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NINE MILE POINT NUCLEAR STATION UNIT 2

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OPERATING PROCEDURE

PROCEDURE NO. N2-OP-71

13.8KV/4160V/600V A.C. POWER DISTRIBUTION

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APPROVALS	SIGNATURES	REVISION 2	REVISION 3	REVISION 4
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Station Superinter NMPNS Unit 2	~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	10/3/67	12/11/67	
R. B. Abbott	RB abbark	<u>kBa</u>	<u>LBA</u>	<u> </u>
General Superinter Nuclear Generation T. J. Perkins	ident All All All All	10/3/47 <u>RBGETJP</u>	12/11/FT 1910	<u> </u>
	U Summary of	Pages (Cont'	f d on Cover S	heet 2)
м 11 И т. н	Revision 3 (Effective Pages iv-vii,1 3-17,22-25,38,39,41,43 53,71,73,79,80,85,90,99	Dat "Aug ,44,46,51,	<u>)</u> ust 1986	,
	122,128,129,132,136,140 55 2,36,37,62,64,157,158,1 177,179-181,183-200,200 40 42,49,54,61 48,50,52 *45	Jun 64,169,175, 2;203``Dec Dec Dec Mar	1987 (TCN-3 e 1987 (TCN- cmber 1987 (ember 1987 (ember 1987 (ch 1988 (TCN ober 1988 (R	TCN-11) TCN-12) -13)
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*Changes.per Section	n 11.5, AP-2.)	USED	PROCEDURE NO. AFTER' Decem CT TO PERIOD	ber 1991 IC REVIEW /21/8-P
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OPERATING PROCEDURE

PROCEDURE NO. N2-OP-71

13.8KV/4160V/600V_A.C. POWER_DISTRIBUTION

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69,176,178,182,201	May 1989 (TCN-16 and TCN-17
56-58	Handwritten Pages)
20-28	September 1989 (TCN-18 Handwritten Pages)
59,60	October 1989 (TCN-19 Handwritten Pages)
i,ii,18,101	December 1989 (Publication Changes Handwritten Pages)
27,29,31,34,35	March 1990 (TCN-20 Handwritten Pages)
47	June 1990 (Publication Change
	Handwritten Page)
19–21	September 1990 (TCN-21 Handwritten Pages)
65,66a,67,68,70,72,74-78 81-84,86-89,91-93,95-98, 100,102-108,110-115, 117-121,123-127,130,131, 133-135,137-139,141,142,	,
144-156,159-163,166,172	December 1990 (TCN-24 and TCN-25 Handwritten Pages)
167,170,171,173,174	February 1991 (Publication Change *1 Handwritten Pages)
165,168	February 1991 (TCN-26 Handwritten Pages)
66	March 1991 (Publication Change *2 Handwritten Page)
26,28,30,32,33 111,66b 63 94	March 1991 (TCN-27 Handwritten Pages) May 1991 (TCN-28 Handwritten Pages) June 1991 (PCE 15796 Handwritten Page) July 1991 (PCE 15934 Handwritten Page)

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3.1 Logic Diagrams (cont.)

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	Auto Transfer
LSK 24-8.2K	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2L	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2M	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2N	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2P	Normal Station Service (13.8) Breaker Control &
£	Auto Transfer
LSK 24-8.2Q	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2R	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2S	Normal Station Service (13.8) Breaker Control &
	Auto Transfer
LSK 24-8.2T	Normal Station Service (13.8) Breaker, Control &
	Auto Transfer
LSK 24-8.2U	13.8KV Breaker Control & Auto Transfer
LSK 24-8.2V	13.8KV Breaker Control & Auto Transfer
LSK 24-8-6A	4.16KV Normal Station Service Breaker Control
LSK 24-8-6B	4.16KV Normal Station Service Breaker Control
LSK 24-8-6C	4.16KV Normal Station Service Breaker Control
LSK 24-8-60	4.16KV Normal Station Service Breaker Control
LSK 24-8-6E	4.16KV Normal Station Service Breaker Control
LSK 24-8-6F	4.16KV Normal Station Service Breaker Control
LSK 24-8-6G	4.16KV Normal Station Service Breaker Control
LSK 24-8-6H	4.16KV Normal Station Service Breaker Control
LSK 24-10.2A	Normal Station Service Substation Supply Breaker
LSN 24-10.2A	Control
LSK 24-10.2B	
LSN 24-10.20	Normal Station Service Substation Supply Breaker
	Control Normal Station Convice Substation Supply Procker
LSK 24-10.3A.	Normal Station Service Substation Supply Breaker
104 24 10 20	Control
LSK 24-10.3B	Normal Station Service Substation Supply Breaker
	Control
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ESK 5NJS02	FDR to XFMR 2NJS-X1A&X1B ACB 1-14
ESK 5NJS03	FDR to XFMR 2NJS-X3C&X3D ACB 3-3
ESK 5NJS04	FDR to XFMR 2NJS-X3A&X3B ACB 3-13
ESK 5NJS05	FDR to XFMR 2NJS-X1F ACB 14-4
ESK 5NJS06	FDR to XFMR 2NJS-X1E ACB 14-8
ESK 5NJS07	FDR to XFMR 2NJS-X3F ACB 15-1
ESK 5NJSO8	FDR to XFMR 2NJS-X3E ACB 15-7

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ESK 5NNS01	Feeder to Aux XFMR 2ATX-XS1 ACB 1-4
ESK 5NNS02	
ESK 5NNS03	Bus 2NNS-SWG011 Sta Svce Sply ACB11-3
ESK 5NNS06	Bus 2NNS-SWG012 Bus Prot
ESK 5NNS08	Bus 2NNS-SWG011 & 012 UV Prot
ESK 5NNS09	Bus 2NNS-SWG013 Sta Svc Sply ACB 13-6
ESK 5NNS10	Bus 2NNS-SWG011&013 Prim Bus Prot
ESK 5NNS11	Bus 2NNS-SWG012 Supply ACB 13-10.
ESK 5NNS12	Buc 2NNS SUCO12 IN Drot
ESK 5NNS13	Bus 2NNS-SWG013 UV Prot Bus 2NNS-SWG012 Backup_Bus_Prot
ESK 5NNS14	
ESK SNNS14 ESK SNNS16	Bus 2NNS-SWG012 Supply ACB 11-1
	Bus 2NNS-SWG018 Supply ACB 18-2
ESK 5NNS17	Bus 2NNS-SWG016 Supply ACB 16-2
	Bus 2NNS-SWG017 Supply ACB 17-2
	Bus 2NNS-SWG014 Supply ACB 14-2
	2NNS-SWG014 Sp1y ACB 14-1
	2NNS-SWG014 Bus Prot
	2NNS-SWG015 Sply ACB 15-3
	2NNS-SWG015 Sply ACB 15-8
ESK 5NNS24	Bus 2NNS-SWG015 Prot
ESK 5NNS25	Bus 2NNS-SWG014&015 UV Prot
ESK 5NPS01	Bus 2NPS-SWG001 Norm Sply ACB 1-3
ESK 5NPS02	2NPS-SWGOO1 Bus Prot
ESK 5NPS03	Bus 2NPS-SWG001 Res Sply ACB 1-16
ESK 5NPS04	Bus 2NPS-SWG003 Norm Sply ACB 3-14
ESK 5NPS05	2NPS-SWG003 Bus Prot
ESK 5NPS06	Bus 2NPS-SWG003 Res Sply ACB 3-1
ESK 5NPS07	Bus 2NPS-SWG002 Sply ACB 2-5
ESK 5NPS08	Bus 2NPS-SWG002 Prot
ESK 5NPS09	Bus 2NPS-SWGOO2 Res Sply ACB 2-1
ESK 5NPS10	Bus 2NPS-SWG001&003 UV Prot
ESK 5NPS11	2NPS-SWG001 Res Sply ACB 1-1
ESK 5NPS12	Bus 2NPS-SWG003 Res Sply ACB 3-16
ESK 5NPS13	Auto Transfer Ckt Bus 2NPS-SWG001
ESK 5NPS14	Auto Transfer Ckt Bus 2NPS-SWG003
ESK 6NJS07	Unit Sub 2NJS-US5 Supply Breaker
ESK 6NJSO8	Unit Sub 2NJS-US5 Supply Breaker
ESK 6NJSO9	Unit Sub 2NJS-US5 Supply Breaker
ESK 6NJS10	Unit Sub 2NJS-US5 Supply Breaker
ESK 6NJS11	Bus 2NJS-US1 Under Vitge Protec
ESK 6NJS12	Bus 2NJS-US2 Under Vitge Protec
ESK 6NJS13	Bus 2NJS-US3 Under Vitge Protec
ESK 6NJS14	Bus 2NJS-US4 Under Vltge Protec
ESK 6NJS15	Bus 2NJS-US5,6,7 UV Protection
ESK 6NJS16	Breaker Control Interlocks
ESK 6NJS17	Unit Sub 2NJS-US1 Supply Breaker
ESK 6NJS18	Unit Sub 2NJS-US1 Supply Breaker
ESK 6NJS19	Unit Sub 2NJS-US3 Supply Breaker
ESK 6NJS20	Unit Sub 2NJS-US3 Supply Breaker
ESK 6NJS21	Unit Sub 2NJS-US7 Supply Breaker
ESK 6NJS22	Unit Sub 2NJS-US7 Supply Breaker Unit Sub 2NJS-US7 Supply Breaker
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Electrical Schematics (cont.)

ESK 8NPS05	13.8KV Bus 2NPS-SWG002 Rly & Htr
ESK 8SPX01	XFMR 2ATX-XS1 R1y
ESK 8SPX02	XFMR 2ATX-XS3 Rly
ESK 8SPX04	2ATX-XSI Pri Prot
ESK 8SPX08	XMFR 2ATX-XS3 Pri Prot
ESK 8SYSO1	Synchronizing Station Service

3.3

Electrical One-Line Drawings

EE-001B	One Line Dgm Res & Norm SS XFMR
EE-001C	Main One Line Dgm Aux XFMR Norm 4KV
EE-001D	Main One Line Dgm Emer 4KV & 600V SY
EE-001F	13.8KV One Line Dgm Bus 2NPS-SWG001
EE-001G	13.8KV One Line Dgm Bus 2NPS-SWGOO2
EE-001H	13.8KV One Line Dgm Bus 2NPS-SWG003
EE-001J	13.8KV One Line Dgm Bus 2EPS*SWG001
EE-001K	4160V One Ling Dgm Bus 2NNS-SWG001
EE-001L	4160V One Line Dgm Bus 2NNS-SWG013
EE-001M	4160V One Line Dgm Bus 2NNS-SWG014
EE-001N	4160V One Line Dgm Bus 2NNS-SWG015
EE-001P	4160V One Line Dgm Bus 2NNS*SWG 016
EE-001Q	4160V One Line Dgm Emer Bus 2ENS*SWG
EE-001R	4160V One Line Dgm Emer Bus 2ENS*SWG
EE-001S	1 LN Dia 600V LD Ctr Bus 2NJS-US7 T.B.
EE-001T	1 LN Dia 600V LD Ctr Bus 2NJS-US1 Turb.
EE-001U	600V One LN Diag 2NJS-US2 Reac Bldg
EE-001V	1 LN Dia 600V LD Ctr Bus 2NJS-US3 Turb.
EE-001W	1 LN Dia 600V LD Ctr Bus 2NJS-US4 Norm.
EE-001X	1 LN Dia 600V LD Ctr Bus 2NJS-US5 & US6
EE-001Y	1 LN Dia 600V LD Ctr Bus 2NJS-US6 Norm
EE-001Z	1 LN Dia 600V LD Ctr Bus 2EJS*US1 & US
EE-001AA	600V One Line Diag MCC 2NHS-MCC 001A
EE-001AB	600V One Line Diag MCC 2NHS-MCC 002A
EE-001AD	600V One Line Diag MCC 2NHS-MCC 003A
EE-001AE	600V One Line Diag MCC 2NHS-MCC 004&15
EE-001AF	600V One Line Diag MCC 2NHS-MCC013
EE-001AG	600V One Line Diag MCC 2NHS-MCC 005A
EE-001AH	600V One Line Diag MCC 2NHS-MCC 006A
EE-001AK	600V One Line Diag MCC 2NHS-MCC 007A
EE-001AL	600V One Line Diag MCC_2NHS_MCC 008
EE-001AM	600V 1-LN D1 2NHS-MCCO10 Trb Rm E
EE-001AN	600V 1-LN D1 2NHS-MCCO10 Trb Rm E
EE-001AP	600V One Line Dgm Reac Bldg North&Sth
EE-001AZ	600V One Line, Diag MCC 2NHS-MCCO14
EE-001BB	600V One Line Dgm Normal Bus Dist PN
EE-0018G	600V One Ln Dg Dist Pnl 2NJS-PNL500
EE-001BH	One Line Dgm Low Vltg Pwr Dist PlB
EE-001BR	125V DC One L Dia Norm B DPNL 28YS-P
EE-001CA	600V One Line Dgm Emer & Vital Bus Pwr
EE-001CB	600V One Ln Dg Dist Pnl 21AC*PNL100A,
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EE-001CC 600V One Ln Dg Dist Pnl 2EJS*PNL100A

EE-001CX 600V One Line Diag 2NJS-US8 Turb Bldg 600V One Line Diag 2NJS-US9 Rad Bldg EE-001CY 600V One Line Diag 2NJS-US10 Turb EE-001CZ 600V One Line Diag 2NHS-MCC017 Scrn EE-001FB 600V One Line Diag 2NHS-MCC016 RD/B EE-001FC EE-M0001A Plnt Mstr One Line Diag NCRM Dist Plnt Mstr ONe Line Diag Emer Power EE-M0001B EE-M0001C Plnt Mstr One Line Diag Norm Plnt Mstr One Line Diag Norm EE-M0001D EE-M0001E Plnt Mstr One Line Diag Emerg Plnt Mstr One Line Diag Emerg EE-M0001F EE-M0001G Plnt Mstr One Line Diag Norm

4.0 Manufacturer's Instruction Manual

UPS (Exide) - "System Handbook for Uninterruptable Power System," #101-710-343-77223, Oct. 28, '81 (S&W# INST. 3 1.560-5004), Access No. 430000742.

Breakers (ITE) - "ITE Low Voltage Power Circuit Breakers" - #1B-9.1.7-6, Issue F

Transfer Switch - (ASCO) - "Automatic Transfer Switch" - Manual #ID4800 - R2

UPS (ELGAR) - Instruction Manual for UPS #103-1-176, 6/82 -Instruction Manual for Power Line Conditioner, PLC #253-1-2, 8/82 (S&W # INST. 1.560-5003), Access No. 430002477.

Electrical Protection Assembly - "Instruction Manual for Electrical Protection Assembly #914E175, Issued 17 Dec. 80.

P.O. Specifications:

NMP2 -

E011C - Normal Station Service Transformer
E011G - Auxiliary Stepdown Transformer
E015E - 13.8KV Metal Clad Switchgear
E015F - 4.16KV Metal Clad Switchgear
E015N - 600V Load Centers
E015Q - 600V Motor Control Centers
E022D - 13.8KV & 4.16KV Non-segregated Phase Bus Duct
E035A - Uninterruptable Power Supplies
E0902 - Transfer Switch 2VBB-TRS1
E014T - 600V Distribution Panels
MPL-C72 (G.E. Spec.) - Electrical Protection Assembly

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Reg. Guides

1.32, 1.68, 1.6, 1.75, 1.93

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N2-0P-71

13.8 KV/4160V/600V A.C. POWER DISTRIBUTION

A. TECHNICAL SPECIFICATIONS

- 1.0 Section 3/4.8 Electrical Power Systems
- 1.1.0 Section 3.8.1 A.C. Sources
- 1.1.1 Section 3.8.1.1 A.C. Sources Operating
- 1.1.2 Section 3.8.1.2 A.C. Sources Shutdown
- 1.2.0 Section 3.8.3 On-site Power Distribution Systems
- 1.2.1 Section 3.8.3.1 Distribution Operating
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- 1.3.0 Section 3.8.4 Electrical Equipment Protective Devices
- 1.3.1 Section 3.8.4.1 A.C. Circuits Inside Primary Containment
- 1.3.2 Section 3.8.4.2 Primary Containment Penetration Conductor Overcurrent Protective Devices

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1.3.3 Section 3.8.4.4 Reactor Protection System Electric Power Monitoring

B. SYSTEM DESCRIPTION

The 24.9KV main generator leads are tapped to provide power to the normal station service transformer 2STX-XNS1, which has two 13.8KV windings.

During normal operation, 13.8KV bus 2NPS-SWG001 is fed from the "X" winding of normal station service transformer 2STX-XNS1; and 13.8KV bus 2NPS-SWG003 is fed from the "Y" winding of normal station service transformer 2STX-XNS1. 13.8KV bus 2NPS-SWG002 is fed from auxiliary boiler service transformer 2ABS-X1. During startup, shutdown and standby, reserve transformer 2RTX-XSR1A feeds 13.8KV bus 2NPS-SWG003. Reserve transformers 2RTX-XSR1B feeds 13.8KV bus 2NPS-SWG003. Reserve transformers 2RTX-XSR1A and 1B and auxiliary boiler service transformer 2ABS-X1 are fed at 115KV from two off-site sources.

Transformer 2ATX-XS1, fed from 13.8KV bus 2NPS-SWG001, supplies 4160V power to normal 4160V buses 2NNS-SWG011 and 2NNS-SWG014. Bus 2NNS-SWG011 has a tie breaker which feeds 4160V bus 2NNS-SWG012.

Transformer 2ATX-XS3, fed from 13.8KV bus 2NPS-SWG003, supplies 4160V power to normal 4160V buses 2NNS-SWG013 and 2NNS-SWG015. Bus 2NNS-SWG013 has a tie breaker which can feed 4160V bus 2NNS-SWG012.

There are two 600V load centers supplied by the 4160V buses 2NNS-SWG014 and 2NNS-SWG015. The two 600V load centers, 2NJS-US5 and 2NJS-US6, are fed from two supply breakers, one normally closed and <u>one</u> normally open. There is no tie breaker supplied between the separate feeds.

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B. SYSTEM DESCRIPTION (Cont.)

eight 600V load centers, supplied by the 13.8KV buses There are 2NPS-SWG001 and 2NPS-SWG003. Seven 600V load centers. 2NJS-US1,2,3,4,8,9,10, are divided into "A", "B" and "C" sections, The "A" section is fed from 13.8KV bus 2NPS-SWG001 and a tie breaker supplies the "C" sections. The "B" sections are fed from 13.8KV bus 2NPS-SWG003 and a tie breaker can supply to "C" sections. One 600V load center, 2NJS-US7, is divided into "A" and "B" sections. The "A" section is supplied from 13.8KV bus 2NPS-SWG001; and the "B" section is supplied from 13.8KV bus 2NPS-SWG003. There is a normally-open tie breaker between the two sections. w.a = 1 *

4160V Emergency bus 2ENS*SWGIO1 is designated Division I. 4160V Emergency bus 2ENS*SWGIO3 is designated Division II. 4160V Emergency bus 2ENS*SWGIO2 is designated Division III. Division I and II supply all safety-related loads required for safe plant shutdown, except high pressure core spray system which is supplied by Division III.

All three divisions are normally energized from off-site power by Reserve A and Reserve B transformers, with auxiliary boiler transformer 2ABS-X1 as a back up for division I and II. In the event of a loss of off-site power, each division has a standby diesel generator which would start automatically in order to provide power to that division.

Division I (II) consists of one 4160V bus 2ENS*SWG101 (2ENS*SWG103), one 600V load center 2EJS*US1 (2EJS*US3), three 600V motor control centers 2EHS*MCC101,102,103, (2EHS*MCC301,302,303) and various 600 volt distribution panels.

Division III consists of one 4160V bus 2ENS*SWG102 and one motor control center 2EHS*MCC201.

There are five 75KVA Uninterruptable Power Supplies (UPS) and two 10 KVA UPS. Each UPS System has a normal A.C. source (600V), a D.C. source (125V) and a maintenance source supplying the same voltage as its associated UPS output. The UPS is normally fed from its normal source. Upon loss of normal A.C. source the UPS automatically is fed from the D.C. source. Upon loss of both the A.C. normal and D.C. sources or an inverter section failure the UPS load will automatically transfer to the maintenance source. The maintenance source is also used when maintenance [3] is being performed on the UPS.

The 75 KVA UPS supplies 120/208. 3-phase power as follows: UPS1A/1B feed selected nonsafety-related instrumentation and control loads UPS1A feeds Radwaste computer, UPS1B feeds leaky-wire radio system. UPS1C/1D feeds essential lighting loads and Gaitronics, UPS1G 3 feeds PMS computer loads.

The normal feed for UPS1A, 1B & 1G is fed through transfer switch 2VBB-TRS1. Upon loss of normal feed (from 2NJS-US3) to - TRS1. The transfer switch will automatically transfer to 2NJS-US4. The load will automatically transfer back upon re-energization of 2NJS-US3. (After a 10-30 sec. time delay).

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B. SYSTEM DESCRIPTION (Cont.)

The 10 KVA UPS (UPS 3A/3B) supply their loads through electrical protection assemblies (EPA's). These are molded case circuit breakers that will trip upon an over voltage, under -voltage or under-frequency condition. After a trip to return to normal these must be manually reset.

C. OPERATING REQUIREMENTS

1.0 Systems

The following systems must be in operation in accordance with their respective operating procedures to support the 13.8KV, 4160V, 600V A.C. Power distribution System:

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1.1	Normal 125V D.C. Power Distribution	N2-0P-73
1.2	Station Electrical Feed 115KV Switchyard	N2-0P-70
1.3	Emergency D.C. Distribution	N2-0P-74
1.4	Normal 125V D.C. Power Distribution	N2-0P-73
1.5 .	Control Bldg Air Cond. & Vent Sys. (UPSIG)	N2-0P-53
1.6	Normal Switchgear Bldg. Vent Sys. (For all except UPSIG)	N2-0P-54

D.. PRECAUTIONS/LIMITATIONS

- 1.0 For 13.8KV, 4160V, 600V switchgear: Before racking in a breaker, the control switch for the breaker should be in the "Pull-to-Lock" position; and the control circuit fuses must be removed, and the breaker should be in the open position.
- 2.0 For all 600V motor control centers: Before closing a breaker, the control switch for the start associated with this breaker must be in the "Pull-to-Lock" position where applicable.
- 3.0 For normal operation of reserve transformer "A", neutral switch 2RTX-SW001 must be in the "Open" position.
- 4.0 For operation with neutral switch 2RTX-SW001 in the "Closed" position, refer to Section H, Step 11.
- 5.0 At no time will both emergency bus 2ENS*SWG101 and 2ENS*SWG103be paralleled to bus 2NNS-SWG018.

6.0 Prior to energizing any 600V load center or motor control center bus, the associated loads should be individually investigated to assure that they are in a condition to prevent damage to equipment or personnel.

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7.0 Prior to energization of any UPS, the associated loads should be individually investigated to assure that they are in a condition , to prevent damage to equipment or personnel.

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- 8.0 Before installing breakers in switchgear, verify that spring charging motor circuits have fuses installed and, where applicable, switches are on. After closing breakers, verify that springs are charged.
- 9.0 All applicable evolutions described in this procedure shall be monitored and controlled in accordance with Radiation Protection procedures.
- 10.0 Load tap changers for 2STX-XNS1, 2RTX-XSR1A and 2RTX-XSR1B will TCN-2 normally be operated in the "Manual" mode.

E. STARTUP PROCEDURE

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This section includes procedures for placing de-engerized 13.8KV, 4160V, 600V station service buses in service from the reserve supply. It also includes procedures for placing the UPS in service.

