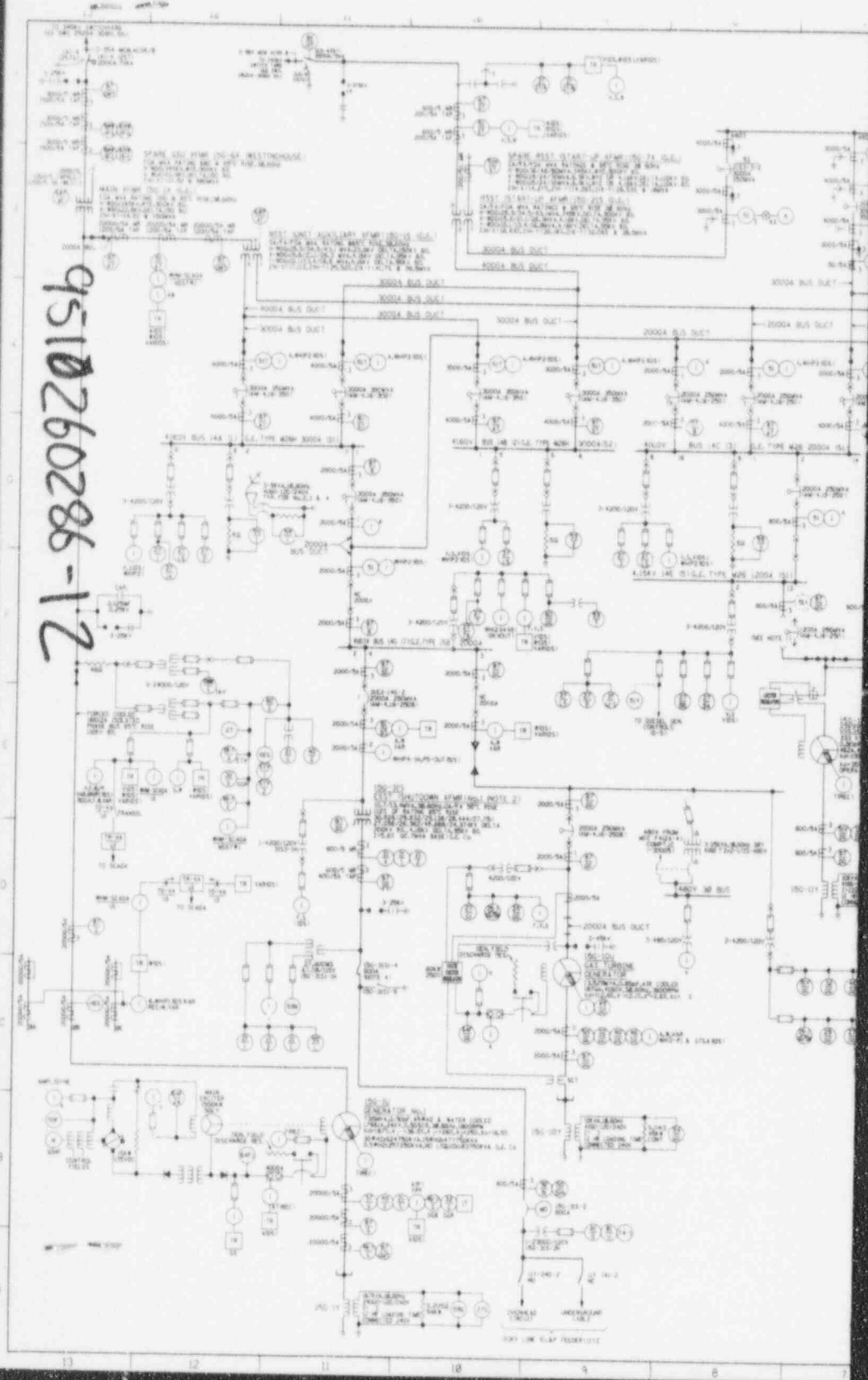
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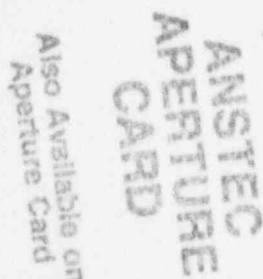
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83-156	1	8-24-64	AS BUILT PER DSR-MI-S-1062-88	
MF P.A.#	NO.	DATE	REVISIONS	

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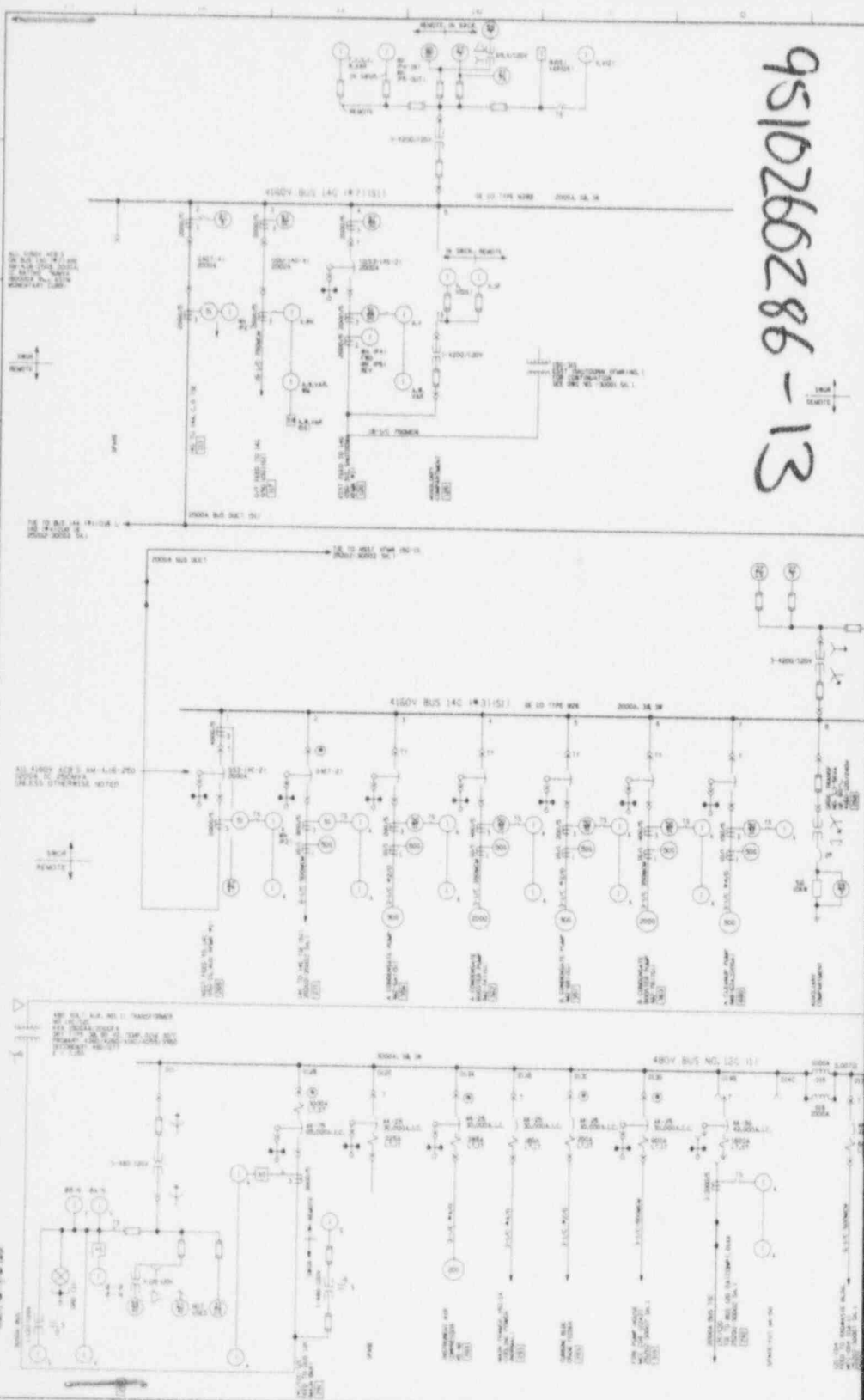
7 - INDICATES SUPPLIED ON LOSS OF NORMAL POWER
8 - INDICATES SUPPLIED ON LOSS OF NORMAL POWER & REQUIRED FOR THE COMBUSTION
9 - PREHEATING DEMAND DETECTOR
10 - TRANSMITTER FOR COMPUTER DATA SYSTEM
11 - COMPUTER DATA SYSTEM
12 - AIR FLOW MEASUREMENT LINE
13 - GENERATOR
14 - AUXILIARY TRANSDUCER
15 - SIGNAL GENERATOR
16 - GAS FLOWMEASUREMENT GENERATOR
17 - MAIN TRANSDUCER
18 - REACTOR
19 - SLOWDOWN TRANSDUCER
20 - START UP TRANSDUCER
21 - CURRENT TRANSDUCER

25.000 - 30.000 \$/t	30.000 - 35.000 \$/t	35.000 - 40.000 \$/t	40.000 - 45.000 \$/t	45.000 - 50.000 \$/t	50.000 - 55.000 \$/t	55.000 - 60.000 \$/t	60.000 - 65.000 \$/t	65.000 - 70.000 \$/t	70.000 - 75.000 \$/t	75.000 - 80.000 \$/t	80.000 - 85.000 \$/t	85.000 - 90.000 \$/t	90.000 - 95.000 \$/t	95.000 - 100.000 \$/t	100.000 - 105.000 \$/t	105.000 - 110.000 \$/t	110.000 - 115.000 \$/t	115.000 - 120.000 \$/t	120.000 - 125.000 \$/t	125.000 - 130.000 \$/t	130.000 - 135.000 \$/t	135.000 - 140.000 \$/t	140.000 - 145.000 \$/t	145.000 - 150.000 \$/t	150.000 - 155.000 \$/t	155.000 - 160.000 \$/t	160.000 - 165.000 \$/t	165.000 - 170.000 \$/t	170.000 - 175.000 \$/t	175.000 - 180.000 \$/t	180.000 - 185.000 \$/t	185.000 - 190.000 \$/t	190.000 - 195.000 \$/t	195.000 - 200.000 \$/t	200.000 - 205.000 \$/t	205.000 - 210.000 \$/t	210.000 - 215.000 \$/t	215.000 - 220.000 \$/t	220.000 - 225.000 \$/t	225.000 - 230.000 \$/t	230.000 - 235.000 \$/t	235.000 - 240.000 \$/t	240.000 - 245.000 \$/t	245.000 - 250.000 \$/t	250.000 - 255.000 \$/t	255.000 - 260.000 \$/t	260.000 - 265.000 \$/t	265.000 - 270.000 \$/t	270.000 - 275.000 \$/t	275.000 - 280.000 \$/t	280.000 - 285.000 \$/t	285.000 - 290.000 \$/t	290.000 - 295.000 \$/t	295.000 - 300.000 \$/t	300.000 - 305.000 \$/t	305.000 - 310.000 \$/t	310.000 - 315.000 \$/t	315.000 - 320.000 \$/t	320.000 - 325.000 \$/t	325.000 - 330.000 \$/t	330.000 - 335.000 \$/t	335.000 - 340.000 \$/t	340.000 - 345.000 \$/t	345.000 - 350.000 \$/t	350.000 - 355.000 \$/t	355.000 - 360.000 \$/t	360.000 - 365.000 \$/t	365.000 - 370.000 \$/t	370.000 - 375.000 \$/t	375.000 - 380.000 \$/t	380.000 - 385.000 \$/t	385.000 - 390.000 \$/t	390.000 - 395.000 \$/t	395.000 - 400.000 \$/t	400.000 - 405.000 \$/t	405.000 - 410.000 \$/t	410.000 - 415.000 \$/t	415.000 - 420.000 \$/t	420.000 - 425.000 \$/t	425.000 - 430.000 \$/t	430.000 - 435.000 \$/t	435.000 - 440.000 \$/t	440.000 - 445.000 \$/t	445.000 - 450.000 \$/t	450.000 - 455.000 \$/t	455.000 - 460.000 \$/t	460.000 - 465.000 \$/t	465.000 - 470.000 \$/t	470.000 - 475.000 \$/t	475.000 - 480.000 \$/t	480.000 - 485.000 \$/t	485.000 - 490.000 \$/t	490.000 - 495.000 \$/t	495.000 - 500.000 \$/t	500.000 - 505.000 \$/t	505.000 - 510.000 \$/t	510.000 - 515.000 \$/t	515.000 - 520.000 \$/t	520.000 - 525.000 \$/t	525.000 - 530.000 \$/t	530.000 - 535.000 \$/t	535.000 - 540.000 \$/t	540.000 - 545.000 \$/t	545.000 - 550.000 \$/t	550.000 - 555.000 \$/t	555.000 - 560.000 \$/t	560.000 - 565.000 \$/t	565.000 - 570.000 \$/t	570.000 - 575.000 \$/t	575.000 - 580.000 \$/t	580.000 - 585.000 \$/t	585.000 - 590.000 \$/t	590.000 - 595.000 \$/t	595.000 - 600.000 \$/t	600.000 - 605.000 \$/t	605.000 - 610.000 \$/t	610.000 - 615.000 \$/t	615.000 - 620.000 \$/t	620.000 - 625.000 \$/t	