<u>NOTE</u>: For the purpose of this procedure the following equipment may be identified as follows:

<u>Equipment ID</u>	<u>Location</u>
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<u>Alternate 1D</u>

2NPS-SWG001	Normal Switchgear Bldg. Elev. 261' 13.8KV Bus 001
2NPS-SWG002	Normal Switchgear Bldg. Elev. 261' 13.8KV Bus 002
2NPS-SWG003	Normal Switchgear Bldg. Elev. 261' 13.8KV Bus 003
2NNS-SWG011	Normal Switchgear Bldg. Elev. 261' 4.16KV Bus 011
2NNS-SWG012	Normal Switchgear Bldg. Elev. 261' 4.16KV Bus 012
2NNS-SWG013	Normal Switchgear Bldg. Elev. 261' 4.16KV Bus 013
2NNS-SWG014	Normal Switchgear Bldg. Elev. 261' 4.16KV Bus 014
2NNS-SWG015	Normal Switchgear Bldg. Elev. 261" 4.16KV Bus 015
2NNS-SWG016	Normal Switchgear Bldg. Elev. 261*
2NNS-SWG017	Normal Switchgear Bldg. Elev. 261* 281 "4:16KV Bus "017
2NNS-SWG018	Normal Switchgear Bldg. Blev. 261* 20. 4.16KV Bus 018
2NJS-US1	Turbine Bldg. Northeast Elev. 277' 1977 600V Bus US1
2NJS-US2	Reactor Bldg. East Elev. 289' 600V Bus US2
2NJS-US3	Turbine Bldg. Southwest Blev. 277
2NJS-US4	Normal Switchgear Bldg. Elev. 261' 🖑 600V Bus US4
2NJS-USS	Normal Switchgear Bldg. Elev. 261' 600V Bus US5
2NJS-US6	Normal Switchgear Bldg. Elev. 261' 600V Bus US6
2njs-us7	Turbine Bldg. Northeast Elev. 277' - 600V Bus US7
2NJS-US8	Turbine Bldg. North Elev. 306' 600V Bus US8
2NJS-US9	Radwaste Bldg. South Elev. 279' 600V Bus US9
2NJS-US10	Turbine Bldg. East Elev. 250' · 600V Bus US10
2EJS*PNL 100A	Control Bldg. Elev. 261' Panel 100A ·
2EJS*PNL 101A	Aux. Bldg. North Elev. 240' Panel 101A
2EJS*PNL 102A	Control Bldg. Elev. 261' Panel 102A
2EJS*PNL 103A	Aux. Bldg. North Elev. 240' Panel 103A
2EJS*PNL 104A	Aux. Bldg. North Elev. 240' Panel 104A
2EJS*PNL 300B	Control Bldg. Elev. 261' Panel 300B
2EJS*PNL 301B	Control Bldg. Elev. 261' Panel 301B
2EJS*PNL 302B	Aux. Bldg. Šouth Elev. 240' Panel 302B N2-OP-71 -4- May 1987

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Ε. STARTUP PROCEDURE (Cont'd)

<u>Equipment ID</u>	Location	<u>Alternate 1D</u>
2EJS*PNL 303B	Aux. Bldg. South Elev. 240' -	Panel 303B
2EJS*PNL 304B	Aux. Bldg. South Elev. 240'	Panel 304B
2EJS×US1	Control Bldg. Elev. 261'	600V Bus US1
2EJS*US3	Control Bldg. Elev. 261'	600V Bus US3
2CEC*PNL601	Control Bldg. Elev. 306'	Panel 601
2CEC*PNL602	Control Bldg. Elev. 306'	Panel 602
2CEC*PNL603	Control Bldg. Elev. 306'	Panel 603,
	Control Bldg. Elev. 288'	Panel 802
2CEC-PNL803	Control Bldg. Elev. 288'	Panel 803
2CEC-PNL804	Control Bldg. Elev. 288'	Panel 804
2CEC-PNL805	Control Bldg. Elev. 288'	Panel 805
2CEC-PNL806	Control Bldg. Elev. 288'	Panel 806
2CEC-PNL807	Control Bldg. Elev. 288'	Panel 807
2CEC-PNL808	Control Bldg. Elev. 288'	Panel 808
2CEC-PNL809	Control Bldg. Elev. 288'	Panel 809
2CEC-PNL810	Control Bldg. Elev. 288'	Panel 810
2CEC-PNL811	Control Bldg. Elev. 288'	Panel 811
2CEC-PNL812	Control Bldg. Elev. 288'	Panel 812
2CEC-PNL813	Control Bldg. Elev. 288'	Panel 813
2CEC-PNL814	Control Bldg. Elev. 288'	Panel 814
2CEC-PNL815	Control Bldg. Elev. 288'	Panel 815
2CEC-PNL849	Control Bldg. Elev. 306'	Panel 849
2CEC-PNL851	Control Bldg. Elev. 306'	Panel 851
2CEC-PNL852	Control Bldg. Elev. 306'	Panel 852
2CEC-PNL867	Control Bldg. Elev. 288'	Panel 867
2CES-IPNL506	Auxiliary Boiler Bldg. Elev. 261'	Panel 506
2CES-IPNL507	Auxiliary Boiler Bldg. Elev. 261'	Panel 507
2FPW-PNL233	Screenwell Bldg., Motor Fire Pump	
	Room Elev. 261'	Panel 233
2NPS-SWG004	Normal Switchgear Bldg EL. 293'	3.8KV BUS 4.
2NPS-SWG005	Normal Switchgear Bldg EL. 293'	13.8KV BUS 5
2NHS-MCC001	Radwaste Bldg South EL. 279'	600V.MCC001
2NHS-MCC002	Screenwell Bldg EL. 261'	600V. MCC002
2NHS-MCC003	Turbine Bldg Northeast EL. 277'	600V.MCC003
2NHS-MCC004	Turbine Bldg Northeast EL. 277	600V.MCC004
2NHS-MCC005	Reactor Bldg West EL 215	600V.MCC005
2NHS-MCC006	Turbine Bldg Southwest EL 277	600V. MCC006
2NHS-MCC007	Normal Switchgear Bldg EL 261	600V.MCC007
2NHS-MCC008	Normal Switchgear Bldg EL 261	600V.MCC008
2NHS-MCC009	Normal Switchgear Bldg EL 261	600V.HCC009
2NHS-MCC010	Turbine Bldg East EL 250	600V.HCC101 .
2NHS-MCC011	Reactor Bldg Northwest EL. 261	600V.MCC011
2NHS-MCC012	Reactor Bldg Southwest EL 261	600V.HCC012
2NHS-HCC013	- Screenhouse (Cooling Tower)	600V.HCC013
2NHS-HCC014	Reactor Bldg West EL215	600V.MCC014
2NHS-HCC015	Turbine Bldg North EL 306	600V. MCC015
2NHS-MCC016	Radwaste Bldg South EL 279	600V. MCC016
2NHS-MCC017	Screenwell Bldg EL 261 ·	600V.MCC017
2VBB-UPS1A	Normal Switchgear Bldg EL237	UPS1A
2VBB-UPS1B	Normal Switchgear Bldg EL 237	UPS1B
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2VBB-UPS1C

2VBB-UPS1D

Normal Switchgear Bldg EL 237 N2-OP-71 -5- May 1987

Normal Switchgear Bldg EL 237

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UPS1C UPS1D E. STARTUP PROCEDURE (Cont'd)

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<u>Equipment ID</u>	Location	<u>Alternate 1D</u>
2VBB-UPS1G	Control Bldg EL 214'	UPS1G -
2VBB-UPS3A	Normal Switchgear Bldg EL 237*	UPS3A
2VBB-UPS3B	Normal Switchgear Bldg EL 237'	UPS3B

- 1.0 To ensure reserve station service transformers 2RTX-XSR1A, 2RTX-XSR1B, and 2ABS-X1 are energized:
 - a. The 115KV System should be energized in accordance with OP-70.

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2.0 To place 13.8KV bus 2NPS-SWG-001 in Service

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- a. At Panel 852, verify the control switch for the normal station service feed to 13.8 "KV" bus" 001 "breaker 1-3 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the reserve transformer "B" feed to 13.8 KV bus 001 breaker 1-16 is in the "pull to lock" position. (Cubicle only)
- c. At Panel 852, verify the control switch for the reserve transformer "A" feed to 13.8KV bus 001 Breaker 1-1 is in the "pull to lock" position.
- d. At Panel 852, verify the control switch for the feed to Aux. Transformer 2ATX-XS1, Breaker 1-4 is in the "pull to lock" position (4160V feed to bus 2NNS-SWG011 and 2NNS-SWG-014)
- e. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US1 and US2, Breaker 1-5 is in the "pull to lock" position.
- f. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US3, US4 and US7 Breaker 1-14 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 13.8KV Normal Bus Feed to 600V Bus US8, US9, US10, Breaker 1-1A is in the "pull to lock" position.
- h. At panel 851 verify the control switch for the the following motor breakers are in the "pull to lock" position:

Panel 851 Condensate Booster Pump A Reactor Feed Pump A Condensate Booster Pump C.(Bus 001) Circulating Water Pump A Circulating Water Pump C Circulating Water Pump E Reactor Feed Pump C (Bus 001)

Panel 602 Reactor Recirc. Pump A (Breaker 2A) N2-OP-71 -6- May 1987

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E. <u>STARTUP PROCEDURE</u> (Cont'd)

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- i. At 13.8KV bus 001 metering cubical 1-2/1-15, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.
- j. For reserve transformer 2-RTX-XSR1A, check neutral switch , 2RTX-SW001 "Open".
- k. At 13.8KV Bus 001, Rack In Reserve Transformer "A" supply-

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Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 812 13.8KV Bus NPS-001 Protection Lockout Relay
- 2. Panel 805 Reserve Station Service XFMR 1A Primary Protection Lockout Relay
- 3. Panel 806 Reserve Station Service XFMR 1A Backup Protection Lockout Relay
- 4. Panel 867 Generator Backup Protection Lockout Relay 2
- 5. Check all relay flags are reset on NPS-SWG-001, inform SSS of all flags.
- 1. At Panel 852, turn on synchronize reserve "A" switch.
- m. At Panel 852, close reserve transformer "A" supply breaker
 1-1. Check voltage on 13.8KV bus 001 as nominally 13.8KV.
- n. At panel 852, turn off synchronize reserve "A" switch.

To place 13.8KV bus 2NPS-SWG-003 in service:

- a. At Panel 852, verify the control switch for the normal station service feed 13.8KV bus 003, Breaker 3-14 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the reserve transformer "A" feed to 13.8KV bus 003, Breaker 3-16 is in the "pull to lock" position. (Cubicle Only)
- c. At Panel 852, verify the control switch for the reserve transformer "B" feed to 13.8KV bus 003, Breaker 3-1 is in the "pull to lock" position.
- d. At Panel 852, verify the control switch for the feed-to-Aux. Transformer 2ATX-XS3, Breaker 3-6 is in the "pull to lock" position (4160V feed to bus 2NNS-SWG013 and 2NNS-SWG015)
- e. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US1 and US2, Breaker 3-3 is in the "pull to lock" position.

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E. STARTUP PROCEDURE (Cont'd)

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- f. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US3, US4 and US7 Breaker 3-13 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 13.8KV Normal Bus Feed to 600V Bus US8, US9, US10, Breaker 3-1A is in the "pull to lock" position.
- h. At panel 851 verify the control switch for the the following motor breakers are in the "pull to lock" position:

Panel 851Condensate Booster Pump B
Reactor Feed Pump B
Condensate Booster Pump C (Bus 003)
Reactor Feed Pump C (Bus 003)
Circulating Water Pump B
Circulating Water Pump D
Circulating Water Pump FPanel 602Reactor Recirc. Pump B (Breaker 2B)

- i. At 13.8KV bus 003 at metering cubical 3-2/3-15, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.
- j. At 13.8KV Bus 003, Rack In Reserve Transformer "B" Supply Breaker 3-1.
- k. Check the following lockout relays are reset to assure closing permissive satisfied:
 - 1. Panel 813 13.8 KV Bus NPS-003 Protection Lockout Relay
 - 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay
 - 3. Panel 809 Reserve Station Service XFMR 1B Backup Protection Lockout Relay
 - 4. Panel 867 Generator Backup Protection Lockout Relay 2
 - 5. Check all relay flags are reset on NPS-SWG 003, inform SSS of all flags.

At Panel 852, turn on synchronize reserve "B" switch. 1. At Panel 852, close reserve transformer "B" supply Breaker 3-1 Check voltage on 13.8KV bus 003 as nominally 13.8KV.

m. At panel 852, turn off synchronize reserve "B" switch.

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To place 13.8KV bus 2NPS-SWG 002 in Service

a. At Panel 852, verify the control switch for the auxiliary boiler transformer to 13.8KV bus 002 Breaker 2-5 is in the "pull to lock" position.

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- 4.0 (Cont'd)
 - b. At Panel 852, verify the control switch for the reserve transformer "A" emergency feed to 13.8KV bus 002 Breaker 2-1 is in the "pull to lock" position. (Cubicle Only)
 - c. At Panel 506 verify the control switch for the 13.8KV feed to "A" auxiliary boiler is in the "pull to lock" position.
 - d. At Panel 507 verify the control switch for the 13.8KV feed to "B auxiliary boiler "is in the "pull to lock" position.

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e. At 13.8KV bus 002 at metering cubical 2-4, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.

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f. At 13.8KV Bus 002, rack in auxiliary boiler transformer feed to 13.8KV Bus 002 supply breaker 2-5, as required.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 811 Aux Boiler XFMR ABS-X1 Primary Protection Lockout Relay
- 2. Panel 802 Aux Boiler Service XFMR Backup Protection Lockout Relay
- 3. Panel 815 13.8KV Bus NPS-002 Protection Lockout Relay
- 4. Check all relay flags are reset on NPS-SWG 002, inform SSS of all flags.
- g. At Panel 852, close auxiliary boiler transformer to 13.8KV bus 002 supply breaker 2-5. Check voltage on 13.8KV Bus 002 as nominally 13.8KV.

5.0 <u>To energize 13.8KV/4.16KV auxiliary Transformer 2ATX-XS1</u>

- a. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS1 to bus 2NNS-SWG011, Breaker 11-3 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS1 to bus 2NNS-SWG014, Breaker 14-2 is in the "pull to lock" position.
- At Panel 852, verify the control switch for the 13.8KV feed to transformer 2ATX-XS1, Breaker 1-4 is in the "pull.to lock" position.
- d. At Panel 852, check voltage on 13.8KV Bus 001 as nominally 13.8KV.
- e. At 13.8KV bus 001, rack in 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.

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E. STARTUP PROCEDURE (Cont'd)

5.0 (Cont'd)

Check the following lockout relay reset to assure closing permissive satisfied:

- Panel 807 Aux. XFMR ATX-XS1 Protection Lockout Relay
 Check all relay flags are reset, inform SSS of all flags.
- f. At Panel 852, close 13.8KV feed to auxiliary_transformer - 2ATX-XS1 supply breaker 1-4.

6.0 To place 4.16KV bus 2NNS-SWG011 in service.

- a. At Panel 852, verify control switch for the 4.16KV normal bus feed to 4.16KV bus Oll, Breaker 11-3 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.
- c. At Panel 852, verify control switch for the tie breaker from 4.16KV Bus Oll to 4.16KV Bus Ol2, Breaker 11-1 is in the "pull to lock" position.
- d. At Panel 601, verify control switch for the TBCLC pump "A" (2CCS-P1A) is in the "pull to lock" position.
- e. At Panel 851, verify control switch for the Heater Drain pump "A" (2HDL-PIA) is in the "pull to lock" position.
- f. At Panel 851, verify control switch for the Condensate pump "A" (2CNM-PIA) is in the "pull to lock" position.
- g. At Panel 851, verify control switch for the Condensate pump "C" (2CNM-P1C) (Bus 011) is in the "pull to lock" position.
- h. At Panel 602, verify the control switch for Reactor Recirc. Motor Generator Set "A" (2RCS-MGIA) (Breaker 1A) is in the "pull to lock" position.

i. At 4.16KV bus Oll rack in 4.16KV Normal Bus feed to 4.16KV Bus Oll Breaker 11-3.

Check the following lockout relays reset to assure closing permissives satisfied:

- 1. Panel 815 4.16KV Bus NNS-012 Backup Protection & Lockout Relay
- 2. Panel 812 4.16KV Bus NNS-011 Protection Lockout Relay
- 3. Panel 807 Aux. XFMR ATX-XS1 Protection Lockout Relay
- 4. Check all relay flags are reset, inform SSS of all flags.

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- 6.0 (Cont'd)
 - j. At Panel 852, close 4.16KV bus feed to 4.16KV bus 011, Breaker 11-3 and Check voltage on 4.16KV bus 011 as nominally 4.16KV.

7.0 To place 4.16KV bus 2NNS-SWG014 In Service

a. At Panel 852, verify the control switch for the 4.16KV normal bus feed to 4.16KV bus 014, Breaker 14-2 is in the "pull to lock" position.

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- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.
- c. At Panel 852, verify the control switch for the 4.16KV bus Ol4 tie breaker to emergency bus 2ENS*SWG101(G), Breaker 14-1 is in the "pull to lock" position.
- d. At Panel 603, verify the control switch for Control Rod Drive pump "A" (2RDS-P1A) breaker 14-7 is in the "pull to lock" position.
- e. At Panel 601, verify the control switch for RBCLC pump "C" (2CCP-P1C) and RBCLC booster pump (2CCP-P3C) breakers 14-6 and 14-9 are in the "pull to lock" position.
- f. At Panel 852, verify the control switch for the 4.16KV bus Ol4 feed to 600V bus US5 (auxiliary transformer 2NJS-X1F), Breaker 14-4 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 4.16KV bus 014 feed to 600V bus US5 (auxiliary transformer 2NJS-X1E), Breaker 14-8 is in the "pull to lock" position.
- h. At 4.16KV bus 014, rack in 4.16KV Normal Bus feed to 4.16KV Bus 014, Breaker 14-2.

Check the following lockout relays are reset to assure closing permissives satisfied:

1. Panel 807 - Aux. XFMR ATX-XS1 Protection Lockout Relay

- 2. Panel 803 4.16 Bus NNS-014 Protection Lockout Relay
- 3. Check all relay flags are reset, inform SSS of all flags.

• At Panel 852, close 4.16KV bus feed to 4.16KV bus 014, Breaker 14-2 Check voltage on 4.16KV bus 014 as nominally 4.16KV.

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E. STARTUP_PROCEDURE (Cont'd)

- 8.0 <u>To energize 13.8KV/4.16KV auxiliary transformer 2ATX-XS3</u>
 - a. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS3 to bus 2NNS-SWG013, Breaker 13-6 is in the "pull to lock" position.
 - b. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS3 to bus 2NNS-SWG015, Breaker 15-3 is in the "pull to lock" position.
 - c. At Panel 852, verify the control switch for the 13.8KV feed to transformer 2ATX-XS3, Breaker-3-6 is in the "pull to lock" position.
 - d. At Panel 851, check voltage on 13.8KV Bus 003 as nominally 13.8KV.
 - e. At 13.8KV bus 003, rack in 13.8KV feed to auxiliary transformer 2ATX-XS3, Breaker 3-6.

Check the following lockout relay reset to assure closing permissive satisfied:

- 1. Panel 810 Aux. XFMR ATX-XS3 Protection Lockout Relay
- 2. Check all relay flags, reset. Inform SSS of all flags.
- f. At Panel 852, close 13.8KV feed to auxiliary transformer 2ATX-XS3 supply breaker, 3-6.

9.0 <u>To place 4.16KV bus 2NNS-SWG013 In Service</u>

- a. At Panel 852, verify the control switch for the 4.16KV Normal Bus feed to 4.16KV bus 013, Breaker 13-6 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to 'auxiliary transformer 2ATX-XS3, Breaker 3-6.
- c. At Panel 852, verify the control switch for the tie breaker from bus 013 to bus 012, Breaker 13-10 is in the "pull to lock" position.
- d. At Panel 851, verify the control switch for Condensate pump "C" (2CNM-P1C) (Bus 013) breaker 13-2 is in the "pull to lock" position.

e. At Panel 851, verify the control switch for Condensate pump "B" (2CNM-P1B) breaker 13-3 is in the "pull to lock" position.

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9.0 (Cont'd)

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- f. At Panel 851, verify the control switch for Heater Drain pump "B" (2HDL-P1B) breaker 13-4 is in the "pull to lock" position.
- g. At Panel 601, verify the control switch for TBCLC pump "B" (2CCS-P1B) and RBCLC booster pump (2CCP-P3A) breaker 13-8 ¹ and 13-9 are in the "pull to lock" position.

h. At Panel 602, verify the control switch for Reactor Recirc. Motor Generator Set. "B"..(2RCS-MG1B) (Breaker 1B) is in the "pull to lock" position.

i. At 4.16KV bus 013, rack in 4.16KV Normal Bus feed to 4.16KV Bus 013, Breaker 13-6.

Check the following lockout relays reset to assure closing permissives satisfied:

- 1. Panel 810 Aux. XFMR ATX-XS3 Protection Lockout Relay
- 2. Panel 813 4.16KV Bus NNS-013 Protection Lockout Relay
- 3. Panel 815 4.16KV Bus NNS-012 Backup Protection Lockout Relay
- Check all relay flags are reset, inform SSS of all flags.
- j. At Panel 852, close 4.16KV bus feed to 4.16KV bus 013, Breaker 13-6. Check voltage on 4.16KV bus 013 as nominally 4.16KV.

10.0 To place 4.16KV bus 2NNS-SWG015 in Service

- a. At Panel 852, verify the control switch for the 4.16KV normal bus feed to 4.16KV bus 015, Breaker 15-3 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS3, Breaker 3-6.
- c. At Panel 852, verify the control switch for the 4.16KV bus Ol5 tie breaker to emergency bus 2ENS*SWG103, Breaker 15-8 is in the "pull to lock" position.
- d. At Panel 603, verify the control switch for Control Rod Drive pump "B" (2RDS-P1B) breaker 15-2 is in the "pull to lock" position.
- e. At Panel 601, verify the control switch for RBCLC pump "B" (2CCP-P1B) and RBCLC booster pump (2CCP-P3B) breakers 15-4 and 15-6 are in the "pull to lock" position.

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- 10.0 (Cont'd)
 - f. At Panel 852, verify the control switch for the 4.16KV bus 015 feed to 600V bus US6 (auxiliary transformer 2NJS-X3E) (Breaker 15-7) is in the "pull to lock" position.
 - g. At Panel 852, verify the control switch for the 4.16KV bus 015 feed to 600V bus US6 (auxiliary transformer 2NJS-X3F)¹ (Breaker 15-1) is in the "pull to lock" position.
 - h. At 4.16KV bus 015, rack in 4.16KV Normal Bus feed to 4.16KV

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 810 Aux XFMR ATX-XS3 Protection Lockout Relay
- 2. Panel 804 4.16KV Bus NNS-015 Protection Lockout Relay
- 3. Check that all relay flags are reset, inform SSS of all flags.
- i. At Panel 852, close 4.16KV bus feed to 4.16KV bus 015, Breaker 15-3. Check voltage on 4.16KV bus 015 as nominally 4.16KV.
- 11.0 To place 4.16KV bus 2NNS-SWG012 in Service from 4.16KV bus 2NNS-SWG011:
 - a. At Panel 852, verify the control switch for the 4.16KV bus Oll tie breaker to 4.16KV bus Ol2, Breaker 11-1 is in the "pull to lock" position.
 - b. At Panel 852, verify the control switch for the 4.16KV bus 013 tie breaker to bus 4.16KV bus 012, Breaker 13-10 is in the "pull to lock" position.
 - c. At Panel 851, verify the control switch for Heater Drain pump "C" (2HDL-P1C) breaker 12-2 is in the "pull to lock" position.
 - d. At Panel 849, and Panel 233, verify the control switches for Motor Driven Fire pump (2FPW-P2), breaker 12-3 is in the "pull to lock" position
 - e. At Panel 601, verify the control switch for TBCLC pump "C" (2CCS-PIC), breaker 12-4 is in the "pull to lock" position.
 - f. At Panel 601, verify the control switch for RBCLC pump "A" (2CCP-P1A), breaker 12-5 is in the "pull to lock" position.
 - g. At Panel 852, Check voltage on 4.16KV Bus 011 as nominally 4.16KV.

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11.0 (Cont'd)

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h. At 4.16KV bus Oll, rack in 4.16KV Bus Oll tie breaker to 4.16KV Bus Ol2, breaker 11-1.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 812 4.16KV Bus NNS-011 Protection Lockout Relay
- 2. Panel 814 4.16KV Bus NNS-012 Protection Lockout Relay

. 3. Check that all relay flags are reset, inform SSS of all ... flags.

- i. At Panel 852, close 4.16KV bus 011 tie breaker to 4.16KV bus 012, breaker 11-1. Check voltage on bus 012 as nominally 4.16KV.
- 12.0 To place 4.16KV Bus 2NNS-SWG012 in service from 4.16KV Bus 2NNS-SWG013:
 - a. Refer to Section E, Step #11 a. thru f.
 - b. At Panel 852, check voltage on 4.16KV Bus 013 as nominally 4.16KV.
 - c. At 4.16KV Bus 013, rack in 4.16KV Bus 013 Tie Breaker to 4.16KV Bus 012, Breaker 13-10.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 813 4.16KV Bus NNS-013 Protection Lockout Relay
- 2. Panel 814 4.16KV Bus NNS-012 Protection Lockout Relay
- 3. Check that all relay flags are reset, inform SSS of all flags.
- d. At Panel 852, close 4.16KV Bus 013 Tie Breaker to 4.16KV Bus 012, Breaker 13-10. Check voltage on 4.16KV Bus 012 as nominally 4.16KV.

To place 4.16KV bus 2NNS-SWG016 in Service

a. At Panel 852, verify the control switch for the 4.16KV bus Ol6 feed from Reserve Station Transformer 2RTX-XSR1A 4.16KV tertiary winding, Breaker 16-2 is in the "pull to lock" position.

- b. At Panel 852, verify the control switch for the 4.16KV bus Ol6 feed to 4.16KV emergency bus 2ENS*SWG101 (G), Breaker 101-13 is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the bus 016 feed to 4.16KV emergency bus 2ENS*SWG102 (P), Breaker 102-4 is in the "pull to lock" position.

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STARTUP PROCEDURE (Cont'd) Ε.

- 13.0 (Cont'd)
 - At Panel 852, check voltage from Reserve Station Service d. Transformer 2RTX-XSR1A to 4.16KV bus 016 as nominally 4.16KV.
 - e. At 4.16KV bus 016, rack in Supply Breaker from Reserve Station Transformer 2RTX-XSR1A, Breaker 16-2.

Check the following lockout relays reset to assure closing permissive satisfied:

- Panel 852 Lockout Relay 86 Trip & Lockout Breaker 1. 16 - 2
- Panel 805 Reserve Station Service XFMR 1A Primary 2. Protection Lockout
- 3. Panel 806 - Reserve Station Service XFMR 1A Backup Protection Lockout Relay
- 4. Check that all relay flags are reset, inform SSS of all flags.
- f. At Panel 852, close 4.16KV bus 016 supply breaker from Reserve Station Transformer 2RTX-XSR1A, Breaker 16-2.

14.0 To place 4.16KV bus 2NNS-SWG017 in Service

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- a. At Panel 852, verify the control switch for the 4.16KV bus 017 feed from Reserve Station Transformer 2RTX-XSR1B 4.16KV tertiary winding, Breaker 17-2 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV bus 017 feed to 4.16KV emergency bus 2ENS*SWG102 (P), Breaker 102-5 (Cubicle Only) is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 4.16KV bus 017 feed to 4.16KV emergency bus 2ENS*SWG 103 (Y), Breaker 103-4 is in the "pull to lock" position.
- Panel 852, check voltage d. At from Reserve Station Transformer 2RTX-XSR1B to 4.16KV bus 017 as nominally 4.16KV.

At 4.16KV bus 017 rack in Supply Breaker from Reserve Station Transformer 2RTX-XSR1B, Breaker 17-2.

Check the 'following lockout relays are reset to assure closing permissives satisfied:

- Panel 852 Lockout Relay 86 Trip & Lockout Breaker 1. 17-2
- 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay

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E. STARTUP PROCEDURE (Cont'd)

- 14.0 (Cont'd)
 - 3. Panel 809 Reserve Station Service XFMR 1B Backup Protection Lockout Relay
 - 4. Check that all relay flags are reset, inform SSS of all flags.
 - f. At Panel 852, close 4.16KV bus 017 supply breaker from ¹ reserve Station Transformer 2RTX-XSR1B, Breaker 17-2.

15.0 To place 4.16KV bus 2NNS-SWG018 in service

- a. At Panel 852, verify the control switch for the 4.16KV bus Ol8 feed from Auxiliary Boiler Transformer 2ABS-X1 4.16KV tertiary winding, Breaker 18-2 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV bus O18 feed to emergency bus 2ENS*SWG101 (G), Breaker 101-10 (Cubicle Only) is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 4.16KV bus Ol8 feed to emergency bus 2ENS*SWG103 (Y), Breaker 103-2 (Cubicle Only) is in the "pull to lock" position.
- d. At Panel 852, check voltage from Aux. Boiler Transformer 2ABS-X1 to 4.16KV bus 018 as nominally 4.16KV.
- e. At 4.16KV bus 018, rack in Supply Breaker from Auxiliary Boiler Transformer 2ABS-X1, Breaker 18-2.

Check the following Lockout Relays are reset to assure closing permissives satisfied:

- 1. Panel 852 Lockout Relay 86 Trip & Lockout Breaker 18-2
- Panel 811 Aux. Boiler XFMR ABS-X1 Primary Protection Lockout Relay
- 3. Panel 802 Aux. Boiler Service XFMR Backup Protection Lockout Relay
- 4. Verify all relay flags are reset.
- f. At Panel 852, close 4:16KV bus 018 supply breaker from Auxiliary Boiler Transformer 2ABS-X1, Breaker 18-2.

16.0 ____The following will energize -13.8 KV/600 V auxiliary transformers and place 600V 2NJS-US1 through 4 and 7 through 10 load centers in service.

- a. At load center check open bus A supply breaker from aux. transformer.
- b. At load center check open bus B supply breaker from aux. transformer.

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- E. STARTUP PROCEDURE (Cont'd)
 - 16.0 (Cont'd)
 - c. At load center check open one bus tie breaker to bus C. Normally A to bus C tie breaker will be closed and B bus tie to C will be open.
 - SNDS

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- d. At panel 852, check voltage on 2NNS-SWG 001 & 003 bus normal.
- e. Check that non-essential loads are removed from load center.
- f. At 2NPS-SWG001 rack in supply breaker to 600V aux. transformers. Check lockout relay 86 reset, and all flags cleared.

Breaker 1-1A for 2NJS-US8,9,10 Breaker 1-5 for 2NJS-US1,2 Breaker 1-14 for 2NJS-US3,4,7

- g. At panel 852, close the respective 13.8 KV supply breaker to 600V aux. transformers, as noted above.
- h. At 13.8 KV bus 003 rack in supply breaker to aux. transformers. Check lockout relay 86 reset and all flags cleared.

Breaker 3-1A for 2NJS-US8,9,10 Breaker 3-3 for 2NJS-US1,2 Breaker 3-13 for 2NJS-US3,4,7

- i. At panel 852, close the respective 13.8 KV supply breaker to 600V aux. transformers, as noted above.
- j. At load center bus A, close supply breaker from aux. transformer. Check bus A voltage as nominally 600 V.
- k. At load center bus B, close supply breaker from aux. transformer. Check bus B voltage as nominally 600V.
- To energize 4160V/600V Auxiliary Transformers and place load center 2NJS-US5 in Service:
 - a. At Panel 852, Lockout 4.16KV Bus 014 feed to Aux. Transformer 2NJS-X1E, Breaker 14-8.
 - b. At Panel 852, Lockout 4.16KV Bus 014 feed to Aux. Transformer 2NJS-X1F, Breaker 14-4.
 - c. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer ZNJS-X1E, Breaker 5-3B.

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STARTUP PROCEDURE (Cont'd) Ε.

17.0 (Cont'd)

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NOTE:

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- d. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer 2NJS-X1F, Breaker 5-8B.
- At Panel 852, Check voltage on 4.16KV Bus 014 as nominally θ. 4.16KV.
- f. At 4.16KV Bus 014, rack in Supply Breaker to Aux. Transformer 2NJS-X1E, Breaker 14-8. Check Lockout Relay 86-2NJSX31 Reset.
- g. At 4.16KV Bus 014, Rack in Supply Breaker to Aux. Transformer 2NJS-X1F, Breaker 14-4, as required. Check Lockout Relay 86-2NJSX21 Reset.
- Panel h. At 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X1E, Breaker 14-8.
- i. At Panel 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X1F, Breaker 14-4.

CAUTION

(5-88) Before racking in 2NJS-US5 supply breaker 5-3B^V verify supply breaker 5-8B, is open and-racked-out. (5-38)

At Load Center 2NJS-US5, rack in 600V Supply Breaker from j۰ Aux. Transformer 2NJS-X1E, Breaker 5-3B, as required. (5-8B)

(XIF) -CAUTION-

-Before-racking in 2NJS-USS-supply broaker-S-8B-reverify -breaker-S-3B-is-open-and-racked-out-

k: <u>- At-Load-Center-2NJS-USS,-rack-in-600V-Supply-Breaker-From</u> -Aux .- Transformer-2NJS-X1F,-Breaker-5-8B.

- χ^κ At Panel 852, close 600V Supply Breaker from Aux. Transformer 2NJS-X1E, Breaker 5-3B, Check voltage on Load (XIF) Center 2NJS-US5 as nominally 600V. (3.88)
 - At panel 852, take the control switch for breaker 5-8B(5-3B) out of pull-to-lock, DO NOT close the breaker.

- Aux. Transformer 2NJS-X1F 600V Supply Breaker to 600V Load, NOTE: Center 2NJS-US5, Breaker 5-8B, will be the alternate feed. The alternate feed can be used if the normal feed (2NJS-XIE) is not available. *** * *

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E. STARTUP PROCEDURE (Cont'd)

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- To energize 4160V/600V Auxiliary Transformers and place load 18.0 center 2NJS-US6 in Service:
 - At Panel 852, Lockout 4.16KV Bus 015 feed a. to Aux. Transformer 2NJS-X3E, Breaker 15-7.
 - Ъ. At Panel 852, Lockout 4.16KV Bus 015 feed to Aux. 2 Transformer 2NJS-X3F, Breaker 15-1.
 - At Panel 852, Lockout 600V Supply Breaker from c. Aux. Transformer 3NJS-X3E, Breaker 6-3B.
 - d. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer 2NJS-X3F, Breaker 6-7B.
 - e. At Panel 852, Check voltage on 4.16KV Bus 015 as nominally 4.16KV.
 - f. At 4.16KV Bus 015, rack in Supply Breaker to Aux. Transformer 2NJS-X3E, Breaker 15-7. Check Lockout Relay 86-2NJSY31 Reset.
 - At 4.16KV Bus 015, Rack in Supply Breaker to Aux. g. Transformer 2NJS-X3F, Breaker 15-1. Check Lockout Relay 86-2NJSY21 Reset.

Panel h. At 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X3E, Breaker 15-7.

i. At Panel 852, close 4.16KV Supply Breaker to Aux. NOTE: Aux. Transformer 2NJS-X3F, Breaker 15-1. NOTE: Aux. Transformer 2NJS-X3F 600v supply Breaker to 600v load center 2HJS.US6, breaker 67B, will be the alternate feed. The alternate feed can be used if the normal feed (2NJS-X3E) is not available. CAUTION (6-78)

Before racking in 2NJS-US6 supply breaker 6-3B^V verify 2NJS-US6 supply breaker 6-7B_kis open and-racked-out. (6-38)

i. At Load Center 2NJS-US6, rack in 600V Supply Breaker from Aux. Transformer 2NJS-X3E, Breaker 6-3B, as required. (6-78)

(X3F) -CAUTION-

Before-racking- in 2NJS-US6 - supply breaker - 6-7B verify-2NJS-US6-supply-breaker-6-3B-is-open/racked-out-

At Load Center 2NJS-US6, rack in 600V Supply Breaker from --- Aux. Transformer-2NJS-X3F, Breaker-6-78, as-required.

x^k At Panel 852, close 600V Supply Breaker from Aux. Transformer 2NJS-X3E, Breaker 6-3B, Check voltage on Load (X3F) Center 2NJS-US6 as nominally 600V. (678)

(b-3B) m.L At Panel 852, take the control switch for breaker 6-78^N out of pull-to-lock, DO NOT close the breaker. N2-0P-71 -20- May-1987 September 1990.

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18.0 (Cont'd)

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<u>NOTE:</u> -Aux. Transformer-2NJS-X3F-600V Supply Broaker to 600V-Load --Center-2NJS-US6, Broaker-6-78, will bo-the-alternate-food.

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- 19.0 The following will energize 600V 2NHS motor control centers 1, 2, 3, 5, 6, 7, 10, 13 through 17.
 - a. At load center, check open bus A supply breaker to 2NHS MCC bus A.
 - b. At load center, check open bus B supply breaker to 2NHS MCC bus B.
 - c. At 2NHS MCC bus A, check open supply breaker from load center bus A.
 - d. At 2NHS MCC bus B, check open supply breaker from load .center bus B.
 - e. At 2NHS MCC, check open tie breaker between bus A and C, bus B and C. Normally bus tie A to C will be closed and bus tie B to C will be open.
 - f. At load center, check voltage normal for bus A and B.
 - g. Check that large non-essential loads are removed from MCC.
 - h. At load center bus A, rack in and close supply breaker to 2NHS-MCC bus A.
 - i. At load center bus B, rack in and close supply breaker to 2NHS-MCC bus B.
 - j. At 2NHS-MCC bus A, close supply breaker from load center bus A. Check voltage.
 - k. At 2NHS-MCC bus B, close supply breaker from load center bus B check voltage.

CAUTION

Verify bus tie B to C is open before closing bus tie A to C.

. 1. At 2NHS-MCC close bus tie A to C. Check voltage as normal.

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20.0 To energize 600 V motor control center 2NHS-MCC 004

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a. At load center 2NJS-US4, check open supply breaker to 2NJS-PNL401, breaker 4B bus A.

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20.0 (Cont'd)

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b. At load center 2NJS-US4, check open supply breaker to 2NJS-PNL402 breaker 14A bus B.

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- c. At 2NJS-PNL401 check open supply breaker to 2NHS-MCC 004, breaker 31.
- d. At 2NJS-PNL402 check open supply breaker to 2NHS-MCC 004, breaker 31.
- e. At 2NJS-PNL401 check closed main supply breaker.

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- f. At 2NJS-PNL402 check closed main supply breaker.
- g. At load center 2NJS-US4, close supply breaker to 2NJS-PNL401, breaker 4B bus A.
- h. AT load center 2NJS-US4, close supply breaker to 2NJS-PNL402, breaker 14A bus B.
- i. At 2NJS-PNL401 close supply breaker to 2NHS-HCC 004, breaker 31.
- j. At 2NJS-PNL 402 close supply breaker to 2NHS-MCC 004, breaker 31.
- k. At 2NHS-MCC 004 verify white indicating light is lit.

21.0 <u>To energize 600V Motor Control Center 2NHS-MCC008</u>

- a. At Load Center 2NJS-US5, Check open supply breaker to 2NHS-MCC008, Breaker 3D.
- b. At Load Center 2NJS-US5, Check open Supply Breaker to 2NHS-MCC008, Breaker 5A.
- c. At 2NHS-MCC008, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 3D).
- d. At 2NHS-MCC008, Check open Breaker 9A, 600V Supply from Load Center 2NJS-US5 (Breaker 5A).
- e. At Load Center 2NJS-US5, Check Voltage as nominally 600V.
- f. At Load Center 2NJS-US5, rack in Supply Breaker to . 2NHS-MCC008, Breaker 3D.
- g. At Load Center 2NJS-US5, rack in supply breaker to . 2NHS-MCC008, Breaker 5A.
- h. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC008, Breaker 3D.

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21.0 (Cont'd)

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- i. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC008, Breaker 5A.
- j. At 2NHS-MCC008, close Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 3D). Check voltage as nominally 600V.

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- NOTE: At 2NHS-MCC008, Breaker 9A, the 600V Supply from Load Center 2NJS-US5 (Breaker 5A), will be the alternate source.
- <u>NOTE</u>: The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.
- 22.0 To energize 600V Motor Control Center 2NHS-MCC009
 - a. At Load Center 2NJS-US6, Check open supply breaker to 2NHS-MCC009, Breaker 3C.
 - b. At Load Center 2NJS-US6, Check open Supply Breaker to 2NHS-MCC009, Breaker 5D.
 - c. At 2NHS-MCC009, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 3C).
 - d. At 2NHS-MCC009, Check open Breaker 7A, 600V Supply from Load Center 2NJS-US6 (Breaker 5D).
 - e. At Load Center 2NJS-US6, Check Voltage as nominally 600V.
 - f. At Load Center 2NJS-US6, rack in Supply Breaker to 2NHS-MCC009, Breaker 3C.
 - g. At Load Center 2NJS-US6, rack in supply breaker to 2NHS-MCC009, Breaker 5D.
 - h. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC009, Breaker 3C.
 - i. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC009, Breaker 5D.
 - j. At 2NHS-MCCOO9, close Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 3C). Check voltage as nominally 600V.
- NOTE: At 2NHS-MCC009, breaker 7A, the 600V supply from load center 2NJS-US6 (Breaker 5D) will be the alternate source.
- <u>NOTE</u>: The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.

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- 23.0 To energize 600V Motor Control Center 2NHS-MCC011
 - a. At Load Center 2NJS-US5, Check open supply breaker to 2NHS-MCC0011, Breaker 4A.
 - b. At Load Center 2NJS-US5, Check open Supply Breaker to 2NHS-MCC011, Breaker 5C.

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- c. At 2NHS-MCCO11, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 4A).
- d. At 2NHS-MCCOll, Check open Breaker 10A, 600V Supply from Load Center 2NJS-US5 (Breaker 5C).
- e. At Load Center 2NJS-USS, Check Voltage as nominally 600V.
- f. At Load Center 2NJS-US5, rack in Supply Breaker to 2NHS-MCCO11, Breaker 4A.
- g. At Load Center 2NJS-US5, rack in supply breaker to 2NHS-MCCO11, Breaker 5C.
- h. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCCO11, Breaker 4A.
- i. At Load Center 2NJS-US5, close Supply Breaker to^{*} 2NHS-MCC011, Breaker 5C.
- j. At 2NHS-MCCO11, close Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 4A). Check voltage as nominally 600V.
- <u>NOTE</u>: At 2NHS-MCC011, Breaker 10A, the 600V Supply from Load Center 2NJS-US5 (Breaker 5C), will be the alternate source.
- <u>NOTE</u>: The Motor Control Center Supply Breaker's will be lined up utilizing the Kirk-Key Control Interlock System.
- 24.0 <u>To energize 600V Motor Control Center 2NHS-MCC012</u>
 - a. At Load Center 2NJS-US6, Check open supply breaker to 2NHS-MCC012, Breaker 4D.
 - b. At Load Center 2NJS-US6, Check open Supply Breaker to 2NHS-MCC012, Breaker 5A.
 - c.---At- 2NHS-HCCO12, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 4D).
 - d. At 2NHS-MCC012, Check open Breaker 10A, 600V Supply from Load Center 2NJS-US6 (Breaker 5A).
 - e. At Load Center 2NJS-US6, Check Voltage as nominally 600V.

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E. STARTUP PROCEDURE (Cont'd)

- 24.0 (Cont'd)
 - f. At Load Center 2NJS-US6, rack in Supply Breaker to 2NHS-MCC012, Breaker 4D.
 - g. At Load Center 2NJS-US6, rack in supply breaker to 2NHS-MCCO12, Breaker 5A.
 - h. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC012, Breaker 4D.

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- j. At 2NHS-MCCO12, close Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 4D). Check voltage as nominally 600V.
- <u>NOTE</u>: At 2NHS-MCCO12, Breaker 10A, the 600V Supply from Load Center 2NJS-US6 (Breaker 5A), will be the alternate source.
- <u>NOTE</u>: The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.
- 25.0 To energize the normal, welding and lighting 600V Distribution ' Panels, refer to the main one line diagrams and perform the following steps for each Distribution Panel:
 - a. Check open all Distribution Panel Load Breakers.
 - b. Check open 600V Incoming Supply Breaker (Main Breaker), located on Distribution Panel.
 - c: Close 600V Feed Breaker to Distribution Panel located on respective Load Center.
 - d. Close 600V Incoming Supply Breaker (Main Breaker), located on Distribution Panel.
 - e. Sequentially close Load Breakers on Distribution Panel.

Distribution Panel	Location -	Power Supply
•		*
2NJS-PNL 100	Turb Büild. East El 277'	2NJS-US1
2NJS-PNL 200	Reactor Build West El 289'	2NJS-US2
2NJS-PNL 300	Turb. Build. West El 277'	NJS-US3
2NJS-PNL 301	. Turb. Build. West El 288'	2NJS-US3
2NJS-PNL 400	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 401	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 402	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 500	Normal Swgr. Build. El 237'	2NJS-US5
2NJS-PNL 600	Normal Swgr. Build. El 237'	2NJS-US6
2NJS-PNL 700	Turb. Build. East El 277'	2NJS-US7
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STARTUP PROCEDURE (Cont'd) Ε.

25.0 (Cont'd)

Distribution Panel	Location	Power_Supply
2NJS-PNL 701 2NJS-PNL 702 2NJS-PNL 703 2NJS-PNL 704 2NJS-PNL 705 2NJS-PNL 706 2NJS-PNL 707 2LAT PNL 100	Turb. Build. East El 277'	2NJS-US7
2NJS-PNL 702	Reactor Build. North El 289'	2NJS-US7
2NJS-PNL 703	Reactor Build. North El 289'	2NJS-US7
2NJS-PNL 704	Turb. Build. West El 277'	2NJS-US7 .
2NJS-PNL 705	Turb. Build. West El 277'	2NJS-US7
2NJS-PNL 706	Electrical Bay El 261'	2NJS-US7
2NJS-PNL 707	Normal Switchgear Bldg El 261'	2NJS-US7
2LAT PNL 100	Turb. Build. East El 277'	2NJS-US1
2LAR PNL 200	Reactor Build. West El 289'	2NJS-US2
2LAT PNL 300	Turb. Build. West El 277'	2NJS-US3
2LAS PNL 400	Normal Switchgear Bldg EL 261'	2NJS-US4
2LAN PNL 900	Radweste Build. El 279'	2NJS-US9
2WPS PNL 100	Turb. Build. East El 277' `	
	Reactor Build. West El 289' ·	2NJS-US2
2WPS PNL 300	Turb. Build. West El 277'	, 2NJS-US3
2WPS PNL 400 ·	Normal Switchgear Bldg El 261'	2NJS-US4
	cludes procedures for placing in service when UPSLA is de-ener	
	s on Panel 2VBS-PNLA101 & A10 or energizing these panels.	2 are in a safe
b. On the UPS	verify open: CB-1, CB-2, CB-3	
c. On the UPS,	verify closed: CB-4	
d. On 2VBB-XDS	00 verify CB-1 is closed.	
e. On UPS dis	connect the power cord (unplug) for the motor

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- operator on CB-4.
- Close breaker #8-D on 2NJS-US5 f.
- Close in loads on Panels 2VBS-PNLA101 & A102 as desired. g٠

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This section includes procedures for placing the de-energized UPS1A in service:

- OR PUT IN SERVICE Check the maintenance supply is in service 38 Aper #26, a-g **a**. above. ٠
- ь. Verify that all card cage printed circuit cards are fully seated. (CARD SLOT #5 is Empty)
- c. Verify that all fuse cutouts within the UPS are properly seated.

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E. <u>STARTUP PROCEDURE</u> (cont.)

- d. Place the transfer control switch in the manual restart position.
- e. Place the switch for "CB-3" in the open position.
- f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
- g. Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4.
- <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h1 Verify that transfer switch 2VBB-TRS1 indicates normal or emergency condition.
- NOTE: Either condition is permissible to energize the UPS.
 - i. In the UPS place control switches A27-CB1 & A27-S2 in the "ON" position.

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- j. Reconnect the motor operator power cable to CB-4.
- k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
- 1. Close breaker #1 on 2VBB-PNL301.
- m. On the UPS, close C3-1.
- n. Push the module "ON" pushbutton.
- o. After a time delay verify that the UPS output volts are nominally 120 VAC.
- p. Verify that the module "ON" light is lit.
- q. Verify on 2BYS-SWG001A that voltage is 130V to 140V.
- r. Close breaker #2-C on 2BYS-SWG001A.
- s. Close breaker CB-2 on UPS1A.
- t. Verify that the "Util Sync OK" lamp is lit.
- u. Verify that the "No break transfer ready to UPS" lamp is lit.
- v. Place the "CB-3" switch in the closed position. The following events will occur:

1. Inverter output "CB-3" closed lamp is lit.

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E. STARTUP PROCEDURE (cont.)