625.000 - 630.000 \$/t	630.000 - 635.000 \$/t	635.000 - 640.000 \$/t	640.000 - 645.000 \$/t	645.000 - 650.000 \$/t	650.000 - 655.000 \$/t	655.000 - 660.000 \$/t	660.000 - 665.000 \$/t	665.000 - 670.000 \$/t	670.000 - 675.000 \$/t	675.000 - 680.000 \$/t	680.000 - 685.000 \$/t	685.000 - 690.000 \$/t	690.000 - 695.000 \$/t	695.000 - 700.000 \$/t	700.000 - 705.000 \$/t	705.000 - 710.000 \$/t	710.000 - 715.000 \$/t	715.000 - 720.000 \$/t	720.000 - 725.000 \$/t	725.000 - 730.000 \$/t	730.000 - 735.000 \$/t	735.000 - 740.000 \$/t	740.000 - 745.000 \$/t	745.000 - 750.000 \$/t	750.000 - 755.000 \$/t	755.000 - 760.000 \$/t	760.000 - 765.000 \$/t	765.000 - 770.000 \$/t	770.000 - 775.000 \$/t	775.000 - 780.000 \$/t	780.000 - 785.000 \$/t	785.000 - 790.000 \$/t	790.000 - 795.000 \$/t	795.000 - 800.000 \$/t	800.000 - 805.000 \$/t	805.000 - 810.000 \$/t	810.000 - 815.000 \$/t	815.000 - 820.000 \$/t	820.000 - 825.000 \$/t	825.000 - 830.000 \$/t	830.000 - 835.000 \$/t	835.000 - 840.000 \$/t	840.000 - 845.000 \$/t	845.000 - 85
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[illegible]

Q. A

TITLE: PNL SUPERVISORY DESIG.		CAD		DATE: 01-10-78		BY: J. H. B. / J. H. B.	
DATE: 01-10-78		REV: 01-10-78		REV: 01-10-78		REV: 01-10-78	
<p>Northwest Utilities System</p> <p>NORTHWEST NUCLEAR ENERGY CO.</p> <p>NO. 2 UNIT AND 2</p> <p>MAIN ONE LINE WIRING DIAGRAM</p> <p>AS SHOWN</p>				<p>NO. 1 TO NO. 2</p> <p>NO. 2 TO NO. 3</p> <p>NO. 3 TO NO. 4</p> <p>NO. 4 TO NO. 5</p> <p>NO. 5 TO NO. 6</p> <p>NO. 6 TO NO. 7</p> <p>NO. 7 TO NO. 8</p> <p>NO. 8 TO NO. 9</p> <p>NO. 9 TO NO. 10</p> <p>NO. 10 TO NO. 11</p> <p>NO. 11 TO NO. 12</p> <p>NO. 12 TO NO. 13</p> <p>NO. 13 TO NO. 14</p> <p>NO. 14 TO NO. 15</p> <p>NO. 15 TO NO. 16</p> <p>NO. 16 TO NO. 17</p> <p>NO. 17 TO NO. 18</p> <p>NO. 