- 2. The maintence supply breaker "CS-4" open lamp is 3 lit.
- 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
- 4. The "No break transfer ready, to bypass" Xmaintenance supply. lamp is lit.
- w. Place the transfer control switch in the "Auto Restart" position.
- 28.0 This section includes procedures for placing the maintenance supply for UPS1B in service when UPS1B is genergized.
 - a. Verify loads on Panel 2VBS-PNLB101 & B102 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.

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- c. On the UPS, verify closed: CB-4
- . d. On 2VBB-XD601 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #4-B on 2NJS-US6
 - g. Close in loads on Panels 2VES-PNLB101 & B102 as desired.

This section includes procedures for placing the de-energized UPS1B in service:

- a. Check the maintenance supply is in service as per Step 28.0, a-g above.
- b. Verify that all card cage printed circuit cards are fully seated. (CAAS SLOT #5 15 Grappy)
- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.
- e. Place the switch for "CB-3" in the open position.
- f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
- g. Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4. N2-OP-71 -28- December-1987-

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E. <u>STARTUP PROCEDURE</u> (cont.)

- <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h./ Verify that transfer switch 2VBB-TRS1 indicates normal or emergency condition.

NOTE: Either condition is permissible to energize the UPS. h. 2 DISCONNEET THE PARTE CORD PLUE, Pb, TO MUTUR PREMIER ON CB-4.

> i. In the UPS place control switches A27-C31 & A27-32 in the 2-"ON" position. 5/

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- j. Reconnect the motor operator power cable to CB-4.
- k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
- 1. Close breaker #2 on 2VBB-PNL301.
- m. On the UPS, close C3-1.
- n. Push the module "ON" pushbutton.
- o. After a time delay verify that the UPS output volts are nominally 120 VAC.
- p. Verify that the module "ON" light is lit.
- q. Verify on 2BYS-SWG001C that voltage is 130V to 140V.
- r. Close breaker #2-A on 2BYS-SWG001C.
- s. Close breaker #C3-2 on UPS1B.
- t. Verify that the "Util Sync OK" lamp is lit.
- u. Verify that the "No break transfer ready to UPS" lamp is lit.
- v. Place the "CB-3" switch in the closed position. The following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit. | 3
 - 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
 - 4. The "No break transfer ready, to bypecc" (maintenance -supply) lamp is lit.
- w. Place the transfer control switch in the "Auto Transfer" position. March 1990

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E. <u>STARTUP PROCEDURE</u> (cont.)

- 30.0 This section includes procedures for placing the maintenance supply for UPS1C in service when UPS1C is de-energized.
 - a. Verify loads on Panel 2LAT-PNL017 are in a safe condition for energizing these panels.

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- b. On the UPS verify open: CB-1, CB-2, CB-3.
- c. On the UPS, verify closed: CB-4
- d. On 2VBB-XD501 verify CB-1 is closed.
- e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #4-B on 2NJS-USS
 - g. Close in loads on Panel 2LAT-PNL017 as desired.

31.0

- a. Check the maintenance supply is in service as per #30, a-g above.
- b. Verify that all card cage printed circuit cards are fully seated. (CAAL SLOT #5 15 Erry)
- c. Verify that all fuse cutouts within the UPS are properly > seated.
- d. Place the transfer control switch in the manual restart position.

e.1) Place the switch for "CB-3" in the open position. e.2) Place the switch for "CB-3" in the open position. f. Place control switches A27-CB1 & A27-32 in the "ON"

- position. SI
- g. Reconnect the motor operator power cable to CB-4.
- h. Reset all alarms, test that all alarms lights will light, then reset alarms and silence horn.
- i. On 2LAT-PNL300 close the sub-feed breaker #45 for 2VBB-UPS1C.
- j. On the UPS close CB-1.
- k. Push the module "ON" pushbutton.
- 1. After a time delay verify that the UPS output volts are nominally 120 VAC.

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E. STARTUP PROCEDURE (cont.)

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- m. Verify that the module "ON" light is lit.
- n. Verify on 2BYS-SWG001A that voltage is 130V to 140V.
- o. Close Breaker #2-D on 2BYS-SWG001A.
- p. Close Breaker #CB-2 on UPS1C.
- q. Verify that the "Util Sync OK" lamp is lit.
- r. Verify that the "No Break transfer ready to UPS" lamp is lit.
- s. Place the "CB-3" switch in the closed position. The following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit. 3

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- 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
- t. Place the transfer control switch in the "Auto Restart" position.
- 32.0 This section includes procedures for placing the maintenance supply for UPS1D in service when UPS1D is de-energized.
 - a. Verify loads on Panel 2LAS-PNL016 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - d. On 2VBB-XD600 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #6-C on 2NJS-US6
 - g. Close in loads on Panels 2LAS-PNL016 as desired.

33.0 This section includes procedures for placing the de-energized UPS1D in service: OR PUT IN SERVICE

a. Check the maintenance supply is in service ac per #32, a-g above. March 1990

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STARTUP PROCEDURE (cont.)

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- b. Verify that all card cage printed circuit cards are fully seated. (CAAD SHOT #5 15 GAMPTY)
- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.

e.1) Place the switch for "CB-3" in the open position. e.2) DISCONTRATOR TO CB-4. f. Place control switches A27-CB1 & A27-32 in the "ON" position. 51

- g. Reconnect the motor operator power cable to CB-4.
- h. Reset all alarms, test that all alarm lights will light, then reset alarms and silence horn.
- i. On Panel (2NHS-MCC006) close the #8-A breaker that feed 2VBB-UPS1D.
- j. On the UPS, close CB-1.
- k. Push the module "ON" pushbutton.
- 1. After a time delay verify that the UPS output volts are nominally 120 VAC.
- m. Verify that the module "ON" light is lit.
- n. Verify on 2BYS-SWG001B that voltage is 130V to 140V.
- o. Close Breaker #2-D on 2BYS-SWG001B.
- p. Close Breaker #CB-2 on UPS1D.
- q. Verify that the "Util Sync OK" lamp is lit.
- r. Verify that the "No Break transfer ready to UPS" lamp is lit.
- s. Place the "CB-3" switch in the closed position. the following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit.
 - 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
 - 4. The "No break transfer ready, to bypass" (maintenance -supply) lamp is lit. N2-OP-71 -32- Docomber=1987 MAR<H 1991

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E. <u>STARTUP PROCEDURE</u> (cont.)

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- t. Place the transfer control switch in the "Auto Restart" position.
- 34.0 This section includes procedures for placing the maintenance supply for UPSIG in service when UPSIG is de-energized.
 - a. Verify loads on Panel 2VBS-PNLC100, C101, C102, and C103, ¹ and 2VBB-PNL 300 are in a safe condition for energizing these panels.

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- b'. On the UPS verify open: CB-1, CB-2, CB-3.
- c. On the UPS, verify closed: CB-4
- d. On 2VBB-XD602 verify CB-1 is closed.
- e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
- f. Close breaker #6-D on 2NJS-US6
- g. Close in loads on Panels 2VBS-PNLC100, Cl01, Cl02, and Cl03 and 2VBB-PNL 300 as desired.
- This section includes procedures for placing the de-energized UPSIG in service:
 - a. Check the maintenance supply is in service per #34, a-g above.
- b. Verify that all card cage printed circuit cards are fully seated. (CARD SLOT #5": 15 Empty)
- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.
- e. Place the switch for "CB-3" in the open position.
- f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
- g. Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4.
- <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h./ Verify that transfer switch 2VBB-TRS1 indicates normal or . emergency condition.

: Either condition is permissible to energize the UPS.

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NOTE:

E. STARTUP PR	OCEDURE (cont.)
h.2) · S co · S co · A.2)	UCEDURE (cont.) UCEDURE (cont.) i. In the UPS place control switches A27-CB1 &A27-92 in the "ON" position. JI
	j. Reconnect the motor operator power cable to $CB-4$.
•	k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
:	1. Close breaker #7 on 2VBB-PNL301.
. 1	m. On the UPS, close CB-1.
T	. Push the module "ON" pushbutton.
-	o. After a time delay verify that the UPS output volts are nominally 120 VAC.
1	. Verify that the module "ON" light is lit.
c	. Verify on 2BYS-SWG001C that voltage is 130V to 140V.
1	c. Close breaker #2-C on 2BYS-SWG001C.
	s. Close Breaker #CB-2 on UPS1G.
t	. Verify that the "Util Sync OK" lamp is lit.
τ	. Verify that the "No Break transfer ready - to UPS" lamp is lit.
N	r. Place the "CB-3" switch in the closed position. The following events will occur:
	1. Inverter output "CB-3" closed lamp is lit.
	2. The maintenance supply breaker "CB-4" open lamp is lit.
e e e e e e e e e e e e e e e e e e e	3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
	4. The "No break transfer ready to bypass" (maintenance 3)
w	Place the transfer control switch in the "Auto Restart" position.
U	his section contains the startup procedure for energizing the PS3A loads from its maintenance supply when UPS3A is -, e-energized.
a	 Verify that the loads off panels 2VBS*PNLA101, 2VBS*PNLA103, 2VBS*PNLA104, 2VBS*PNLA105, and 2VBS*PNLA106, 2CEC*PNL709 are in a safe condition to allow energization of these panels. MOLC 1990 N2-OP-71 -34- Becember 1987

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E. <u>STARTUP PROCEDURE</u> (cont.)

- b. Put the UPS3A manual transfer switch, S-1, in the 🔅 maintenance position.
- c. Close breaker #2 on 2NJS-PNL500.
- d. On 2VBB-XRC503, close the input A.C breaker #CB-1. 2VBB-XRC503 will energize.
- e. Verify "Power in" light is lit on front of 2VBS*ACBLA.
- f. Manually close breaker 2VBS*ACB1A.
- g. Verify "Power in" light is lit on front of 2VBS*ACB2A.
- h. Manually close breaker 2VBS*ACB2A.
- .. Verify "Cower out" light is lit on front of 2VBS*ACB2A.
- j. Close in loads on panel 2VBS*PNLA101 as desired.
- 37.0 This section contains the startup procedure for energizing 2VBB-UPS3A:

a. Check that the maintenance supply for UPS3A is in service در جرح جر جرح per Section E, #36, a-j.

- b. On UPS3A, check breaker #CB-1, #CB-2 open.
- c. On 2LAT-PNL100, close breaker #26.
- d. On 2BYS-SWG001C, check that voltage is 130V to 140 VDC.
- e. Close breaker #2-C on 2BYS-SWG001C.
- f. On UPS3A, close A.C. input breaker #CB-1
- g. Set the D.C. input voltmeter switch to "rectifier" and 3 check that the voltmeter reads nominally 140 VDC.
- NOTE: As the UPS "Starts Up" an increase in noise will be noticed.
 - h. When the UPS starts up, set the output A.C. voltmeter 2 switch to "inverter" and check that it indicates nominal 124 VAC.
 - i. Push the lamp test pushbutton, all lamps will light and then go out when button is released.
 - j. Check the following indications:
 - 1. "Low Battery" lamp is lit (because CB-2 is open)
 - 2. "Reverse Transfer" lamp is lit.
 - k. Close battery input breaker. #CB-2. N2-OP-71 -35- December 1987 WCUCON 1991D

STARTUP PROCEDURE (cont.) E.

- Set the D.C. input voltmeter switch to "Battery" and check 3 1. the battery voltage as 130V - 140 VDC.
- Check "Sync Loss" lamp is out. m.
- 3 Place manual transfer switch, S-1, in the static switch n. position.
- Push the "Forward Transfer" pushbutton. ٥.
- Load can be monitored on the "Load Current" ammeter. p.
 - Check that all alarm lamps are out. q.
- r 38.0 This section contains the startup procedure for energizing the UPS3B loads from its maintenance supply when UPS3B is 3 de-energized.
 - Verify that the loads on panels 2VBS*PNLB101, 2VBS*PNLB103, a. 2VBS*PNLB104, 2VBS*PNLB105, and 2VBS*PNLB106, 2CEC*PNL708 are in a safe condition to allow energization of these panels.
 - b. Put the UPS3B manual transfer switch, S-1. in the 3 maintenance position.
 - Close breaker #2 on 2NJS-PNL600. c.
 - On 2VBB-XRC603, close the input A.C. breaker #CB-1. d. 2VBB-XRC603 will energize.
 - Verify "power in" light lit on front of 2VBS*ACB1B. e.
 - f. Manually close breaker 2VBS*ACB1B.
 - Verify "power in" light is lit on front of 2VBS*ACB2B. g٠
 - Manually close breaker 2VBS*ACB2B. h.
 - Verify "power out" light is lit on front of 2VBS*ACB2B. i.
 - j. Close in loads off panel 2VBS*PNLB101 as desired.

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- This section contains the startup procedure for energizing 2VBB-UPS3B:
 - -----Check that the alternate supply for UPS3B is in service per a. Section D, #38 a-j.
 - b. On UPS3B, check breaker #CB-1, #CB-2 open.

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- On 2NJS-PNL402 close breaker #32. c.
- On 2BYS-SWG001B check that voltage is 130V to 140 VDC. N2-OP-71 -36- December 1987 d.

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E. <u>STARTUP PROCEDURE</u> (cont.)

e. Close breaker #3-D on 2BYS-SWG001B.

f. On UPS3B, close A.C. input breaker - #CB-1.

- g. Set the D.C. input voltmeter switch to "rectifier" and 3 check that the voltmeter reads nominally 140 VDC.
- NOTE: As the UPS "Starts Up" an increase in noise will be noticed.
 - h. When the UPS starts up, set the output-A:C. voltmeter switch to "inverter" and check that it indicates nominal 124 VAC.
 - i. Push the lamp test pushbutton, all lamps will light and then go out when button is released.
 - j. Check the following indications:
 - "Low Battery" lamp is lit (because CB-2 is open).
 "Reverse Transfer" lamp is lit.

k. Close battery input breaker, #CB-2.

- 1. Set the D.C. input voltmeter switch to "Battery" and check 3 the battery voltage is 130V to 140 VDC.
- m. Check "Sync Loss" lamp is out.
- n. Place manual transfer switch, S-1, in the static switch 3 position.
- o. Push the "Forward Transfer" pushbutton.
- p. Load can be monitored on the "Load Current" ammeter.
- q. Check that all alarm lamps are out.

F. NORMAL OPERATION

- 1.0
- Before energizing normal station transformer 2STX-XNS1, ensure that:
 - a. At Panel 852, check open 13.8KV bus 001 supply breaker from normal station service transformer 2STX-XNS1, Breaker 1-3.
 - b. At Panel 852, check open 13.8KV bus 003-supply breaker from normal station service transformer 2STX-XNS1, breaker 3-14.
 - c. At 2STX-XNS1, place oil pumps and fans selector switches in auto.
 - d. At 2STX-XNS1, check closed potential power circuit breaker at load tap changer auto controller.

e. At 2STX-XNS1, place local-remote switch in remote position.

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F. NORMAL OPERATION (cont.)

- f. At 2STX-XNS1, check closed circuit breaker to cooling equipment and check closed circuit breaker to load-tap changer.
- g. At 2STX-XNS1, check closed space heater circuit breaker.
- h. At 2STX-XNS1, check transfer tank and load tap changer oil levels as normal.
- i. At 2STX-XNS1, check that transformer tank pressure is between .30 and .55 psig.
- j. At 2STX-XNS1, check automatic gas control equipment in service and gas cylinder pressure as greater than 200 psig.
- k. Check liquid and winding temperatures as less than 80°C.
- 1. At Panel 852, place 2STX-XNS1 load tap changer auto-manual switch in manual.

2.0 To transfer station service from reserve to normal

- a. Verify that the main generator has been synchronized and tied to the grid in accordance with OF #68 and a stable load has been established.
- b. At 13.8 KV bus 001, rack in supply breaker from normal station service transformer 2STX-XNS1, breaker 1-3. Check the following lockout relays reset to assure closing permissives are satisfied:
 - 1. Panel 864 Unit Protection Lockout Relay 1
 - 2. Panel 865 Unit Protection Lockout Relay 1
 - 3. Panel 866 Unit Protection Lockout Relay 1
 - 4. Panel 867 Generator Backup Protection Lockout Relay 1
 - 5. Panel 812 13.8 KV Bus NPS-001 Protection Lockout Relay.
 - 6. Check that relay flags are reset.
- c. At 13.8 KV Bus 003, rack in supply breaker from normal station service transformer 2STX-XNS1, Breaker 3-14. Check the following lockout relays reset to assure closing permissives are satisfied:
 - 1. Panel 864 Unit Protection Lockout Relay 1
 - 2. Panel 865 Unit Protection Lockout Relay 1
- -....3.Panel 866 Unit Protection Lockout Relay 1
 - 4. Panel 867 Generator Backup Protection Lockout Relay 1
 - 5. Panel 813 13.8 KV Bus NPS-003 Protection Lockout Relay.
 - 6. Check that relay flags are reset.
- d. At Panel 852, turn on Synch Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 001, Breaker 1-3.
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F. NORMAL OPERATION (Cont.)

- e. Check voltages equal and synchroscope in phase, approximately 12 O'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower Control switch (P-852).
- <u>NOTE</u>: Normal station service transformer 2STX-XNS1 load tap changer auto-manual switch will be left in "Manual" for normal operating conditions.
 - f. At Panel 852, close 13.8 KV Bus 001 supply breaker from 2STX-XNS1, breaker 1-3. Check normal station service transformer ammeters to verify load was picked up.
 - g. At Panel 852, turn off Sync. Switch across normal station service transformer 2STX-XNS1@ap2012.CoXV.Bus 001, breaker 1-3.
 - At Panel 852, open 13.8 KV Bus 001 supply breaker from reserve station service transformer 2RTX-XS-R1A, Breaker 1-1, and leave control switch in normal after trip position. Check voltage on 13.8 KV Bus 001 as nominally 13.8 KV.
 - i. At Panel 852, turn on Synch. Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 003, Breaker 3-14.
 - j. Check voltages equal and synchroscope in phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower control switch.
 - k. At Panel 852, close 13.8 KV Bus 003 supply breaker from 2STX-XNS1, breaker 3-14. Check mormal (Station)) service transformer ammeters to verify load picked up.
 - At Panel 852, turn off Synch Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 001, breaker 3-14.
 - M. At Panel 852, open 13.8 KV Bus 003 supply breaker from reserve station service transformer 2RTX-XRS1B, breaker 3-1. Check voltage on 13.8 KV Bus 003 as nominally 13.8 KV.
- 3.0 After 13.8KV buses 001 and 003 are transferred to normal station service and periodically thereafter, transformer 2STX-XNS1 should be inspected and the following items should be checked as normal:

a. Liquid temperature (Less, than 80°c).

b. Winding temperature (Less than 80°c).

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F. NORMAL OPERATION (Cont.)

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c. Tank pressure (Between -8 and +10 PSIG)

d. Liquid flow (If pump is running)

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- e. Liquid level in transformer
- f. Liquid level in load tap changer
- g. Fault gas

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4.0 <u>Normal_operation_for_UPS-1_series_and_3-series, 75KVA and 10 KVA</u>

The normal operation of UPS's require little operator action. However, the individual UPS should be checked periodically for the following:

- a. Ventilation filters clean
- b. Doors and panel secured
- c. AC output voltage: For UPS 3A/3B 124V + 27

(121.5-126.5) UPS 1 Series- 120V <u>+</u> 2%. (117.6 - 122.4 VAC)

5.0 <u>Aux Service Transformers</u>

- 5.1 The following parameters should be periodically monitored on each transformer, by the operator.
 - a. Winding Temperature (less than 80°C)
 - b. Oil Temperature (less than 80°C)
 - c. Oil Level in Transformer
 - d. Internal Gas Pressure (-5 to +7.5 psig)

G. SHUTDOWN PROCEDURE

- <u>NOTE</u>: Once established, this system will not be shutdown as a unit. Shutdown is considered to be the manual transfer from normal to reserve supply when the main generator is taken out of service.
- 1.0 To transfer station service from normal to reserve
 - a. Manual transfer from normal to reserve for purposes of shutting down the main generator should be done while the generator is still synchronized to the bus.
 - b. Check the following lockout relays reset to assure closing permissives satisfied, for 13.8KV bus 001.
 - Panel 812 13.8 KV Bus NPS-001 protection lockout relay
 - 2. Panel 805 Reserve Station Service XFMR 1A Primary Protection Lockout Relay
 - 3. Panel 806 Reserve Station Service XFRM 1A Backup Protection Lockout Relay
 - 4. Panel 867 Generator backup protection lockout relay 2
 - 5. Check that relay flags are reset N2-OP-71 -40- December 1987

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SHUTDOWN (Cont.)

- c. Check the following lockout relays reset to assure closing permissives satisfied, for 13.8KV bus 003.
 - 1. Panel 813 13.8 KV Bus NPS-003 protection lockout relay
 - 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay
 - 3. Panel 809 Reserve Station Service XFRM 1B Backup ; Protection Lockout Relay
 - 4. Panel 867 Generator backup protection lockout relay 2
 - 5. Check that relay flags are reset
- d. At Panel 852, turn on Synch Switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, breaker 1-1.
- e. Check voltages equal and synchroscope in phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower control switch (P852).

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- f. At panel 852, close 13.8 KV Bus 001 supply breaker from 2RTX-XSR1A, breaker 1-1. Check reserve station service transformer 2RTX-XSR1A ammeters to verify load was picked up.
- g. At Panel 852 turn off Synch Switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
- h. At Panel 852, open 13.8 KV bus 001 supply breaker from normal station service transformer 2STX-XNS1, Breaker 1-3 and leave Control Switch in the normal after trip position. Check voltage on 13.8 KV Bus 201 action oninally 13.8 KV.
- i. At Panel 852, turn on Synch Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 003, Breaker 3-1.
- j. Check voltages equal and synchroscope on phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower switch (P852).
- At Panel 852, close supply breaker from 2RTX-XSR1B, Breaker 3-1, check reserve station service transformer 2RTX-XSR1B ammeters to verify load was picked up.

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G. SHUTDOWN (Cont.)

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- At Panel 852, turn off Synch Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 003, breaker 3-1.
- m. At Panel 852, open 13.8 KV Bus 003 supply breaker from normal station service transformer 2STX-XNS1, breaker 3-14 and leave control switch in the normal after trip position. Check voltage on 13.8 KV bus 003 as nominally 13.8 KV.
- n. Station service is now transferred from normal to reserve. Refer to OP #101 for plant shutdown.
- 2.0 Once the UPS Systems are put into service they should not be shut down as a unit. This would de-energize all UPS cloads. However, certain individual composents wof the UPS systems may be taken out of service for maintenance, etc. These procedures will be given under section H - off-normal procedures.

H. OFF NORMAL PROCEDURES

- NOTE: 13.8 KV Bus 001 Breaker 1-16, 13.8 KV bus 002 Breaker 2-1, and 13.8 KV bus 003 Breaker 3-16. No Breaker is supplied for cubicle.
- NOTE: For extended outages of reserve station service transformers 2RTX-XSR1A and XSR1B, refer to Sections of this procedure for transferring emergency switchgears to alternate feeds.
- 1.0 To remove reserve station service transformer 2RTX-XSR1A from service with unit running and station being fed from normal station service:
 - a. At Panel 852, start emergency.diesel.generator %2EOS*EC1 mand synchronize to emergency bus 2ENS*SWG101%(See*N2=0P-100A).

CAUTION

If a LOCA occurs while the bus is powered by the Diesel 'Generator alone, circuit #4 must be closed to separate category II service water and breaker 101-1 must be tripped. Note that the following step defeats load sequencing for Div. 1 SWP Pumps.

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- b. Station an operator with a flashlight and radio at panel 2BYS*PNL201A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open Breaker 101-13, feed from Transformer 2RTX-XSRIA to bus 2ENS*SWG101.

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H. OFF NORMAL PROCEDURES (Cont.)

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- <u>NOTE</u>: Step d and e is not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1B.
 - d. Place the 43LS switch on SWG102 to the ON position.
 - e. At P852, open breaker 102-4.
 - f. Move breaker from 102-4 to 102-5.
 - g. Place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.

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- h. Close breaker 102-5.
- i. Place the synch switch in the OFF position.
- j. Place the 43LS switch on SWG102 to the OFF position.
- k. At Panel 852, 4.16 KV bus 2NNS-SWG016, open Breaker 16-2,
 4.16KV feed from Reserve Station Service Transformer 2RTX-XSRIA to bus 2ENS*SWG101 and bus 2ENS*SWG102.
- At Panel 852, 13.8KV bus 2NPS-SWG001 check open breaker. 1-1, feed from Reserve Station Service Transformer 2RTX-XSRIA to 13.8 KV Bus.001.
- m. At 13.8 KV Bus 003, check cubicle 3-16, alternate feed from reserve station service transformer 2RTX-XSR1A, is empty.
- n. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS3, feed to Reserve Station Service Transformer 2RTX-XSR1A.
- o. At Panel 852, 13.8KV bus 001, verify that control switch for Breaker 1-16 is in the normal after: trip position.
 - P. At 13.8KV bus 001, rack out and remove Breaker 1-1 from cubicle 1-1 and rack breaker 1-1 into cubicle 1-16, feed to 13.8 KV Bus 001 from reserve station service transformer 2RTX-XSR1B.
- <u>NOTE</u>: Transfer of Station Service from normal to reserve station service will now be from Reserve B Transformer.
- 2.0 To return reserve station service transformer 2RTX-XSR1A to service with unit running and station being fed from normal station service:
 - a. To energize.transformer 2RTX-XSR1A, refer to OP-70 Section D.
 - b. At Panel 852, 13.8KV bus 2NPS-SWG*001, verify that control switch for Breaker 1-1 is in the normal after trip position.
 - c. At 13.8KV bus 001, rack out and remove Breaker 1-16 from cubicle 1-16 and rack Breaker 1-16 into cubicle 1-1.

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H. OFF NORMAL PROCEDURES (Cont.)

- d. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1A to 4.16 KV bus 016 as nominally 4.16 KV.
- e. At Panel 852, check breakers 101-13 and 102-4, feed from 4.16 KV Bus 016 to emergency switchgear are open.
- f. At Panel 852, 4.16KV bus 2NNS-SWG016 close Breaker 16-2, 4.16KV feed from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16KV.
- g. At Panel 852, turn on Synch Switch across 4.16 KV Bus 016 and 2ENS*SWG101, Breaker 101-13.
- h. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across Breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- i. Close circuit #4 in panel 2BYS*PNL201A.
- j. At Panel 852, turn off Synch Switch across 4.16KV Bus 016 and 2EHS*SLX-101, Breaker 101-13.
- k. At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- <u>NOTE</u>: If it is desired to power 2ENS*SWG102 from RTX-XSR1A then perform steps 1, m, n, o, p, q.
 - 1. Place the 43LS switch on SWG102 to the ON position.
 - m. At P852, open breaker 102-5.
 - n. Move the breaker from 102-5 to 102-4.
 - o. Place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
 - p. Close breaker 102-4.

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- q. Place the synch switch in the OFF position.
- r. Place 43LS switch in the OFF position.

To remove reserve station service transformer 2RTX-XSR1B from service with unit running and station being fed from normal station service:

a. At Panel 852, start emergency diesel generator 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

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CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER AND BREAKER 103-14 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP ALSO DEFEATS SWP PUMP LOAD SEQUENCING FOR DIV. 1.

- b. Station an operator with a flashlight and radio at panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an off-site feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open Breaker 103-4, feed from Transformer 2RTX-XSR1B to bus 2ENS*SWG103.
- <u>NOTE</u>: Steps d through j are not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1A.
 - d. Place the 43LS switch on SWG102 in the ON position.
 - e. At P852, open breaker 102-5.
 - f. Move the breaker from 102-5 to 102-4.
 - g. Place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
 - h. Close breaker 102-4.
 - i. Place the synch switch in the OFF position.
 - j. Place the 43LS switch in the OFF position.
 - k. At Panel 852, 4.16 KV bus 2NNS-SWG017, open Breaker 17-2, *
 4.16KV feed from Reserve Station Service Transformer
 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
 - At Panel 852, 13.8KV bus 2NPS-SWG003 check open breaker 3-1, feed from Reserve Station Service Transformer 2RTX-XSR1B to 13.8 KV Bus 003.
 - m. At 13.8 KV Bus 001, check cubicle 1-16, alternate feed from reserve station service transformer 2RTX-XSR1B, is empty.
 - n. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS4, feed to Reserve Station Service Transformer 2RTX-XSR1B.
 - o. At Panel 852, 13.8KV bus 003, verify that control switch for Breaker 3-16 is in the normal after trip position.
 - p. At 13.8KV bus 003, rack out and remove Breaker 3-1 from cubicle 3-1 and rack breaker 3-1 into cubicle 3-16, feed to 13.8 KV Bus 003 from reserve station service transformer 2RTX-XSR1A.
- <u>NOTE</u>: Transfer of Station Service from normal to reserve station service will now be from Reserve A Transformer.

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- 4.0 To return reserve station service transformer 2RTX-XSR1B to service with unit running and station being fed from normal station service:
 - a. To energize transformer 2RTX-XSR1B, refer to OP-70 Section D.
 - b. At Panel 852, 13.8KV bus 2NPS-SWG003, verify that control switch for Breaker 3-1 is in the normal after trip position.
 - c. At 13.8KV bus 003, rack out and remove Breaker 3-16 from a cubicle 3-16 and rack Breaker 3-16 into cubicle 3-1.
 - d. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1B to 4.16 KV bus 017 as nominally 4.16 KV.
 - e. At Panel 852, check breakers 103-4 and 102-5, feed from 4.16 KV Bus 017 to emergency switchgear are open.
 - f. At Panel 852, 4.16KV bus 2NNS-SWG017 close Breaker 17-2,
 4.16KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102. Check
 4.16KV bus 017 voltage as nominally 4.16KV.
 - g. At Panel 852, turn on Synch Switch across 4.16 KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
 - h. At Panel 852, bus 2ENS*SWG103, check synchronization and voltage across Breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
 - i. Close circuit #4 in Panel 2BYS*201B.
 - j. At Panel 852, turn off Synch Switch across 4.16KV Bus 017 and 2ENS*SWG-103, Breaker 103-4.
 - k. At Panel 852, bus 2ENS*SWG103, open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.
- <u>NOTE</u>: If it is desired to power 2ENS*SWG102 from RTX-XSR1B then perform steps 1 through r.
 - 1. Place the 43LS switch on SWG102 to the ON position.
 - m. At P852, open breaker 102-4.
 - n. Move the breaker from 102-4 to 102-5.
 - o. Place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - p. At P852, close breaker 102-5.

Place the synch switch in the OFF position. N2-OP-71 _46 May 1987 TCN-6

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r. Place the 43LS switch in the OFF position.

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To remove reserve station service transformer 2RTX-XSR1A from service with unit shutdown and station being fed from Reserve Station Service Transformers 2RTX-XSR1A and 1B.

a. At Panel 852, start emergency diesel 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSC PERFECTION FOR A DIV. 1.

- b. Station an operator with a flashlight and radio at panel 2BYS*PNL2OIA. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open breaker 101-13, feed from transformer 2RTX-XSR1A to bus 2ENS*SWG101 (See N2-OP-100A).

NOTE

Steps d through i are not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1B.

- d. At SWG102 place the 43LS switch in the ON position.
- e. At P852 open breaker 102-4.
- f. Move the breaker from 102-4 to 102-5.
- g. At P852, place the synch switch for the "alternate" feed to bus 102 from NNS017 in the ON position.
- h. At P852, close breaker 102-5.
- i. Place the synch switch in the OFF position.
- j. Place the 43LS switch in the OFF position.
- k. At Panel 852, 4,16KV bus 2NNS-SWG016, open breaker 16-2, 4.16KV feed from Reserve station service transformer
 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102.
- 1. At 13.8KV bus 001, rack out and remove breaker 1-3 from cubicle 1-3 and rack breaker 1-3 into cubicle 1-16.
- m. At Panel 852, bus 2NPS-SWG001, turn on synch. switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 001, Breaker 1-16.
- n. At Panel 852, bus 2NPS-SWG001, place the control switch for breaker 1-16 to the close position. Breaker 1-1 will trip and breaker 1-16 will close. 13.8 KV Bus 001 is now fed from reserve station service fransformer aRTX · XSR/B.

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- At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 001, breaker 1-16.
- p. At Panel 852, bus 2NPS-SWG001, place control switch for breaker 1-1 in the pull to lock position.
- q. At 13.8 KV Bus 003, check cubicle 3-16, alternate feed from reserve station service transformer 2RTX-XSR1A is empty.
- r. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS3, feed to Reserve station service transformer 2-RTX-XSR1A.
- 6.0 To return reserve station service transformer ... 2RTX-XSR1A to service with unit shutdown and station being fed from Reserve station service transformer 2RTX-XSR1B:
 - a. To energize transformer 2RTX-XSR1A, refer to OP-70 Section E.

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- b. At 13.8KV bus 001 verify that breaker 1-1 is racked in.
 - c. At Panel 852, bus 2NPS-SWG001, turn on synch switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
 - d. At Panel 852, bus 2NPS-SWG001, place the control switch for breaker 1-1 to the close position. Breaker 1-16 will trip and breaker 1-1 will close. 13.8 KV Bus is now being fed from reserve station service transformer 2RTX-XSR1A.
 - e. At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
 - f. At Panel 852, Bus 2NPS-SWG001, place control switch for breaker 1-16 in the pull to lock position.
- g. At 13.8KV bus 001, rack out and remove breaker 1-16 from cubicle 1-16 and rack breaker 1-16 into cubicle 1-3.
- h. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1A to 4.16 KV Bus 016 as nominally 4.16 KV.
- i. At Panel 852, check breakers 101-13 & 102-4, feeds from 4.16 KV bus 016 to emergency switchgear are open.
- j. At Panel 852, bus 2NNS-SWGOI6, close breaker 16-2 4.16KV feed from Reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16 KV.

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k. At Panel 852, turn on Synch. Switch across 4.16 KV Bus 016 and 2ENS*SWG 101, Breaker 101-13.

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- At Panel 852, bus 2ENS*SWG101 check synchronization and voltage across breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- m. Close circuit #4 in Panel 2BYS*PNL201A.

- n. At Panel 852, turn off synch. switch across 4.16 KV Bus 016 and 2ENS*SWG 101, Breaker 101-13.
- o. At Panel 852, bus 2ENS*SWG1Q1, open demogency demost generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.

<u>NOTE</u>: If it is desired to power 2ENS*SWG102 from RTX-XSR1A then perform steps p through v.

- p. Place the 43LS switch on SWG102 in the ON position.
- g. At P852, open breaker 102-5.
- r. At P852, place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
- s. Move the breaker from 102-5 to 102-4.
- t. At P852 close breaker 102-4.
- u. Place the synch switch in the OFF position.
- v. Place the 43LS switch, in the OFF position.
- To remove reserve station service transformer 2RTX-XSR1B from service with unit shutdown and station being fed from Reserve Station Service Transformers 2RTX-XSR1A and 1B.
 - a. At Panel 852, start emergency diesel 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 103-14 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 2 SWP PUMPS.

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b. Station an operator with a flashlight and radio at Panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed. N2-OP-71 -49- December 1987 τ. . ь

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c. At Panel 852, open breaker 103-4, feed from transformer 2RTX-XSR1B to bus 2ENS*SWG103 (See N2-OP-100A).

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- <u>NOTE</u>: Step d through j is not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1A.
 - d. At SWG102, place the 43LS switch in the ON position.
 - e. At P852, open breaker 102-5.
 - f. At P852, place, the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
 - g. Move the breaker from 102-5 to 102-4.
 - h. At P852, close breaker 102-4.
 - i. Place the synch switch in the OFF position.
 - j. Place the 43LS switch on SWG102 in the OFF position.
 - k. At Panel 852, 4.16KV bus 2NNS-SWG017, open breaker 17-2,
 4.16 KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
 - 1. At 13.8KV bus 003, rack out and remove breaker 3-14 from cubicle 3-14 and rack breaker 3-14 into cubicle 3-16.
 - m. At Panel 852, bus 2NPS-SWG003, turn on synch. switch across reserve station service transformer 2RTX-XSR1A and 13.8KV Bus 003, Breaker 3-16.
 - n. At Panel 852, bus 2NPS-SWG003, place the control switch for breaker 3-16 to the close position. Breaker 3-2, will strip and breaker 3-16 will close. '13.8KV Bus 003 is now being fed from reserve station service transformer 2RTX-XSR1A.
 - At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1A and 13.8KV Bus 003 Breaker 3-16.
 - p. At panel 852, bus 2NPS-SWG003, place control switch for breaker 3-1 in the pull to lock position.
 - q. At 13.8 KV Bus 001 check cubicle 1-16, alternate feed from reserve station service transformer 2RTX-XSR1B is empty.
 - r. At Panel 852, 115KV bus, open circuit_switcher 2YUC-MDS4, feed to reserve station service transformer 2RTX-XSR1B.
- 8.0 To return reserve station service transformer 2RTX-XSR1B to service with unit shutdown and station being fed from Reserve Station Service transformer, 2RTX-XSR1A:
 - a. To energize transformer 2RTX-XSR1B refer to OP-70 Section E. N2-OP-71 -50- March 1988

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- b. At 13.8KV bus 003 verify that breaker 3-1 is racked in.
- c. At Panel 852, bus 2NPS-SWG003, turn on Synch. Switch across reserve station service transformer 2RTX-XSR1B and 13.8KV Bus 003, Breaker 3-1.
- d. At Panel 852, bus 2NPS-SWG003, place the control switch for breaker 3-1 to the close position. Breaker 3-16 will trip and breaker 3-1 will close. 13.8KV Bus 003 is now fed from reserve station service transformer 2RTX-XSR1B.
- e. At Panel 852, turn off synch switch across reserve station service transformer 2RTX-XSR1B and 13.8KV Bus 003, Breaker 3-1.
- f. At Panel 852, Bus 2NPS-SWG003, place control switch for Breaker 3-16 in the pull to lock position.
- g. At 13.8KV bus 003, rack out and remove breaker 3-16 from cubicle 3-16 and rack breaker 3-16 into cubicle 3-14.
- h. At Panel 852, check 4.16KV feed from reserve station service transformer 2RTX-XSR1B to 4.16KV Bus 017 as nominally 4.16KV.
- i. At Panel 852, check breakers 103-4 and 102-5 feeds from 4.16 KV Bus 017 to emergency switchgear are open.
- j. At Panel 852, bus 2NNS-SWG017, close breaker 17-2 4.16KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102. Check 4.16KV bus 017 voltage as nominally 4.16 KV.
- k. At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- At Panel 852, bus 2ENS*SWG103 check synchronization and voltage across breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
- m. Close circuit #4 in Panel 2BYS*PNL201B.
- n. At Panel 852, turn off Synch. switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- o. At Panel 852, bus 2ENS*SWG103, open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.

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<u>NOTE:</u> Steps p through v are not necessary if Bus 2ENS*SWG102 is being |TCN-6 fed from reserve station service transformer 2RTX-XSR1A.

p. Place the 43LS switch on SWG102 in the ON position.

q. At P852, open breaker 102-4. N2-OP-71 -51 May 1987 , , . 1 1

- H. OFF NORMAL PROCEDURES (Cont.)
 - r. Move the breaker from 102-4 to 102-5.
 - s. At P852, place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - t. At P852, close breaker 102-5.
 - u. At P852, place the synch switch in the OFF position.
 - v. Place the 43LS switch on SWG102 in the OFF position.
 - 9.0 To remove auxiliary boiler service transformer 2ABS-X1 from service.
 - <u>NOTE</u>: No breakers are supplied for cubicles 18-2 bus 2NNS-SWG018 and 2-1 bus 2NPS-SWG002.
 - a. Refer to OP-48 for removing auxiliary boilers from service.
 - b. At Panel 852, bus 2NPS-SWG002, open breaker .2-5, 13.8KV feed to bus 2NPS-SWG002 and place control switch in the pull to lock position.
 - c. At Panel 852, bus 2NNS-SWG018, check open breaker 18-2, 4.16KV feed to emergency buses 2ENS*SWG101 and 2ENS*SWG103.
 - d. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS5, 115KV feed to transformer 2ABS-X1.
 - e. At Panel 852, check that bus 2NNS-SWG018 and bus 2NPS-SWG002 voltage reads zero.
 - 10.0 To return Auxiliary boiler service transformer 2ABS-X1 to service:
 - <u>NOTE</u>: No breakers are supplied for cubicles 18-2 bus 2NNS-SWG018 and 2-1 Bus 2NPS-SWG002.
 - a. To energize auxiliary boiler service transformer 2ABS-X1, refer to OP-70 Section E.
 - b. To energize 13.8KV Bus 002, refer to this procedure Section E, Step 4.
 - c. To energize 4.16KV Bus 018, refer to this procedure Section E, Step 15.
 - 11.0 To remove auxiliary boiler service transformer 2ABS-X1 from service and supply auxiliary boilers from reserve station service transformer 2RTX-XSR1A.
 - a. To remove auxiliary boiler service transformer 2ABS-X1 from service refer to Section H Step 9 this procedure.

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CAUTION

STEP C MUST BE DONE WHILE TRANSFORMER 2RTX-XSR1A LOAD BREAKERS; 1-1, 3-16, AND 2-1 ARE OPEN.

- b. To remove reserve station service transformer 2RTX-XSR1A from service refer to this procedure Section H Step 5.
- c. Close neutral disconnect switch 2RTX-SW001 in the grounding circuit for the 13.8KV windings of reserve station service transformer 2RTX-XSR1A.
- d. At Panel 852, 115KV bus, close circuit switcher 2YUC-MDS3, feed to Reserve A transformer. (See OP-70)
- e. At Panel 852, check 4.16KV feed from reserve station service transformer 2RTX-XSR1A to 4.16KV Bus 016 as nominally 4.16KV.
- f. At Panel 852, check breakers 101-13 and 102-4, feed from 4.16KV Bus 016 to emergency switchgear are open.
- g. At Panel 852, 4.16KV bus 2NNS-SWG016, close breaker 16-2, 4.16KV feed to emergency bus 2ENS*SWG101 and 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16KV.
- h. At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG101, breaker 101-13.
- i. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- j. Close circuit #4 in Panel 2BYS*PNL201A.
- k. At Panel 852, turn off Synch. Switch across 4.16KV Bus Ol6 and 2ENS*SWG101, breaker 101-13.
- 1. At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EGI output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- NOTE: Steps m through s are not necessary if Bus 2ENS*SWG102 is being fed from reserve station service transformer 2RTX-XSR1B.

m. At SWG102, place the 43LS switch in the ON Position.

- n. At P852, open breaker 102-4.
- o. Move the breaker from 102-4 to 102-5.

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- p. At P852, place the synch switch for the alternate feed bus 102 from NNSO17 in the ON position.
- q. At P852, close breaker 102-5.
- r. At P852, place the synch switch in the OFF position.
- s. At SWG102, place the 43LS switch in the OFF position.
- 12.0 To return auxiliary boiler service transformer 2ABS-X1 to service and return reserve station service transformer 2RTX-XSR1A to normal feed:
 - a. Verify auxiliary boiler service transformer 2ABS-X1 is de-energized by checking open breaker 18-2 bus 2NNS-SWG018; breaker 2-5 bus 2NPS-SWG002 and circuit switcher 2YUC-MDS5.
 - b. Remove auxiliary boilers from service in accordance with OP-48.
 - c. At Panel 852, 13.8 KV bus 2NPS-SWG002, open breaker 2-1 feed from reserve station service transformer 2RTX-XSR1A and check that voltage reads zero on bus 2NPS-SWG002. Place control switch for breaker 2-1 in the pull to lock position.
 - d. At 13.8KV bus 2NPS-SWG002, rack out and remove breaker 2-1 from cubicle 2-1 and rack breaker 2-1 into cubicle 2-5.
 - e. At Panel 852, start emergency diesel 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100B).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

- f. Station an operator with a flashlight and radio at Panel 2BYS*PNL201A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- g. At Panel 852, open breaker 101-13, feed from reserve station service transformer 2RTX-XSR1A to emergency bus 2ENS*SWG101 (See OP-72).
- <u>NOTE</u>: Steps h through m are not necessary if bus 2ENS*SWG102 is being fed from reserve station service transformer 2RTX-XSR1B.

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- h. At SWG102, place the 43LS switch in the ON position.
- i. At P852, open breaker 102-4.
- j: Move the beraker from 102-4 to 102-5.
- k. At P852, place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
- 1. At P852, close breaker 102-5.
- m. Place the synch switch in the OFF position.
- n. Place the 43LS switch in the OFF position.
- o. At Panel 852, bus 2NNS-SWGO16, open breaker 16-2, 4.16KV feed from Reserve station service transformer 2RTS-XSR1A to emergency bus 2ENS*SWG101 and 2ENS*SWG102.
- p. At Panel 852, bus 2NPS-SWG001 verify breaker 101, Reserve A feed to bus 2NPS-SWG001 is open.
- q. At 13.8KV Bus 003, check cubicle 3-16 alternate feed from reserve station service transformer 2RTX-XSR1A is empty.
- r. At Panel 852, 115KV bus open circuit switcher 2YUC-MDS3, feed to reserve station service transformer 2RTX-XSR1A.

CAUTION

STEP S MUST BE DONE WHILE TRANSFORMER 2RTX-XSR1A LOAD BREAKERS: 1-1, 3-16, AND 2-1 ARE OPEN.

- s. Open neutral disconnect switch 2RTX-SW001 in the grounding circuit for the 13.8KV windings of reserve station service transformer 2RTX-XSRIA.
- t. Energize reserve station service transformer 2RTX-XSR1A and transfer 13.8KV bus 2NPS-SWG001 feed in accordance with Section H Step 6 this procedure.
- u. Energize auxiliary boiler transformer and 13.8KV bus 2NPS-SWG002 in accordance with Section H Step 10 this procedure.
- 13.0 To transfer emergency bus 2ENS*SWG102 normal feed from Reserve station service transformer 2RTX-XSR1A to reserve station service transformer 2RTX-XSR1B.
 - a. At Panel 852, bus 2NNS-SWG017, verify that breaker 17-2 is closed. Check 4.16KV bus 017 voltage as nominally 4.16KV.
 - b. At SWG102, place the 43LS switch in the ON position.

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- At Panel 852, bus 2ENS*SWG102, open breaker 102-4, feed с. from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG102.
- At bus 2ENS*SWG102 rack out and remove breaker 102-4 from d. cubicle 102-4 and rack breaker 102-4 into cubicle 102-5.
- At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 e. and 2ENS*SWG102, breaker 102-5.
- At Panel 852, close breaker 102-5. f.
- At Panel 852, turn off Synch. Switch across 4.16KV Bus 017 g. and 2ENS*SWG102, Breaker 102-5.
- Place the 43LS switch in the OFF position. h.
- To transfer emergency bus 2ENS*SWG102 feed from Reserve station 14.0 service transformer 2RTX-XSR1B to reserve station service transformer 2RTX-XSR1A.
 - At Panel 852, bus 2NNS-SWG016, verify that breaker 16-2 is a. closed, check 4.16KV bus 016 voltage as nominally 4.16KV.
 - At SWG102, place the 43LS switch in the ON position. Ъ.
 - At Panel 852, bus 2ENS*SWG102, open breaker 102-5, feed c. from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG102.
 - At bus 2ENS*SWG102 rack out and remove breaker 102-5 from d. cubicle 102-5 and rack in breaker 102-5 into cubicle 102-4.
 - At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 e. and 2ENS*SWG102, breaker 102-4.
 - At Panel 852, close breaker 102-4. f.
 - At Panel 852, turn off Synch. Switch across 4.16KV Bus 016 g. and 2ENS*SWG102, Breaker 102-4.
 - Place the 43LS switch in the OFF position. h.
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NOTE:

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To transfer emergency bus 2ENS*SWG101 feed from reserve station service transformer 2RTX-XSR1A to Aux. boiler transformer 2ABS-X1:

Step-a, is-not-required-if-Bus-2ENS*SWG102-is-being-fed-from--reserve-station-service-transformer-2RTX-XSRLB--

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- At Panel 852, 115KV bus, verify that Aux. boiler transformer 2ABS-X1 is energized.
- D.E. At Panel 852, start emergency diesel generator 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY ICN-12 II SERVICE WATER, AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

C.C. Station an operator with a flashlight and radio at panel 2BYS*PNL2OIA. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.