18 TO NO. 19</p> <p>NO. 19 TO NO. 20</p> <p>NO. 20 TO NO. 21</p> <p>NO. 21 TO NO. 22</p> <p>NO. 22 TO NO. 23</p> <p>NO. 23 TO NO. 24</p> <p>NO. 24 TO NO. 25</p> <p>NO. 25 TO NO. 26</p> <p>NO. 26 TO NO. 27</p> <p>NO. 27 TO NO. 28</p> <p>NO. 28 TO NO. 29</p> <p>NO. 29 TO NO. 30</p> <p>NO. 30 TO NO. 31</p> <p>NO. 31 TO NO. 32</p> <p>NO. 32 TO NO. 33</p> <p>NO. 33 TO NO. 34</p> <p>NO. 34 TO NO. 35</p> <p>NO. 35 TO NO. 36</p> <p>NO. 36 TO NO. 37</p> <p>NO. 37 TO NO. 38</p> <p>NO. 38 TO NO. 39</p> <p>NO. 39 TO NO. 40</p> <p>NO. 40 TO NO. 41</p> <p>NO. 41 TO NO. 42</p> <p>NO. 42 TO NO. 43</p> <p>NO. 43 TO NO. 44</p> <p>NO. 44 TO NO. 45</p> <p>NO. 45 TO NO. 46</p> <p>NO. 46 TO NO. 47</p> <p>NO. 47 TO NO. 48</p> <p>NO. 48 TO NO. 49</p> <p>NO. 49 TO NO. 50</p> <p>NO. 50 TO NO. 51</p> <p>NO. 51 TO NO. 52</p> <p>NO. 52 TO NO. 53</p> <p>NO. 53 TO NO. 54</p> <p>NO. 54 TO NO. 55</p> <p>NO. 55 TO NO. 56</p> <p>NO. 56 TO NO. 57</p> <p>NO. 57 TO NO. 58</p> <p>NO. 58 TO NO. 59</p> <p>NO. 59 TO NO. 60</p> <p>NO. 60 TO NO. 61</p> <p>NO. 61 TO NO. 62</p> <p>NO. 62 TO NO. 63</p> <p>NO. 63 TO NO. 64</p> <p>NO. 64 TO NO. 65</p> <p>NO. 65 TO NO. 66</p> <p>NO. 66 TO NO. 67</p> <p>NO. 67 TO NO. 68</p> <p>NO. 68 TO NO. 69</p> <p>NO. 69 TO NO. 70</p> <p>NO. 70 TO NO. 71</p> <p>NO. 71 TO NO. 72</p> <p>NO. 72 TO NO. 73</p> <p>NO. 73 TO NO. 74</p> <p>NO. 74 TO NO. 75</p> <p>NO. 75 TO NO. 76</p> <p>NO. 76 TO NO. 77</p> <p>NO. 77 TO NO. 78</p> <p>NO. 78 TO NO. 79</p> <p>NO. 79 TO NO. 80</p> <p>NO. 80 TO NO. 81</p> <p>NO. 81 TO NO. 82</p> <p>NO. 82 TO NO. 83</p> <p>NO. 83 TO NO. 84</p> <p>NO. 84 TO NO. 85</p> <p>NO. 85 TO NO. 86</p> <p>NO. 86 TO NO. 87</p> <p>NO. 87 TO NO. 88</p> <p>NO. 88 TO NO. 89</p> <p>NO. 89 TO NO. 90</p> <p>NO. 90 TO NO. 91</p> <p>NO. 91 TO NO. 92</p> <p>NO. 92 TO NO. 93</p> <p>NO. 93 TO NO. 94</p> <p>NO. 94 TO NO. 95</p> <p>NO. 95 TO NO. 96</p> <p>NO. 96 TO NO. 97</p> <p>NO. 97 TO NO. 98</p> <p>NO. 98 TO NO. 99</p> <p>NO. 99 TO NO. 100</p>			