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- At Panel 852, bus 2ENS*SWG101 open breaker 101-13 feed from 4.16KV bus 2NNS-SWG016 to bus 2ENS*SWG101. Place control switch for breaker 101-13 in the pull to lock position.
 - .f.____At_Panol_852, bus_2NNS_SWG016, open_breaker_16-2, feed_from -Reserve___station__service__transformer__2RTX_XSR1A__to_bus -2ENS*SWG101_and_bus_2ENS*SWG102, Place_control_switch_for -_breaker_16-3_in_the_pull_to_lock_position.
 - 8----At--Penol-852, lock-out-aux--boilor--transformer-2ABS-X1-foodto---omorgoncy---buses---2ENS*SWG101---and--2ENS*SWG103, --Broaker-18-2
 - C. At Aniel 852, VEZIFY bREATER 18-2 IS CLOSED AND NUS-SWED19 IS EVERGIZED.
 - h.___At__416KV_bus__016__rack_out__and__remove_breaker__16-2__from _cubicle__16-2__and__rack_breaker__16-2__into__4.16-_KV-bus__018-.cubicle_18-2.
- FX. At bus 2ENS*SWG101 rack out and remove breaker 101-13 from cubicle 101-13 and rack breaker 101-13 into cubicle 101-10.
 - -j. At Panol 852, bus 2NNS-SWCOl8, close breaker 18-2, feed -from 2ABS X1 -- transformer to bus 2ENS*SWC101 and bus -- 2ENS*SWC103.
- g.K. At Panel 852, turn on Synch. Switch across 4.16KV Bus 018 and 2ENS*SWG101, Breaker 101-10.
- h A. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across breaker 101-10. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-10.
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.m. Close circuit #4 in panel 2BYS*PNL201A.

- At Panel 852, turn off Synch: Switch across 4.16 KV Bus 018 and 2ENS*SWG101, Breaker 101-10.
- K ø. At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- 16.0 To transfer emergency bus 2ENS*SWG101 feed from Aux. boiler transformer 2ABS-X1 to reserve station service transformer 2RTX-XSR1A:.
 - a. At Panel 852, 115KV bus, verify that reserve station service transformer 2RTX-XSR1A is energized.
 - b. At Panel 852, start emergency diesel generator 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

- c. Station an operator with a flashlight and radio at panel 2BYS*PNL201A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At panel 852 bus 2ENS*SWG101 open breaker 101-10, feed from
 4.16KV bus 2NNS-SWG018 to bus 2ENS*SWG101. Place control switch for Breaker 101-10 in the pull to lock position.
- e. At Panel 852, bus 2NNS-SWG018, open breaker 18-2, feed from Aux. boiler transformer 2ABS-X1 to bus 2ENS*SWG101 and bus 2ENS*SWG103. Place control switch for breaker 18-2 in the pull to lock position.
- f. At Panel 852, lockout reserve station service transformer 2RTX-XSR1A feed to emergency buses 2ENS*SWG101 & 2ENS*SWG102, Breaker 16-2.
- g. At 4.16KV bus 018 rack out and remove breaker 18-2 from cubicle 18-2 and rack breaker 18-2 into 4.16KV bus cubicle 16-2.
- . h. At bus 2ENS*SWG101 rack out and remove breaker 101-10 from cubicle 101-10 and rack breaker 101-10 into cubicle 101-13.
- i. At Panel 852, bus 2NNS-SWG016, close breaker 16-2, feed from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. N2-OP-71 -58- December 1987

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- j. At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG101, Breaker 101-13.
- At Panel 852, bus 2ENS*SWG101, check synchronization and k. voltage across breaker 101-13. Make necessary adjustments emergency diesel generator 2EGS*EG1 voltage to and frequency (See N2-OP-100A) and close breaker 101-13.
- 1. Close circuit #4 in panel 2BYS*PNL201A.
- At Panel 852, turn off Synch. Switch across 4.16 KV Bus 016 m. and 2ENS*SWG 101, Breaker 101-13.
- At Panel 852, bus 2ENS*SWG101 open emergency diesel n. generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- Transfer emergency bus 2ENS*SWG102 from reserve station ο. service transformer 2RTX-XSR1B to reserve station service transformer 2RTX-XSR1A per Section H Step 14 of this procedure.
- NOTE: Normal feed to Bus 2ENS*SWG102 is from reserve station transformer 2RTX-XSR1A with 2RTX-XSR1B as the alternate source.
- 17.0 To transfer emergency bus 2ENS*SWG103 feed from reserve station service transformer 2RTX-XSR1B to aux. boiler transformer 2ABS-X1:

Verify that bus 2ENS*SWG102 is fed from it's normal source, 1 a. 2RTX-XSRIA. SF N mode 1,2 st 3 And 20154 SWE 103 is to be terreferred to the Aux, backe to with ABS- XI putting to 2 2XX - 25RIA, consult with Tech. Spece. 3. S. 117 b. At Panel 852 5 115KV bus, verify that aux. boild NOTE : ь. boiler the same Misk I line As transformer 2ABS-X1 is energized And Excelse. 13-3 classic.

> c. At Panel 852, start emergency diesel generator 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

CAUTION

If a LOCA occurs while the bus is powered by the Diesel Generator alone, circuit #4 must be closed to separate category II service water, and breaker 103-14 must be tripped. Note that the following step will also defeat load sequencing for Div. 2 SWP Pumps.

- d. Station an operator with a flashlight and radio at panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At Panel 852, bus 2ENS*SWG103 open breaker 103-4 feed from 4.16KV bus 2NNS-SWG017 to bus 2ENS*SWG103. Place control e. switch for breaker 103-4 in the pull to lock position. N2-OP-71 -59- December 1987

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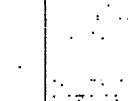
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At-Panel-852, bus-2NNS-SWG017, open-breaker-17-2, food from-Reserve-station_service_transformer_2RTX_XSR18_140--25NS*SWG102-and_bus_25NS*SWG103___Place_control_switch_for_ -breaker_17-2_in_the_pull_to_lock_position.-

At-Panel-852, lock-out-aux boiler transformer 2ABS-X1-foed--to-emergency-buses-2ENSXSWG101_and_2ENSXSWG103-Broakor 18-2-TCN-I3

f. X. Check control switch for breaker 103-2 is in pull-to-lock position.

9 X. At bus 2ENS*SWG103 rack out and remove breaker 103-4 from cubicle 103-4 and rack breaker 103-4 into cubicle 103-2.

At-Panel-852, bus 2NNS-SWG018, close breaker 18-2, feedfrom 2ABS-X1 transformer to bus 2ENSXSWC101 and bus 23NS*SWG103-

At Panel 852, turn on Synch. Switch across 4.16KV Bus 018 and 2ENS*SWG103, Breaker 103-2.

At Panel, 852, bus 2ENS*SWG103, check synchronization and voltage across breaker.-103-2. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-2.

Close circuit #4 in Panel 2BYS*PNL2018.

At Panel 852, turn off Synch. Switch across 4.16 KV Bus 018 and 2ENS*SWG103, Breaker 103-2.

At Panel 852, bus 2ENS*SWG103, open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.

CAUTION

At no time will both emergency bus 2ENS*SWG101 and 2ENS*SWG103 be paralleled on bus 2NNS-SWG018.

18.0

To transfer emergency bus 2ENS*SWG103 feed from Aux. boiler transformer 2ABS-X1 to reserve station service transformer 2RTX-XSR18:

At Panel 852, 115KV bus, verify that reserve station service transformer 2RTX-XSR1B is energized.

Ъ. At Panel 852, start emergency diesel generator 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

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CAUTION

If a LOCA occurs while the bus is powered by the Diesel Generator alone, circuit #4 must be closed to separate category II service water, and breaker 103-14 must be tripped. Note that the following step will also defeat Div. 2 SWP Pump load Sequencing.

- c. Station an operator with a flashlight and radio at panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- d. At panel 852 bus 2ENS*SWG103 open breaker 103-2, feed from
 4.16KV bus 2NNS-SWG018 to hus 2ENS*SWG103. Place control switch for Breaker 103-2 in the pull to lock position.
- e. At Panel 852, bus 2NNS-SWGO18, open breaker 18-2, feed from Aux. boiler transformer 2ABS-X1 to bus 2ENS*SWG101 and bus 2ENS*SWG103. Place control switch for breaker 18-2 in the pull to lock position.
- f. At Panel 852, verify the control switch for the reserve station service transformer 2RTX-XSR1B feed to emergency. buses 2ENS*SWG103 & 2ENS*SWG102, Breaker 17-2 is in the "pull to lock" position.
- g. At 4.16KV bus 018 rack out and remove breaker 18-2 from cubicle 18-2 and rack breaker 18-2 into 4.16KV bus 017 cubicle 17-2.
- h. Check control switch for breaker 103-4 is in pull-to-lock position.
- i. At bus ZENS*SWG103 rack out and remove breaker 208-2 from cubicle 103-2 and rack breaker 103-2 into cubicle 103-4.
- j. At Panel 852, bus 2NNS-SWG017, close breaker 17-2, feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
- k. At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- 1. At Panel 852, bus 2ENS*SWG103, check synchronization and voltage across breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
- m. Close circuit #4 in Panel 2BYS*PNL201B.
- n. At Panel 852, turn off Synch. Switch across 4.16 KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- o. At Panel 852, bus 2ENS*SWG103 open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby. N2-OP-71 -61- December 1987

TCN-12

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19.0 Loss of normal feed (2NJS-US3) to 2VBB-TRS1 - transfer switch feeding normal A.C. voltage supply to 2VBB-UPS1A, 1B, 1G:

Upon loss of feed 2NJS-US3 to transfer switch 2VBB-TRS1, the UPS and transfer switch will automatically transfer so that there is no loss of load, therefore, no operator action is required.

Description of transfer: Upon loss of power from 2NJS-US3 to 2VBB-TRS1 the "normal" green light on TRS1 will go out and TRS1 will automatically (after a time delay) transfer its input to 2NJS-US4 and the "emergency" red light will light. When normal power is lost to the UPS it will automatically begin drawing power from the batteries.

As soon as TRS 1 transfers to 2NJS-US4 normal power is restored to the UPS and the UPS will bias off (stop drawing from) the batteries and draw from its normal source again. When 2NJS-US3 is re-energized the transfer switch, 2VBB-TRS1, will automatically retransfer back to 2NJS-US3 (after a delay). There is no loss of power to the UPS load and all equipment will restore automatically so no operator action is necessary.

20.0 Loss of normal A.C. power to all series 1 and series 3 UPS

No operator action required. Upon loss of normal A.C. supply to any series 1 or series 3 UPS the UPS will automatically begin accepting power from the batteries. As long as the battery voltage does not fall to an undervoltage condition (due to an off normal condition in the 125VDC system), the UPS can continue to operate off the battery indefinitely. When the normal A.C. source is re-energized, the UPS will automatically bias off (stop drawing from) the batteries and draw power again from its normal source.

21.0 Loss of normal A.C. power with added loss of D.C. backup power to all series 1 and series 3 UPS:

> If there is loss of normal A.C. power to any UPS combined with a loss of (battery) D.C. power, the UPS will automatically transfer its load to its maintenance A.C. source. Once the UPS is on the maintenance source it can operate indefinitely on maintenance power until normal power is available. Once normal power is available the load is automatically retransferred back to the UPS.

22.0 Energized UPS (Series 1 or 3) with loss of D.C. power without 3 loss of normal A.C. power:

> An energized UPS operating on normal A.C. power can experience the loss of D.C. power with no effect on the UPS or its loads. 3 Therefore this requires no operator action.

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	L — S4 UF Po	NPPLIES FAC AS LOGIC A WER DE-E	ARE WILL RESALT IN THE UPS CRITICAL LOADS BEING MAINTENANCE SOURCE, THE UPS INVERTER AND WER WILL BE DE-ENERGIZED. WITH THE UPS LOGIC MERGIZED CONTROL ROOM ANNUNCIATION FOR THE UPS WILL BE INHIBITED. 15796
	H. OFF NORMA	L PROCEDU	RES (Cont.)
	23.0		of load from UPS 1 series (75 KVA) to the maintenance 3
-4		a. Init	tial Condition:
-		ĺ.	UPS module supplying critical load.
		2.	The maintenance source is energized.
		3.	The UPS A.C. input breaker is closed.
		b. UPS	transfer and shutdown:
		1.	Check that "util sync ok" lamp is lit.
14 - 1600-1811 - 1620-168 - 266 - 2611 - 2610-1913	r. - 1-1940 av 30-4 av 21 - 1946 av 61-21-21-41-4	2.	"No - break transfer, to bypass".lamp is lit.
		3.	Place the transfer control switch in the -bypess $\frac{7^{1/4}}{3}$
•	. 8	, <u>NOTE</u>	: This initiates the transfer to maintenance. CB-3 3 and CB-4 will change position.
Salary)		ۍ . دی	Release switch and allow it to spring back to the . "manual restart" position.
, j	Serie 43e en	- 5.	Verify breaker CB-4 is closed.
	• *	6.	Open "switch" CB-3" on panel and verify CB-3 opens.
		7.	Push "module off" switch.
×, ×,	•	8.	Open battery breaker, CB-2.
1		, 9 <i>.</i>	Manually open A.C. input breaker, CB-1.
		10.	Using portable D.C. voltmeter on UPS internal D.C. Bus, check that voltmeter indicates less than 30 VDC.
*	NOTE:	Allow app	rox. one minute for DC bus to decay below 30 volts.
	2726726		Open control circuit breakers, A27-CB1 and control
•	· .	13 72	The UPS is now de-energized except for the load current transformer loops. Refer further isolation and/or repairs to maintenance.
• • • • • • • • • • • • • • • • • • •	24.0	11911041112	en Corro Plue, PG, TO MOTOR OPERATOR TO CE-Y. the altornate supply to any 1-series UPS with the UPS Mu the critical load:
9 19 19 - 19 19 - 19 19 - 19 19 - 19 19		a. Verif	Sy UPS "module-on" lamp is lit.
	1		c D.C. volts at 130-140 VDC.
		c. Check	c output frequency at nominal 60 Hz. N2-OP-71 -63- December 198 7 JUNC 1991

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H. OFF NORMAL PROCEDURES (Cont.)

- d. Check A.C. output volts at nominal 120 volts.
- e. Check breaker toggle switch "CB-3" is in closed position.
- f. Check that breaker CB-4 is open.
- g. Disconnect the power jack for the cable to the motor operator of CB-4.
- h. Place transfer control switch to "manual restart" position.

CAUTION:

- BE CAREFUL THAT SWITCH DOES NOT GO TO "BYPASS" ACCIDENTLY.
- i. In order to de-energize each maintenance supply open the associated input breaker, CB-1, on the associated transformer.
- j. To de-energize the feed to each associated transformer, open up the A.C. feed breaker as follows:
- k. For 2VBB-XD500 (UPS1A) open breaker # 8-D on 2NJS-US5 2VBB-XD601 (UPS1B) open breaker # 4-B on 2NJS-US6 2VBB-XD501 (UPS1C) open breaker # 4-B on 2NJS-US5 2VBB-XD600 (UPS1D) open breaker # 6-C on 2NJS-US6 2VBB-XD602 (UPS1G) open breaker # 6-D on 2NJS-US6
- 1. Refer cable removal, etc. to electrical maintenance.
- NOTE: With UPS in this configuration, a UPS trip will cause a loss of critical load.
- 25.0 Transfer of load from UPS 3A and 3B (10 KVA) to the maintenance group source and shutdown of the UPS.
 - 1. Initial Conditions:
 - a. UPS module supplying the critical load.
 - b. The maintenance source is energized.
 - 2. UPS transfer and shutdown
 - a. Check the maintenance supply voltage and frequency to be 3 nominally 124 volts and 60 Hz, respectively.

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- b. Check "Sync. Loss" lamp is out.
- c. Push reverse transfer (to maintenance) pushbutton.
- d. Switch manual transfer switch S-1 to the "Maintenance" | 3 position.
- e. Turn off battery circuit breaker CB-2.
- f. Turn off A.C. input breaker, CB-1.
- g. Check D.C. rectifier and inverter output volts drop to zero.
- h. Set output AC voltmeter and frequency meter switch, S-2, to the "maintenance" position. 3 N2-0P-71 -64- December 1987

- H. OFF NORMAL PROCEDURES (Cont.)
 - 26.0 Removing the maintenance supply to UPS3A or UPS3B with the UPS supplying the critical loads.
 - a. Verify on UPS CB-1 closed.
 - b. Verify on UPS CB-2 closed.
 - c. Verify UPS D.C. volts is 130-140 VDC.
 - d. Verify UPS A.C. output volts to be nominal 124 VAC.
 - e. Verify UPS frequency at nominal 60 Hz.
 - f. Check all alarms clear.

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- 8. Move switch S-1, "manual transfer switch" to the "maintenance" switch position.
- h. On the maintenance supply transformer/regulator open CB-1. "AC INPUT TO MAINTENANCE SUPPLY REGULATOR" BREMEER
- i. Any further isolation and/or repair should be referred to physical maintenance.
- <u>NOTE:</u> With UPS and maintenance supply in this position, any UPS fault condition will result in loss of load.
- 27.0 UPS 1-series restart after a UPS failure trip/transfer to maintenance supply:
 - a. Check the critical load is being powered by the maintenance supply.
 - b. Record all UPS alarm and switch positions, and then push reset buttons A13A34 and A13A21.
 - c. Close/verify closed CB-1, normal AC input.
 - d. Place the transfer control switch in the "manual restart" position.
 - e.1 Place CB-3 toggle switch in the OPEN position.
 - e.2 Push ON pushbutton. After unit stabilizes (running), close CB-2.
 - e.3 Push OFF pushbutton. Place transfer control switch to "AUTO RESTART." Place CB-3 toggle switch in CLOSE position.
 - f. The UPS will automatically restart (after a time relay of approximately 40 sec.) and retransfer back to the UPS.

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- HANTEL MARKE If the UPS transfers back to bypace, then move the transfer g. control switch to "Manual Restart" and investigate cause. l K If UPS shutdown is warranted do so per Section H.23.b.5-14. 2/2/00
- h. If UPS stays on UPS power, verify output of nominal 120 VAC, and 60 Hz.
- i. Check transfer Control Switch is in "Auto Restart" position.
- 28.0

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UPS 1-series shutdown after failure, maintenance source feeding ¹ load: **4** 1

Record all alarms and switch positions on the UPS. a.

<u>.</u>

Place transfer control switch to "manual restart" position. Ъ.

Follow Section H.23.b.5-14 /3. c.

3A/3B restart after a UPS failuré trip/transfer to UPS maintenance supply:

- Check that the critical,load is being powered by the a . maintenance supply.
- Record all alarms and switch positions. Ъ.
- Clear all alarms as'necessary. c.
- close i£ breaker C3-1 closed, input đ. Verify A.C. open/tripped.
- Check D.C. input breaker CB-2 closed. (If tripped, do not e. reset until UPS is up and running.)
- Check UPS D.C. volts 130-140 VDC. £.
- Check inverter output volts nominally 124 VAC and 60 H_Z . 8.
- Check manual transfer switch, S-1, is in the "static h. switch" position.
- Check "Sync. Loss" lamp is out. i.
- Push the "forward transfer" (to inverter) pushbutton. j.
- If the load transfers back to the maintenance supply, then k. investigate the cause. If UPS shutdown is warranted, do so per Section H. 25.

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UPS 3A/3B shutdown after failure, with maintenance source 30.0 feeding load.

> Record all alarms and switch positions. **a**.

- ъ. Follow Section H. 25.
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, . . 31.0 RESTORING THE MAINTENANCE SUPPLY TO UPS 3A OR UPS 3B WITH THE UPS SUPPLYING THE CRITICAL LOADS.

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₩ tr/uj:

Verify on UPS CB-1 closed, a. Verify on UPS CB-2 Closed, 6. c. Verify UPS D.C. volts 130-140 VDC Verify UPS A.C. output volts to be d... nominal 124 VAC e. Verify UPS frequency at nominal 60 HZ. f. Check all alarms cleargexcept sync loss. g. On the maintenance supply transformer/ regulator, close the "AC INPUT TO MAINTENANCE SUPPLY REGULATOR BREAKER h. Move switch S-1 "Manual transfer - Switch to the "STATIC Switch AUTO TRANSFERS POSSIBLE" POSITION.

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32.0 Inadvertent Loss of Buss

NOTE:

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Loss of Buss may be indicated by any of the following:

- Trip of Feeder Breaker due to electrical malfunction • (typically from electrical fault or undervoltage condition).
 - Zero voltage indicated at the affected buss.
 - Annunciators in alarm for the associated buss.
 - Loss of loads supplied by the affected buss.
- 32.1.0 OPERATOR ACTIONS
 - 52.1.1 Take the necessary actions to place the Plant in a Safe condition.
 - X.1.2 Refer to Operating Procedures as required.
 - 32.1.3 Place all loads on affected Switchgear, Unit sub or Motor Control Center in the Pull-to-Lock position.
 - 32.1.4 Place affected Feeder Breakers in the Pull-to-Lock position.
 - 2.1.5 Determine the cause of the inadvertent loss of buss by performing the following steps as appropriate: #
 - Contact Electrical Maint. for assistance.
 - Scan all Control Room panels for abnormal indications which may aid in identifying the cause.
 - Request assistance from I&C and Meter&Test as necessary.
 - Refer to electrical diagrams and load lists as necessary to identify affected loads.
 - 32.1.6 Refer to Technical Specifications for possible entry into LCO's.
 - 32.1.7 Attempt to correct or isolate the cause of loss of buss.
 - <u>CAUTION</u> Trips or Lockout's should not be reset until the cause of the loss of buss has been determined and corrected.

32.2.0 RESTORATION

- 32.2.1 When the cause of the loss of buss has been determined and corrected then restore power to the buss using the following steps as a guideline.
 - a. Verify all load breakers on the affected buss are in Pull-to-Lock.
 - b. Reclose Feeder Breaker to re-energize the buss.
 - c. Verify proper voltage on the buss.

CAUTION

- The following step may involve re-starting of equipment in the plant, Operating Procedures for re-start of those systems must be used.
- d. Sequentially re-energize loads on the buss by placing the breakers from Pull-to-Lock to the Normal-after-Start position for only those loads which are required to support normal plant operation or as directed by the SSS.
 e. Control Room panels should again be scanned to verify that all abnormal indications and alarms caused by the loss of buss have been corrected.

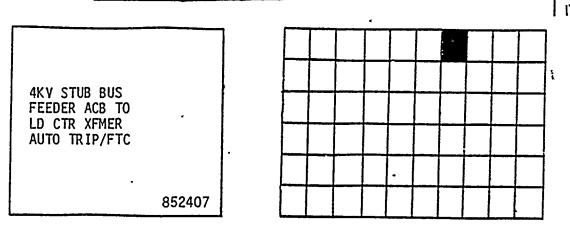
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PROCEDURE FOR CORRECTING ALARM CONDITIONS I.

4KV Stub Bus Feeder Air Circuit Breaker to Load Center $7CN^{3/4}$ Transformer Auto Trip Failure to Close 1.0 852407

Reflash : Yes



852407

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.1	Com	puter Point	Computer Printout	Source		
	′a.	NJSUC1 3	XIE ACB 14-4 AT/FTC	2NJS-X1E ACB 14-4 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSX21		
	b.	NĴSUCI 4	XIE ACB 14-8 AT/FTC	2NJS-X1E ACB 14-8 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSX31		
	с.	NJSUC1 5	X3E ACB 15-1 AT/FTC	2NJS-X3E ACB 15-1 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSY21		
	d.	NJSUC16	X3E ACB 15-7 AT/FTC	2NJS-X3F ACB 15-7 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSY31		

1.2 Automatic Response

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Trip 4160 stub bus feeders to 600V load centers US5 or US6. a.

1.3 **Corrective** Action

Verify auto station response. a.

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Investigate and determine reason for trip. b. When the cause for the trip is corrected, re-energize Return system to normal. The system per N2-CP-71 sect. E. 7.0 (E. 10.0), E. 17.0 (E.18.0) or N2-OP-72 sect. H.2.0 as appropriate. c.