Initiator	Core Melt	Any Rel.	Sig. Rel.	Econ Risk	Risk 5	Risk 6
T8	1.21E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total Freq:	1.21E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Sequence Name	Plant Damage Class	Freq. Measure	Percent (%)	Accident Sequence Events
TEH1	TEH	5.91E-07	4.9 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS FMODMDADELCA <MODULE> MD PUMP TRAIN A FAILS TO DELIVER FMODSDPDELD <MODULE> SD PUMP FAILS TO DEL APW TO HEADERS
TEH1	TEH	5.91E-07	4.9 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS FMODMDADELCA <MODULE> MD PUMP 9B FAILS TO DELIVER FMODSDPDELD <MODULE> SD PUMP FAILS TO DEL APW TO HEADERS
TLGL1	TLGL	5.57E-07	4.6 T8	LOSS OF NORMAL POWER INITIATING EVENT ACREC13 RECOVERY OF AC POWER IN 13 HOURS (MEAN COPING TIME) AMODCCFLNPKAB <module> COMMON CAUSE FAILURE OF AC POWER GIVEN AN LNP
TLGL1	TLGL	4.22E-07	3.5 T8	LOSS OF NORMAL POWER INITIATING EVENT ACREC13 RECOVERY OF AC POWER IN 13 HOURS (MEAN COPING TIME) AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS
TEH1	TEH	4.20E-07	3.5 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS FMODMDADELCA <MODULE> MD PUMP TRAIN A FAILS TO DELIVER FQ1PKCP4 COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEH1	TEH	4.20E-07	3.5 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS FMODMDADELCA <MODULE> MD PUMP 9B FAILS TO DELIVER FQ1PKCP4 COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEH1	TEH	3.61E-07	3.1 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS FMODMDADELCA <MODULE> MD PUMP TRAIN A FAILS TO DELIVER FQ1QXOP4 SD APW PUMP P4 IS O.O.S. FOR MAINT.