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I	I.	PROCEDUR	E FOR	CORRECTING	ALARM CO	NDITIONS	(co	nt.)								
TCN-24 12/6/96 12/6/96		2.0	8524	108 4KV Elect	Stub Bu rical Fa		r	to	Load	Ce	nter	T	rans	form	er	
2/6/96					Reflach	: Yes								•		
2/00			r				()	1				,				1
,							-		$\left - \right $		+			-+	_	1
				STUB BUS DER TO			<u>├</u>	┼──		-	┼╌	-	┝╼╍┤	$\rightarrow \uparrow$		1
			LD (CTR XFMER		,										
								-								
					852408											
•													. 8	5240	8	
		2.1	Comp	outer Point		puter Pri		ut	<u>Soun</u>						~	
			a.	NJSUCO9		K OUT RLY X21 TRIP			on s	< Out stub der A	bus	2NN	s-sw	G014		•
						•			trip Brea INS	os an aker T, Ti rent	d 10 US-5	cks -8B	out on	600 high	¥ :	
			b.	NJSUC10		K OUT RLY X31 TRIP	,	x	on feed trij Brea INS	k Out stub der A os an aker T, Ti rent	bus CB 1 d 10 US-5	2NN 4-8 cks -38	S-SW to out on	GO14 US-5 600 high	v :	
			с.	NJSUC11		K OUT RLY Y21 TRIP	•	8 9 9 9 9 9	on s feed trip Brea INS	k Out stub der A os an aker T, Ti rent	bus CB 1 d 10 US-6	2NN 5-1 cks -7B	S-SW to out on	GO15 US-6 600 high	γ :	
,			d.	NJSUC12 		K OUT RLY Y31 TRIP	,		on s feed trip Brea	< Out stub der A os an aker T, Ti rent	bus CB 1 d 1o US-6	2NN 5-7 cks -38	S-SW to out on	GO15 US-6 600 high	۷ :	
				N2-	0P <i>-</i> 71 -	68 May	emt 1987	per	990							

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2.2 Automatic Response

- Trip stub bus feeder 5-8B (86-2NJS-X21) to US-5, bus loads a. trip on sustained under voltage.
- Trip stub bus feeder 5-3B (86-2NJS-X31) to US-5, bus loads b. trip on sustained under voltage.
- Trip stub bus feeder 6-7B (86-2NJS-Y21) to US-6, bus loads c. trip on sustained under voltage.
- Trip stub bus feeder 6-3B (86-2NJS-Y31) to US-6, bus loads d. trip on sustained under voltage.

2.3 Corrective Action

- Verify auto matic response. a.
- Check computer and panel 852 to determine which breaker Ь. tripped.

TCNI-1 Investigate and determine reason for trip. c. When the cause for the trip is corrected, re-energize the Return system to normal. System por N2-0P-71 Sect. E.2.0 (E.10,0), E.17.0 d.

(E.18.0) or N2-0P-72 Sect. H.2.0 as appropriate

. May 1989 N2-0P-71 -69 May 1987

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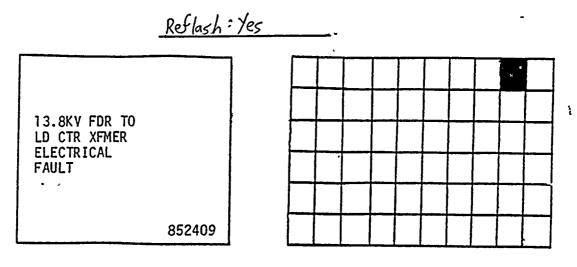
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

3.0 <u>852409</u> 13.8KV Feeder to Load Center Transformer Electrical Fault



{} 852409

3.1	Computer Point		Computer Printout	Source
	a.	NJSUCOI	LOCK OUT RLY 86-YO1 TRIP	Lock out relay 86-2NJSYO1 on 2NPS-SWGOO1 feeder ACB 1-5 to 2NJS-US1 and 2NJS-US2 trips and locks out on: high time or Inst Grnd overcurrent (OC) high time or Inst. Overcurrent (OC).
	b.	NJSUCO2	LOCK OUT RLY 86-YO4 TRIP	Lock out Relay 86-2NJSY04 on 2NPS-SWG001 feeder ACB 1-14 to 2NJS-US3,-US4, -US7 trips on transformer X1A, X1B, X1G high: phase Inst. or Time over current; ground inst. or time OC.
	c.	NJSUCO5	LOCK OUT RLY 86-X07 TRIP	Lock out Relay 86-2NJSX07 on 2NPS-SWG003 feeder ACB 3-3 to 2NJS-US1,-US2, trips on transformer 2NJS-X3C,-X3D high: phase Inst. or Time over current; ground inst. or time OC.

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d. NJSUCO6

LOCK OUT RLY 86-X10 TRIP Lock out Relay 86-2NJSX10 on 2NPS-SWG003 feeder ACB 3-13 to 2NJS-US3,-US4, -U57, trips on transformer 2NJS-X3A, -X3B or -X3G high: phase Inst. or Time over current; ground inst. or time OC.

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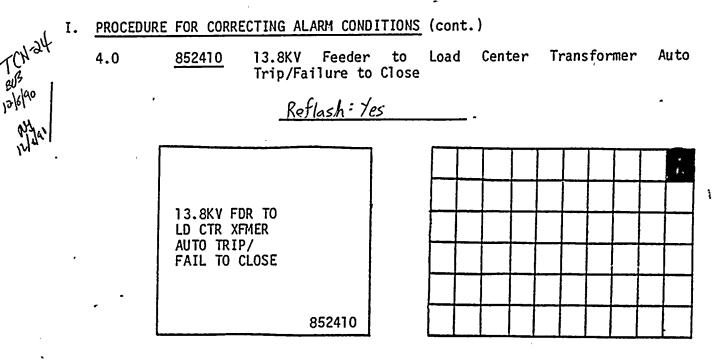
3.2 Automatic Response

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- a. Trips and locks out bus breakers: 2NPS-SWG001, ACB1-5; 2NJS-US1, ACB 1-3B; 2NJS-US2, ACB 2-3B. Removes power to the Alternate Access Bldg. Transformer 2JKB-X1.
- b. Trips and Locks out bus breakers: 2NPS-SWG001, ACB 1-14; 2NJS-US3, ACB 3-3B, 2NJS-US4, ACB 4-3B, 2NJS-US7, ACB 7-3B.
- c. Trips and Locks out bus breakers: 2NPS-SWG003, ACB 3-3; 2NJS-US1, ACB 1-14B; 2NJS-US2, ACB 2-12B.
- d. Trips and Locks out bus breakers: 2NPS-SWG003, ACB 3-13; 2NJS-US3, ACB 3-14B; 2NJS-US4, ACB 4-15B; 2NJS-US7, ACB 7-7B.
- 3.3 Corrective Action
 - a. Verify automatic response.
 - b. Check computer and panel, 2CES-PNL852 to determine which breaker tripped.
 - c. Investigate and determine reason for trip.
 - d. Return system to normal.

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4.1	Comp	<u>uter Point</u>	Computer Printout	Source
r	a.	NJSUCO3	NPSOO1 ACB 1-5 AT/F-T-C	2SWG-NPS001 Air Circuit Breaker 1-5 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSY01
	b.	NJSUCO4	NPSOO1 ACB 1-14 AT/F-T-C	2SWG-NPS001 Air Circuit Breaker 1-14 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSY04
	с.	NJSUCO7	NPSOO3 ACB 3-3 AT/F-T-C	2SWG-NPS003 Air Circuit Breaker 3-3 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSX07
	d.	NJSUCO8	NPSOO3 ACB 3-13 AT/F-T-C	2SWG-NPSOO3 Air Circuit Breaker 3-13 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSX10

4.2 Automatic Résponse

N2-0P-71

a. 13.8KV breaker 1-5 open and Ctrl Sw in Normal after close.
b. 13.8KV breaker 1-14 open and Ctrl Sw in Normal after close.
c. 13.8KV breaker 3-3 open and Ctrl Sw in Normal after close.
d. 13.8KV breaker 3-13 open and Ctrl Sw in Normal after close.

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4.3 Corrective Action

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a. Investigate and determine reason for trip or failure to close.

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b. Return system to normal.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) 5.0 Loss of 115KV From Scriba Alternate 1B Primary Relay 852412 Reflash : No 2/6/40 LOSS OF 115KV ì FROM SCRIBA ALTERNATE 1B PRIMARY RELAY 852412 852412 5.1 Computer Point Computer Printout Source 115KV PWR SCRIBA ALT 1(B) Scriba Station (B) YUCBC08 115KV Line #6 protection (alternate 1) operated as sensed by 94-2YUCB01 ۰. 5.2 Automatic Response NONE (unless 2YUL-MDS2, MDS20, MDS10 are closed then alarm window 852441 would also be lit. 5.3 Corrective Action Determine the cause of the protection circuit actuation. a. b. Restore to normal.

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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. TCN-24 Loss of 115KV From Scriba Alternate 2B Backup Relay 6.0 852413 66 12/6/90 Reflash: No-. ł LOSS OF 115KV FROM SCRIBA ALTERNATE 2B BACKUP RELAY 852413 852413 6.1 Computer Point Computer Printout Source YUCBC10 115KV PWR SCRIBA Scriba Station (B) 115KV Line #6 protection ALT 2 (B) (alternate 2) operated as

A see allo and

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6.2 Automatic Response

NONE (unless 2YUL-MDS2,-MDS20, MDS10 are closed then alarm window 852441 would also be lit.

sensed by 94-2YUCB02

6.3 Corrective Action

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a. Determine the cause of the protection circuit actuation.

b. Restore to normal.

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- PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. Auxiliary Boiler Transformer Loss of Voltage 7.0 852433 Reflash : No AUX BOILER ł TRANSFORMER LOSS OF VOLTAGE 852433 852433 7.1 Computer Point Computer Printout Source AUX BLR XFMR Auxiliary Boiler Trans-NPSEC12 former 2ABS-X1 Loss of . LOSS OF VOLT Voltage as sensed by 59-2NPSZ17 (between 2ABS-X1 and 13.8KV Bus 2NPS-SWG002) 2 7.2 Automatic Response NONE (unless 13.8KV Bus 2NPS-SWG002 Supply ACB 2-5 is closed,
 - 7.3 Corrective Action
 - a. Determine the cause of the undervoltage.

then annunciator 852519 would also be lit.

b. Restore to required.

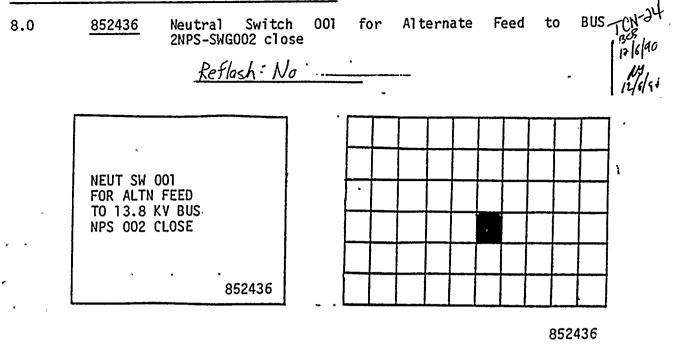
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



8.1	Computer Point	Computer Printout	Source
	NPSZĊO1	Neut SW001 Altn. Fd. 002	Neutral Switch 2RTX-SWOOl (Neutral Grounding Resistor Bypass) on 2RTX-XSRIA for Alternate

8.2 <u>Automatic Response</u>

NONE

8.3 Corrective Action

a. Verify that 2NPS-SWG002 is the only 13.8KV bus to be connected to 2RTX-XSR1A.

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Feed to 13.8KV Bus 2NPS-SWG002 closed, as sensed

by 33-2NPSZ13

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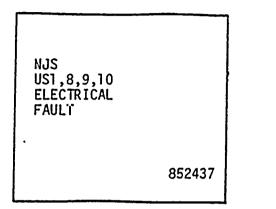
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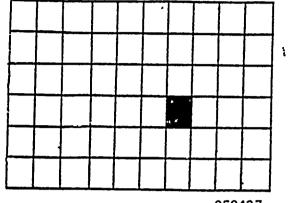
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

1 68 12/6/40 12/6/40 12/6/40 9.0 <u>852437</u> NJS US1, 8, 9,10, Electrical Fault

Reflash: Jes





	852437	
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9.1	Com	outer Point	Computer Printout	Source
·	a.	NJSUC21	USIA ACB 1-3B Elec. Fault	2NJS-USIA Air Circuit Breaker 1-3B Electrical Fault as sensed by 520C-2NJSA01
	b.	NJSUC22	US1B ACB 1-14B Elec. Fault	2NJS-US1B Air Circuit Breaker 1-14B Electrical Fault as sensed by 520C-2NJSB01
	с.	NJSUC27	USIA & C ACB 1-8B Elec. Fault	2NJS-USIA &USIC Air Circuit Breaker ACB1-8B Electrical Fault as sensed by 520C-2NJSN28
	d.	NJSUC29	US1B&C ACB 1-10B Elec. Fault	2NJS-US1B &USIC Air Circuit Breaker ACB1-10B Electrical Fault as sensed by 520C-2NJSN30
	e.	NJSUC45	US8A Sply Brkr ACB 8-3B	2NJS-US8A Air Circuit Breaker ACB 8-3B Electrical Fault as sensed by 520C-2NJSA08

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9.1	Comp	uter Point	Computer Printout	Source (cont.)
	f.	NJSUC46	US8B Sply Brkr ACB 8-13B -	2NJS-US8B Air Circuit Breaker ACB 8-13B Electrical Fault as sensed by 520C-2NJSB08
بر ب	g.	NJSUC44	US8 A & C Sply Brkr ACB 8-7B	2NJS-US8A & US8C Air Circuit Breaker ACB 8-7B Electrical Eault as sensed by 520C-2NJSN41
	h.	NJSUC47	US8B & C Sply Brkr ACB 8-9B	2NJS-US8B & US8C Air Circuit Breaker ACB 8-9B Electrical Fault as sensed by 520C-2NJSN42
	i.	NJSUC49 .	US9A Sply Brkr ACB 9-3B	2NJS-US9A Air circuit Breaker ACB 9-3B Electrical Fault as sensed by 520C-2NJSA09
	j.	NJSUC50	US9B Sply Brkr ACB 9-13B	2NJS-US9B Air circuit Breaker ACB 9-13B Electrical Fault as sensed by 520C-2NJSB09
	k.	NJSUC48	US9A & US9C Sply Bkr ACB 9-7B	2NJS-US9A & US9C Air Circuit Breaker ACB 9-7B Electrical Fault as sensed by 520C-2NJSN43
	1.	NJSUC51	US9B & US9C Sply Bkr ACB 9-9B	2NJS-US9B & US9C Air Circuit Breaker ACB 9-9B Electrical Fault as sensed by 520C-2NJSN44
	Μ.	NJSUC52	USIOA & C Tie Bkr ACB 10-6B	2NJS-USIOA & USIOC Air Circuit Breaker ACB 10-6B Electrical Fault as sensed by 520C-2NJSN45
· · · ·	n.	NJSUC53	USIOA Sply Brkr ACB 10-3B	2NJS-USIOA Air Circuit Breaker ACB 10-3B Electrical Fault as sensed by 520C-2NJSA10

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9.1	Comp	uter Point	Computer Printout	Source (cont.)		
	0.	NJSUC54	US10B Sp1y Brkr ACB 10-12B -	2NJS-US10B Air Circuit Breaker ACB 10-12B Electrical Fault as sensed by 520C-2NJSB10		
	p.	NJSUC55	USTOB &C Bs Tbkr ACB 10-9B	2NJS-US10B &US10C Bus Tie Breaker Air Circuit Breaker ACB 10-9B Elec. Fault as sensed by 520C-2NJSN46		

9.2 Automatic Response

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a. Trip 600V supply or tie breaker on 2NJSUS1, US8, US9, or US10 (whichever breaker fault occurred on).

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9.3 Corrective Action

a. Check computer to determine which breaker is in alarm.

b. Dispatch operator to load center US1, US8, US9, US10.

c. Investigate and determine reason for trip.

d. Return system to normal.

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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I.

Reflash: Yes

Load Center 2NJS-US2 Electrical Fault 10.0 852438

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	2NJ	D CENTER S-US2 CTRICAL LT											
Ŧ			852438							•			
L				L		<u></u>	1				{	3524	38
	Com	puter Point	Compute	er Printou	t	Sou	irce	-					
•	a.	NJSUC32	US2A ACB 2-3B Elect. Flt			Load Center 2NJS-US2A Air Circuit Breaker ACB 2-3B Electrical Fault as Sensed by 520C-2NJSAO2							
	b.	NJSUC33	US2B AC Elect.	8 2-128 Flt		Load Center 2NJS-US2B Air Circuit Breaker ACB 2-12B Electrical Fault as Sensed by 520C-2NJSB02							
	c.	NJSUC36	US2A ACB 2-6B Elect. Flt		Load Center 2NJS-US2A Air Circuit Breaker ACB 2-6B Electrical Fault as Sensed by 520C-2NJSN33								
	d.	NJSUC38	US2B AC Elect.			Air 2-9	Ci B E	rcu [.] Iec [.]	it E tric	Brea al	Fau	2B AC 1t N35	as
	A												

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10.2 Automatic Response

10.1

Trip 600V supply or tie breaker, load center 2NJS-US2. a.

10.3 Corrective Action

> Check computer to determine which breaker is in alarm. a.

b. Dispatch operator to load center US2.

c. Investigate and determine reason for trip.

d. Return system to normal -81 December 1990

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•	I.	PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)												
TCN-24 121610 121610 1211-1	۲	11.0	<u>852</u>	2 <u>439</u> Load C	enter 2NJ	JS-US3 E	lectri	cal F	Fault					
13/6/40				Refla	sh - Yes								-	
Mari							 _							
			LOA	D CENTER										- - \
				IS-US3 ICTRICAL										
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		•			852439		┝╼┼╼	+						_
							[]					8	 52439	
·		11.1	Com	<u>puter Point</u>	Compu	ter Pri	<u>ntout</u>	Sou	<u>rce</u>			•		
-	<i>,</i>		a.	NJSUC23		ACB 3-3 . Fit	B	Air 3-3	d Cer Circ B Ele sed b	cuit ectri	Brea cal	aker "Fau	ACB It as	;
	ų		b.	NJSUC24		ACB 3-1 . Fit	4B	Air 3-1	d Cer Circ 4B El sed b	uit lectr	Brea ical	aker I Fai	ACB ilt a	S
		,	Ċ.	NJSUC28	US3A Elect	& C ACB . Fit	, 3–7 B	US3 ACB Fau	d Cer C Air 3-7E It as C-2NJ	• Cir 8 Ele 5 Sen	cuit ctri sed	t Bre ical	3A & eaker	
			d.	NJSUG30	US3B& Elect	C ACB 34 . Fit	-118	US3 ACB Fau	d Cen C Air 3-11 It as C-2NJ	Cir B El Sen	cuit ectr	: Bre rical	eaker	
- м		11.2	Auto	omatic Respons	e									
			a.	Trip 600V su	ipply or	tie brea	aker, 1	load d	cente	r 2N	JS-U	153.		
		11.3	1	rective Action	-									
			a. b.	Check comput Dispatch ope					ker i	s in	ala	rm.		
•			ь. с.	Investigate					rin.			•		
			d.	Return syste N2-OP	m to norr			a.	•					
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• 5 I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) 12.0 Load Center 2NJS-US4 Electrical Fault 852440 Reflash: Yes LOAD CENTER ì 2NJS-US4 ELECTRICAL FAULT 852440 852440 12.1 Computer Point Computer Printout Source US4A ACB 4-3B NJSUC34 Load Center 2NJS-US4A a. Air Circuit Breaker ACB Elect. Flt 4-3B Electrical Fault as Sensed by 520C-2NJSA04 NJSUC35 US4B ACB 4-15B Load Center 2NJS-US4B b. Elect. Flt Air Circuit Breaker ACB 4-15B Electrical Fault as Sensed by 520C-2NJSB04 Load Center 2NJS-US4A Air Circuit Breaker NJSUC37 US4A ACB 4-8B c. Elect. Flt ACB 4-8B Electrical Fault as Sensed by 520C-2NJSN34 NJSUC39 US4B ACB 4-11B Load Center 2NJS-US4B d. Elect. Fit Air Circuit Breaker ACB 4-11B Electrical Fault as Sensed by 520C-2NJSN36 12.2 Automatic Response Trip 600V supply or tie breaker, load center 2NJS-US4. a. 12.3 **Corrective** Action Check computer to determine which breaker is in alarm. a. b. Dispatch operator to load center US4. Investigate and determine reason for trip. c. Return system to normal, Necember 1990 N2-OP-71 -83 May 1987 d.

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 I.	PROCEDUR	E FOR	CORRECTING	ALARM CON	DITIONS (c	:ont.)					
TCN-34 13/6/90	13.0	8524	147 Load)C Control			Norma1	Load	Cent	er
1316190		i.	Refl	lash= tes		- .				-	
~	-	CONT NORM	OF DC POWER TO IAL LD CTR E PERMISV	852447							
,	13.1	Comp	uter Point	Comp	uter Print	out	Source	<u>)</u>		85244	7
• .		a.	NJSBC13 ,	LOSS CONT	of US1 DC PWR		power,	of DC C 13.8K IS-US1 ISN21	V Brkr	Intl sed b	k, y
•		b.	NJSBC14	LOSS CONT	of US3 DC PWR	• ,	power,	of DC C 13.8K IS-US3 ISN23	V Brkr		
		с.	NJSBC15	LOSS CONT	of US2 DC PWR		power,	of DC C 13.8K IS-US2 ISN22	V Brkr	Intl sed by	k, ¥
		d.	NJSBC16	LOSS Cont	of US4 DC PWR		power,	of DC C 13.8K IS-US4 ISN24	V Brkr	Intli sed by	<, /
		e.	NJSBC18		of US7B BRKR STATU	US	power,	f DC C 13.8K S-US7 SB07	V Brkr		
-		f.	NJSBC19	LOSS CONT	of US8 [.] PWR		power,	f DC C 13.8K S-US8 SN38	V Brkr		
		•			•		•		•		

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13.1	Com	puter Point	<u>Computer Printout</u>	Source (cont.)			
	g.	NJSBC20	LOSS of US9 CONT PWR -	Loss of DC Control power, 13.8KV Brkr Intlk, to 2NJS-US9 as sensed by 74-2NJSN39			
	h.	NJSBC21	LOSS of US10 CONT PWR	Loss of DC Control power, 13.8KV Brkr Intlk, to 2NJS-US10 as sensed by 74-2NJSN40	1		
	. .						

1. 5. a. e. a. e. e. e. e. e.

13.2 <u>Automatic Response</u> NONE

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- 13.3 Corrective Action
 - a. Check computer to determine which load center is in alarm.
 - b. Move fuses to Alternate Feed position (see Section H of N2-OP-73A).

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) 14.0 Load Center 2NJS-US5 Electrical Fault 852448 Reflash: Yes. ł LOAD CENTER 2NJS-US5 ELECTRICAL FAULT . . 852448 852448 14.1 Computer Point Computer Printout Source NJSUC17 **US5 NORM BRKR** a. 2NJS-US5 Normal Breaker ELEC FAULT Electrical Fault as sensed by 520C-2NJSX13 US5^{*}Altn BRKR NJSUC19 b. 2NJS-US5 Alternate ELEC FAULT Breaker Electrical Fault as sensed by 520C-2NJSX14 14.2 Automatic Response Trip 600V normal or alternate supply breaker to load center a. 2NJS-US5. 14.3 Corrective Action a. Check computer to determine which breaker is in alarm. b. Dispatch operator to load center US5. c. Investigate and determine reason for trip. Return system to normal. d.

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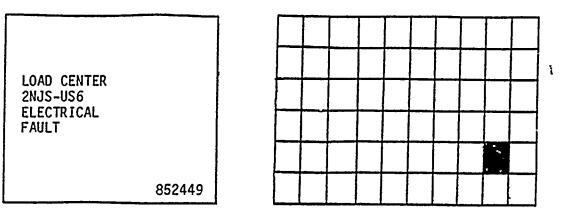
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

15.0

852449 Load Center 2NJS-US6 Electrical Fault

Reflash: Yes

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852449

15.1	Com	puter Point	Computer Printout	Source		
	a.	NJSUC18	US6 NORM BRKR ELEC FAULT	2JNS-US6 Normal Breaker Electrical Fault as sensed by 520C-2NJSY13		
	b.	NJSUC20	US6 ALTN BRKR ELEC FAULT	2NJS-US6 Alternate Breaker Electrical Fault as sensed by 520C-2NJSY14		

15.2 Automatic Response

a. Trip 600V normal or alternate supply breaker to load center 2NJS-US6.