TEH1	TEH	3.61E-07	3.1 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS FMODMDADELCA <MODULE> MD PUMP 9B FAILS TO DELIVER FQ1QXOP4 SD APW PUMP P4 IS O.O.S. FOR MAINT.
TEH1	TEH	3.34E-07	2.8 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS FMODSDPDELD <MODULE> SD PUMP FAILS TO DEL APW TO HEADERS FP9QX09B AFW MD PUMP 9B IS O.O.S. DUE TO MAINT.
TEH1	TEH	3.34E-07	2.8 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS FMODSDPDELD <MODULE> SD PUMP FAILS TO DEL APW TO HEADERS FP9QX09A AFW MD PUMP 9A IS O.O.S. DUE TO MAINT.
TEH1	TEH	2.73E-07	2.3 T8	LOSS OF NORMAL POWER INITIATING EVENT FMODCCFHDRG <MODULE> CCFs OF THE COMMON INJECTION HEADER VALVES QABAF1NP COGNITIVE ERROR TO INITIATE BLEED AND FEED/LNP INITIATOR
TEGH1	TEGE	2.62E-07	2.2 T8	LOSS OF NORMAL POWER INITIATING EVENT ACREC54 RECOVERY OF AC POWER IN 54 MINUTES AMODCCFLNPKAB <module> COMMON CAUSE FAILURE OF AC POWER GIVEN AN LNP FMODSDPDELD <MODULE> SD PUMP FAILS TO DEL APW TO HEADERS
TEH1	TEH	2.37E-07	2.0 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGAFLTJ1 <module> D/G 15G-12U FAULTS FP9QX09B AFW MD PUMP 9B IS O.O.S. DUE TO MAINT. FQ1PKCP4 COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEH1	TEH	2.37E-07	2.0 T8	LOSS OF NORMAL POWER INITIATING EVENT AMODDGBFLTJ1 <module> D/G 15G-13U FAULTS FP9QX09A AFW MD PUMP 9A IS O.O.S. DUE TO MAINT. FQ1PKCP4 COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.

TEGH1	TEGH	1.99E-07	1.6 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC54	RECOVERY OF AC POWER IN 54 MINUTES
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FMODSDPDELD	<MODULE> SD PUMP FAILS TO DEL AFW TO HEADERS
TEGH1	TEGH	1.86E-07	1.5 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC54	RECOVERY OF AC POWER IN 54 MINUTES
			AMODCCFLWPKAB	<module> COMMON CAUSE FAILURE OF AC POWER GIVEN AN LNP
			FQIPKCP4	COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEH1	TEH	1.75E-07	1.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FMODMDADELCA	<MODULE> MD PUMP TRAIN A FAILS TO DELIVER
			FQIPKOP4	OP FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS.
TEH1	TEH	1.75E-07	1.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			FMODMDDBRLCB	<MODULE>MD PUMP 9B FAILS TO DELIVER
			FQIPKOP4	OP FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS.
TEGH1	TEGH	1.69E-07	1.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC54	RECOVERY OF AC POWER IN 54 MINUTES
			AMODCCFLWPKAB	<module> COMMON CAUSE FAILURE OF AC POWER GIVEN AN LNP
			FQIQXOP4	SD AFW PUMP P4 IS O.O.S. FOR MAINT.
TEH1	TEH	1.43E-07	1.2 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			FMODCCFHDRG	<MODULE> CCFs OF THE COMMON INJECTION HEADER VALVES
TEH1	TEH	1.43E-07	1.2 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FMODCCFHDRG	<MODULE> CCFs OF THE COMMON INJECTION HEADER VALVES
TEGH1	TEGH	1.41E-07	1.2 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC54	RECOVERY OF AC POWER IN 54 MINUTES
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FQIPKCP4	COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEGH1	TEGH	1.28E-07	1.1 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC54	RECOVERY OF AC POWER IN 54 MINUTES
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FQIQXOP4	SD AFW PUMP P4 IS O.O.S. FOR MAINT.
TEH1	TEH	1.20E-07	1.0 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ADGQX13U	DIESEL GENERATOR 15G-13U OUT OF SERVICE DUE TO MAINTENANCE
			FMODMDADELCA	<MODULE> MD PUMP TRAIN A FAILS TO DELIVER
			FMODSDPDELD	<MODULE> SD PUMP FAILS TO DEL AFW TO HEADERS
TEH1	TEH	1.20E-07	1.0 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ADGQX12U	DIESEL GENERATOR 15G-12U OUT OF SERVICE DUE TO MAINTENANCE
			FMODMDDBRLCB	<MODULE>MD PUMP 9B FAILS TO DELIVER
			FMODSDPDELD	<MODULE> SD PUMP FAILS TO DEL AFW TO HEADERS
TEH1	TEH	9.92E-08	.8 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGAFLTJI	<module> D/G 15G-12U FAULTS
			FP9QX09B	AFW MD PUMP 9B IS O.O.S. DUE TO MAINT.
			FQIPKOP4	OP FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS.
TEH1	TEH	9.92E-08	.8 T8	LOSS OF NORMAL POWER INITIATING EVENT
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
			FP9QX09A	AFW MD PUMP 9A IS O.O.S. DUE TO MAINT.
			FQIPKOP4	OP FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS.
TLGL1	TLGL	8.54E-08	.7 T8	LOSS OF NORMAL POWER INITIATING EVENT
			ACREC13	RECOVERY OF AC POWER IN 13 HOURS (MEAN COPING TIME)
			ADGQX12U	DIESEL GENERATOR 15G-12U OUT OF SERVICE DUE TO MAINTENANCE
			AMODDGBFLTKI	<module> D/G 15G-13U FAULTS
TLGL1	TLGL	8.54E-08	.7 T8	LOSS OF NORMAL POWER INITIATING EVENT

TEH1	TEH	8.49E-08	ACRBC13 ADGQX130 AMODGAF1JJI 7 T8	RECOVERY OF AC POWER IN 13 HOURS (MEAN COPIING TIME) DIESEL GENERATOR 15G-130 OUT OF SERVICE DUE TO MAINTENANCE <module> D/G 15G-120 FAULTS LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	8.49E-08	ADGQX130 FMODADELCA FQ1PXP4 7 T8	DIESEL GENERATOR 15G-130 OUT OF SERVICE DUE TO MAINTENANCE <module> MD PUMP TRAIN A FAILS TO DELIVER COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP. LOSS OF NORMAL POWER INITIATING EVENT
TGHI	TEH	7.78E-08	ADGQX120 FMODADELCA FQ1PXP4 6 T8	DIESEL GENERATOR 15G-120 OUT OF SERVICE DUE TO MAINTENANCE <module> MD PUMP 9B FAILS TO DELIVER COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP. LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	7.71E-08	ACRBC54 AMODCFLNPJAB FQ1PXP4 6 T8	RECOVERY OF AC POWER IN 54 MINUTES <module> COMMON CAUSE FAILURE OF AC POWER GIVEN AN LMP OF FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS. LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	6.76E-08	ADGQX120 FMODADELCA FQ1PXP4 6 T8	DIESEL GENERATOR 15G-120 OUT OF SERVICE DUE TO MAINTENANCE <module> MD PUMP 9B FAILS TO DELIVER SD AFW PUMP P4 IS O.O.S. FOR MAINT. LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	6.12E-08	ADGQX120 FMODADELCA FQ1PXP4 5 T8	DIESEL GENERATOR 15G-120 OUT OF SERVICE DUE TO MAINTENANCE <module> SD PUMP FAILS TO DEL AFW TO HEADERS AFW MD PUMP 9B IS O.O.S. DUE TO MAINT. LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	5.90E-08	ACRBC54 AMODGAF1JJI FQ1PXP4 5 T8	RECOVERY OF AC POWER IN 54 MINUTES <module> B/C 15G-120 FAULTS <module> D/G 15G-130 FAULTS OP FAILS TO PLACE THE SD PUMP TRAIN IN SERVICE-PROC. ERRORS.
TEH1	TEH	5.39E-08	AB2GX0T2 FMODADELCA FMODSDPELD 4 T8	TIE BREAKER 24D-IT-2 FAILS TO OPEN <module> MD PUMP TRAIN A FAILS TO DELIVER <module> SD PUMP FAILS TO DEL AFW TO HEADERS LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	5.39E-08	AB2CX0T2 FMODADELCA FMODSDPELD 4 T8	TIE BREAKER 24C-IT-2 FAILS TO OPEN <module> MD PUMP 9B FAILS TO DELIVER <module> SD PUMP FAILS TO DEL AFW TO HEADERS LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	5.23E-08	AMOD24LNPJAB FMODADELCA FMODSDPELD 4 T8	FAILURE OF BUS 24B LMP LOGIC <module> MD PUMP TRAIN A FAILS TO DELIVER <module> SD PUMP FAILS TO DEL AFW TO HEADERS LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	5.15E-08	FMODCFLNPJAB MAVC190B 4 T8	RANDOM MECHANICAL FAILURE OF ADV MS-190B RANDOM MECHANICAL FAILURE OF ADV MS-190A LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	5.15E-08	FMODCFLNPJAB MAVC190B 4 T8	RANDOM MECHANICAL FAILURE OF ADV MS-190B RANDOM MECHANICAL FAILURE OF ADV MS-190A LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	4.80E-08	ADGQX120 FMODADELCA FQ1PXP4 4 T8	DIESEL GENERATOR 15G-120 OUT OF SERVICE DUE TO MAINTENANCE AFW MD PUMP 9B IS O.O.S. DUE TO MAINT. COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP. LOSS OF NORMAL POWER INITIATING EVENT
TEH1	TEH	4.68E-08	FMODADELCA FMODSDPELD WMOOPSFTSAIM 4 T8	<module> MD PUMP 9B FAILS TO DELIVER <module> SD PUMP FAILS TO DEL AFW TO HEADERS <module> SD PUMP 5A FAILS TO START OR ESPAS EQUIPMENT FAILS

TEH1	TEH	4.68E-08	.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
				FMODMDADELCA <module> MD PUMP TRAIN A FAILS TO DELIVER
				FMODSDPDDEL <module> SD PUMP FAILS TO DEL APW TO HEADERS
				WMODP5CFTSHW <module> SW PUMP 5C FAILS TO START OR ESPAS EQUIPMENT FAILS
TLGL1	TLGL	4.38E-08	.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
				ACREC13 RECOVERY OF AC POWER IN 13 HOURS (MEAN COPING TIME)
				AMOD24CLNPI <module> FAILURE OF BUS 24C LNP LOGIC
				AMODDGBFLTKI <module> D/G 15G-13U FAULTS
TEH1	TEH	4.35E-08	.4 T8	LOSS OF NORMAL POWER INITIATING EVENT
				AMOD24CLNPI <module> FAILURE OF BUS 24C LNP LOGIC
				FMODMDDBELCB <module> MD PUMP 9B FAILS TO DELIVER
				FQIPXCP4 COGNITIVE ERROR FOR OPS. FAILING TO INIT. SD PUMP.
TEGH1	TEGH	4.03E-08	.3 T8	LOSS OF NORMAL POWER INITIATING EVENT
				ACREC54 RECOVERY OF AC POWER IN 54 MINUTES
				ADGQK12U DIESEL GENERATOR 15G-12U OUT OF SERVICE DUE TO MAINTENANCE
				AMODDGBFLTKI <module> D/G 15G-13U FAULTS
				FMODSDPDDEL <module> SD PUMP FAILS TO DEL APW TO HEADERS
TEGH1	TEGH	4.03E-08	.3 T8	LOSS OF NORMAL POWER INITIATING EVENT
				ACREC54 RECOVERY OF AC POWER IN 54 MINUTES
				ADGQK13U DIESEL GENERATOR 15G-13U OUT OF SERVICE DUE TO MAINTENANCE
				AMODDGBFLTKI <module> D/G 15G-12U FAULTS
				FMODSDPDDEL <module> SD PUMP FAILS TO DEL APW TO HEADERS
TEH1	TEH	3.95E-08	.3 T8	LOSS OF NORMAL POWER INITIATING EVENT
				AMOD24CLNPI <module> FAILURE OF BUS 24C LNP LOGIC
				FMODMDDBELCB <module> MD PUMP 9B FAILS TO DELIVER
				FQIQX0P4 SD APW PUMP P4 IS O.O.S. FOR MAINT.
TLGL1	TLGL	3.85E-08	.3 T8	LOSS OF NORMAL POWER INITIATING EVENT
				AB2GKCT2 TIE BREAKER 24C-IT-2 FAILS TO OPEN
				ACREC13 RECOVERY OF AC POWER IN 13 HOURS (MEAN COPING TIME)
				AMODDGBFLTKI <module> D/G 15G-13U FAULTS

TOTAL: 8.67E-06 71.68% of CN Total Frequency 1.21E-05