15.3 Corrective Action

- a. Check computer and panel 852 to determine which breaker tripped.
- b. Dispatch operator to load center US6.
- c. Investigate and determine reason for trip.
- d. Return system to normal.

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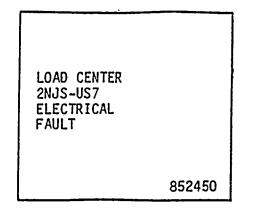
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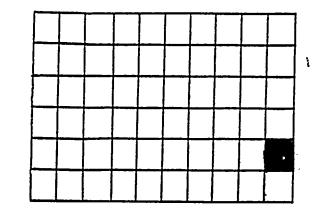
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I. <u>PROCEDURE FOR CORRECTING ALARM CONDITIONS</u> (cont.)

16.0 <u>852450</u> Load Center 2NJS-US7 Electrical Fault

Reflach : Yes





852450

16.1	Com	puter Point	Computer Printout	Source		
	a.	NJSUC25	US7A ACB7-3B ELEC FAULT	2JNS-US7A Brkr ACB7-3B Electrical Fault as sensed by 520C-2NJSAO7		
4	b.	NJSUC26	US7B ACB7-7B ELEC FAULT	2NJS-US7B Brkr ACB7-7B Breaker Electrical Fault as sensed by 520C-2NJSB07		
	c.	NJSUC31	US7A & 7B ACB7-5B EL FLT	2NJS-US7A & B, Bkr ACB7-5B Brkr Electrical Fault as sensed by 520C-2NJSN32		

16.2 Automatic Response

a. Trip 600V normal or alternate supply breaker to load center 2NJS-US7.

16.3 Corrective Action

- a. Check computer to determine which breaker is in alarm.
- b. Dispatch operator to load center US7.
- c. Investigate and determine reason for trip.
- d. Return system to normal.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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Brkr Phase Undervolt, as

 b. NJSEC02 USIB Norm Sply 2NJS-USIB, Normal Sply Brkr Volt Brkr Phase Undervolt, as sensed by 27A & B 2NJSY15
 c. NJSEC03 USIC Norm Sply 2NJS-USIC, Normal Sply

d. NJSEC17 Bus 2NJS-US8A 2NJS-US8A, Normal Sply Undv Prot Brkr Phase Undervolt, as sensed by 27A & B

Brkr Volt

2NJSX37 e. NJSEC18 Bus 2NJS-US8B 2NJS-US8B, Normal Sply Undv Prot Brkr Phase Undervolt, as sensed by 27A & B 2NJSY40 f. NJSEC19 Bus 2NJS-US8C 2NJS-US8C, Normal Sply Undv Prot Brkr Phase Undervolt, as sensed by 27A & B

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17.1	Computer	Point	Computer Printout	Source
	g. NJS	SEC20	Bus 2NJS-US9A Undv Prot -	2NJS-US9A, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSX38
	h. NJS	SEC21	Bus 2NJS-US9B Undv Prot	2NJS-US9B, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSY41
、 .	NJS	SEC22	Bus 2NJS-US9C Undv Prot	2NJS-US9C; Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSZ21
-	j. NJS	SEC23	Bus 2NJS-US10A Undv Prot	2NJS-USIOA, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSX39
-	k. NJS	SEC24	Bus 2NJS-US10B Undv Prot	2NJS-US10B, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSY42
	1. NJS	5EC25	Bus 2NJS-US1OC Undv Prot	2NJS-US1OC, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSZ22

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17.2 Automatic Response

a. The motor feeders on the respective sub bus are tripped after a .05 sec. time delay.

17.3 <u>Corrective Action</u>

- a. Check computer to determine which section is de-energized.
- b. Investigate and determine reason for trip.
- c. Return system to normal.

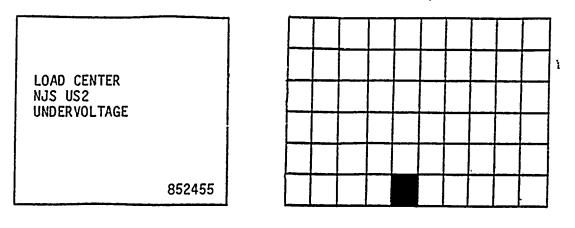
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

18.0 852455 Load Center 2NJS-US2 Undervoltage

Reflash: Yes



852455

18.1	Comp	uter Point	Computer Printout	Source
	a.	NJSECO4	US2A NORM SPLY BRKR VOLT	2NJS-US2A Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSX16
	b.	NJSECO5	US2B NORM SPLY BRKR VOLT	2NJS-US2B Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSY16
	с.	NJSECO6	US2C NORM SPLY BRKR VOLT	2NJS-US2C Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSZ16

- 18.2 Automatic Response
 - a. The motor feeders on the respective sub bus are tripped after a .05-3 second time delay.

18.3 Corrective Action

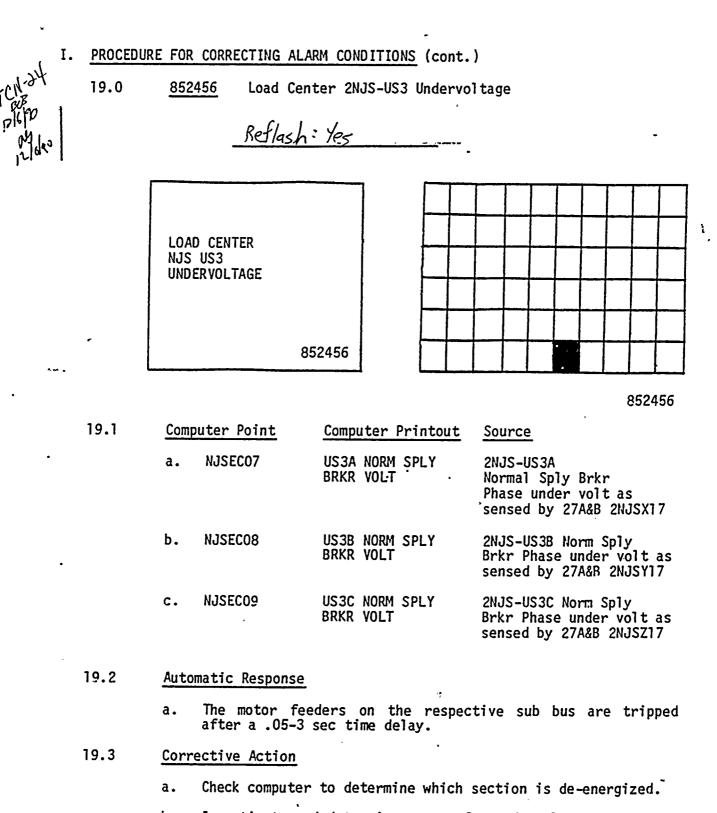
- a. Check computer to determine which section is de-energized.
- b. Investigate and determine reason for undervoltage.
 - c. Identify the 86 devices, reset and return to normal.

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b. Investigate and determine reason for undervoltage.

c. Identify the 86 device, reset and return system to normal.



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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

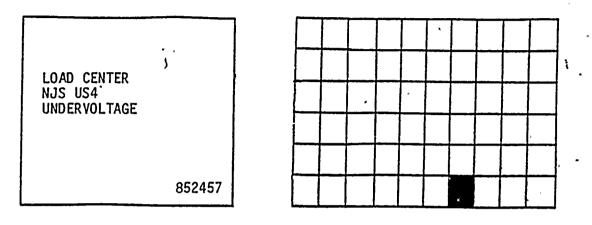
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Load Center 2NJS-US4 Undervoltage

Reflash : Yes



852457

20.1	Com	<u>puter Point</u>	Computer Printout	Source		
	a.	NJSEC10	US4A NORM SPLY BRKR VOLT	2NJS-US4A Normal Sply Brkr Phase under volt as sensed by 27A&B 2NJSX18		
	b.	NJSEC11	US4B NORM SPLY BRKR VOLT	2NJS-US4B Norm Sply Brkr Phase under volt as sensed by 27A&B 2NJSY18		
	c.	NJSEC12	US4C NORM SPLY BRKR VOLT	2NJS-US4C Norm Sply Brkr Phase under volt as sensed by 27A&B 2NJSZ18		

20.2 Automatic Response

a. The motor feeders on the respective sub bus are tripped after a .05-3 sec time delay.

20.3 Corrective Action

- a. Check computer to determine which section is de-energized.
- b. Investigate and determine reason for undervoltage.

c. Identify the 86 device, reset and return system to normal.

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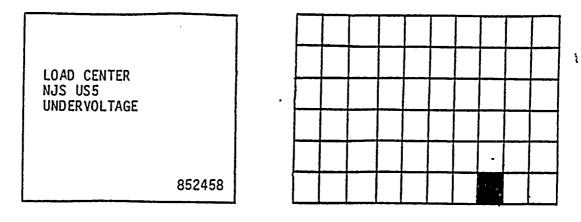
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- I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)
 - 21.0 <u>852458</u> Load Center 2NJS-US5 Undervoltage

Reflash = No



852458

21.1	Computer Point	Computer Printout	Source		
	NJSEC13	US5 NORM SPLY BRKR VOLT	2NJS-US5 Norm Sply Brkr Phase Undervolt as sensed by 27A&B 2NJSX19		

21.2 Automatic Response

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a. the motor feeders on $2NJS - \frac{US5}{-US6}$ are tripped after a .05-3 sec. time delay.

21.3 Corrective Action

- a. Check normal or Alt. feed to bus at panel 852.
- b. Investigate and determine reason for undervoltage.
- c. Identify the 86 device, reset and return system to normal.

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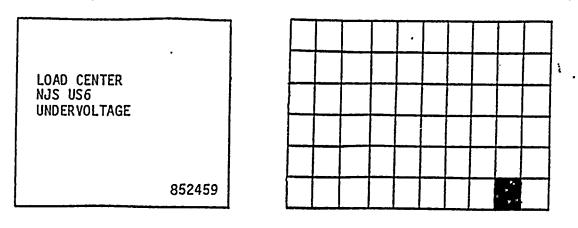
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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852459

Load Center 2NJS-US6 Undervoltage



852459

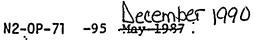
22.1	Computer Point	Computer Printout	Source
	NJSEC14	US6 NORM SPLY BRKR VOLT	2NJS-US6 Norm Sply Brkr Phase Undervolt as sensed by 27A&B 2NJSY19

22.2 Automatic Response

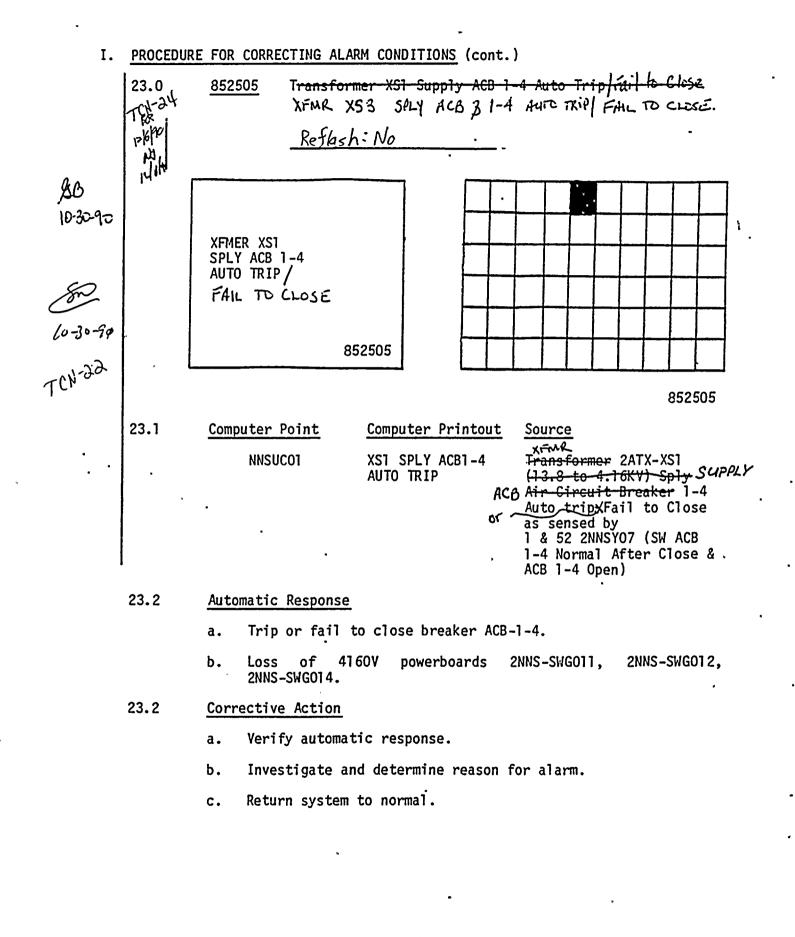
a. The motor feeders on 2NJS-US6 are tripped, after a .05-3 second time delay.

22.3 <u>Corrective Action</u>

- a. Check normal or Alt. feed to bus at panel 852.
- b. Investigate and determine reason for undervoltage.
- c. Identify the 86 device, reset and return system to normal.



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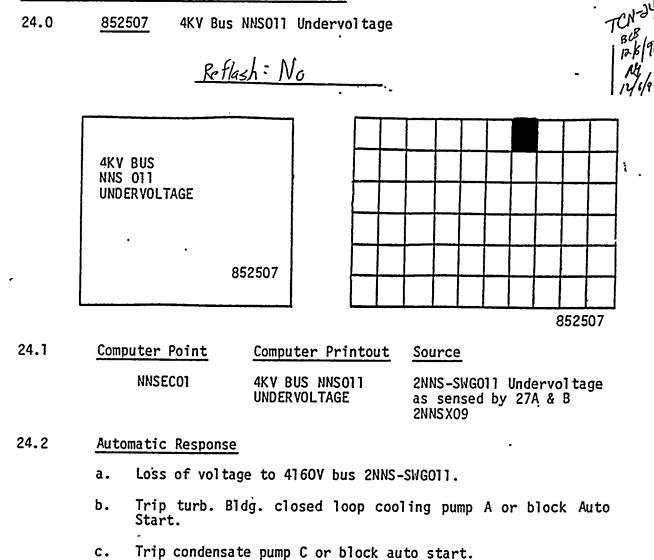
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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d. Trip fourth point Htr drain pump A.

e. Trip condensate pump A or block auto start.

24.3 <u>Corrective Action</u>

- a. Verify automatic response.
- b. Check auto start of standby pumps.
- c. Investigate and determine reason for undervoltage.
- d. Return system to normal.

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Ι.	PROCEDU	RE FOR CORRECTING ALA	RM CONDITIONS (cont.)
1-24	25.0	852508 4KV Bus	NNS 11/12/13 Electri	cal Fault
TCN-24 1216/90		<u>Refla</u>	<u>sh: Yes</u> .	-
		4KY BUS NNS 11/12/13 ELECTRICAL FAULT		
		- 81	52508	
				852508
	25.1	<u>Computer Point</u>	Computer Printout	Source
		a. NNSUC14	4KV BUS E12 LO RLY TRIP	2NNS-SWGO12 Lock Out Relay Trip as sensed by 86-2NNSZO1 on bus 11/12/13 phase time OC or grnd OC.
		b. NŃSUCT5	4KV BUS E11 LO RLY TRIP	2NNS-SWGOll Lock Out Relay Trip as sensed by 86-2NNSXOl on bus 11 phase time OC or grnd OC.
		c. NNSUCI6	4KV BUS ET3 LO RLY TRIP	2NNS-SWGO13 Lock Out Relay Trip as sensed by 86-2NNSYO4
		d. NNSUC17	4KV BUS E12 LO RLY TRIP	2NNS-SWGO12 Lock Out Relay Trip as sensed by 86-2NNSXO5 (Backup protection when SWGO12 is being fed from SWGO13).
		e. NNSUC18	4KV BUS E12 LO RLY TRIP	2NNS-SWGO12 Lock Out Relay Trip as sensed by 86-2NNSYO1 (Backup protection when SWGO12 is being fed from SWGO11).

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25.2 Automatic Response

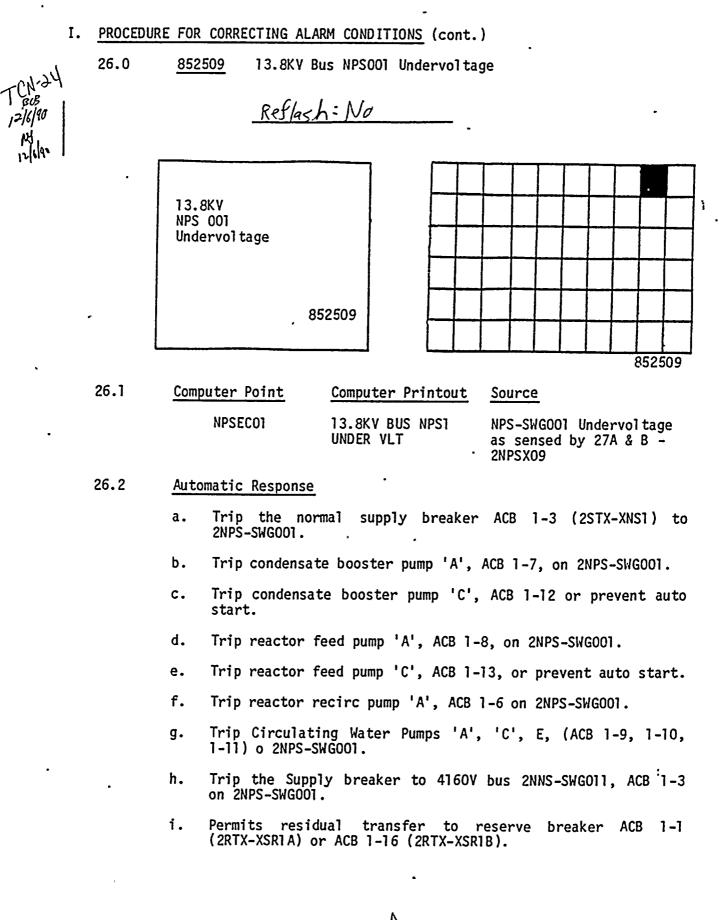
- a. Trip and lockout (cross ties from 2NNS-SWGOll and SWG-13) ACB 11-1 and ACB 13-10; Trip or block auto start-of: 2CCP-PlA, 2CCS-PlC; Fire Pump_2FPW-P2 undervoltage; trip 2HDL-PlC.
- b. Trip and lockout ACB 11-1 and ACB 11-3 on 2NNS-SWGOI1; prevent the auto transfer of 2CNM-PIC on to 2NNS-SWGOI1; trip or block the auto start of: 2CCS-PIA, 2CNM-PIA and 3 2CNM-PIC on the 2NNS-SWGOI1; trip 2HDL-PIA.
- c. Trip and lockout ACB 13-6 and ACB 13-10 on 2NNS-SWG013; trip or block the auto start of: 2CCS-P1B, 2CNM-P1B, 2CCP-P3A, 2CNM-P1C on to 2NNS-SWG013; trip 2HDL-P1B.
- d. Trip and lockout ACB 13-6 which in this circumstance would trip the loads on busses 2NNS-SWG012 and 2NNS-SWG013 (a combination of the loads on a and c above).
- e. Trip and lockout ACB 11-3 which in this circumstance would trip the loads on busses 2NNS-SWGO11 and 2NNS-SWGO12 (a combination of the loads on a and b above).

25.3⁻ Corrective Action

- a. Check the computer to determine which bus tripped.
- b. Verify automatic response.
- c. Investigate and determine the reason for the trip.
- d. Return the system to normal.

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26.2 Automatic Response

j. Loss of loads on 2NPS-SWG001; 2NNS-SWG011, 12, 14; 2NJS-US1A, C & US2A, C, and US3A, C and US4A, C and US5 & US7A and US8A, C and US9A and C; US10A and C; Alternate Access substation.

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26.3 Corrective Action

a. Verify automatic response.

- b. Check auto start of standby equipment.
- c. Reduce power to less than 65%, per NZ-op-101D Section +1.1.0.

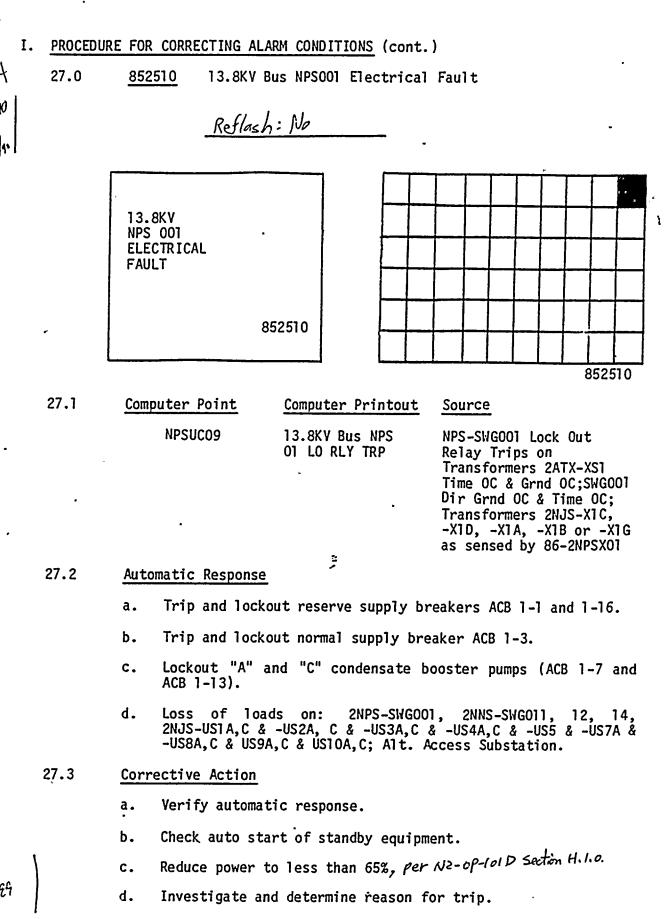
Investigate and determine the reason for the undervoltage. f.

g. Return the plant to normal operation.

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e. Return plant to normal operation

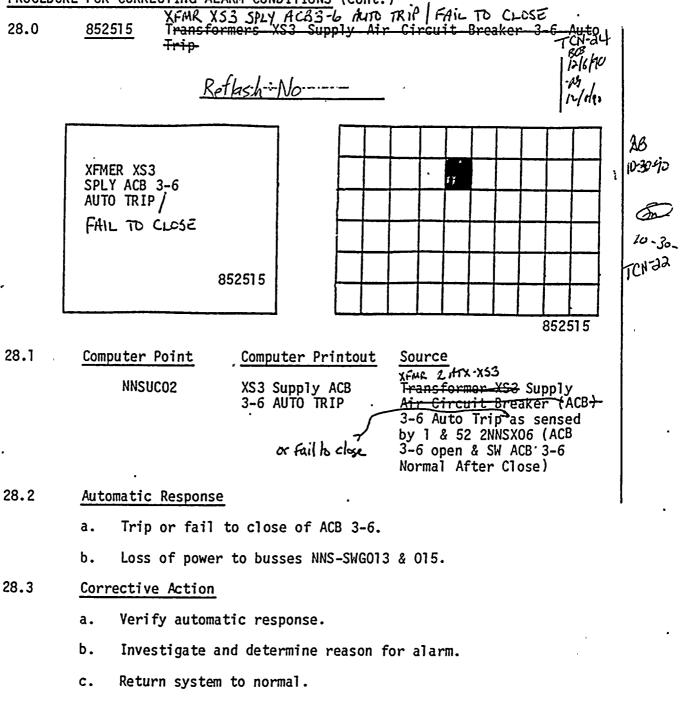
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. 29.0 4KV Bus NNS012 Undervoltage 852517 Reflash : No 4KV BUS NNS 012 **UNDERVOLTAGE** 852517 852517 29.1 Computer Point Computer Printout Source NNSEC03 4KV bus NNS012 2NNS-SWG012 undervoltage Undervolt as sensed by 27A&B 2NNS X18 29.2 Automatic Response Loss of voltage to 4160V bus NNS-SWG012. a. b. Trip or block auto start of 2CCS-P1C. Trip 2HDL-P1C. c. d. Trip or block auto start of 2CCP-PIA. Fire pump 2FPW-P2 undervoltage. e. 29.3 Corrective Action a. Verify automatic response. b. Check auto start of standby pumps. c. Investigate and determine reason for undervoltage. d. Return system to normal.

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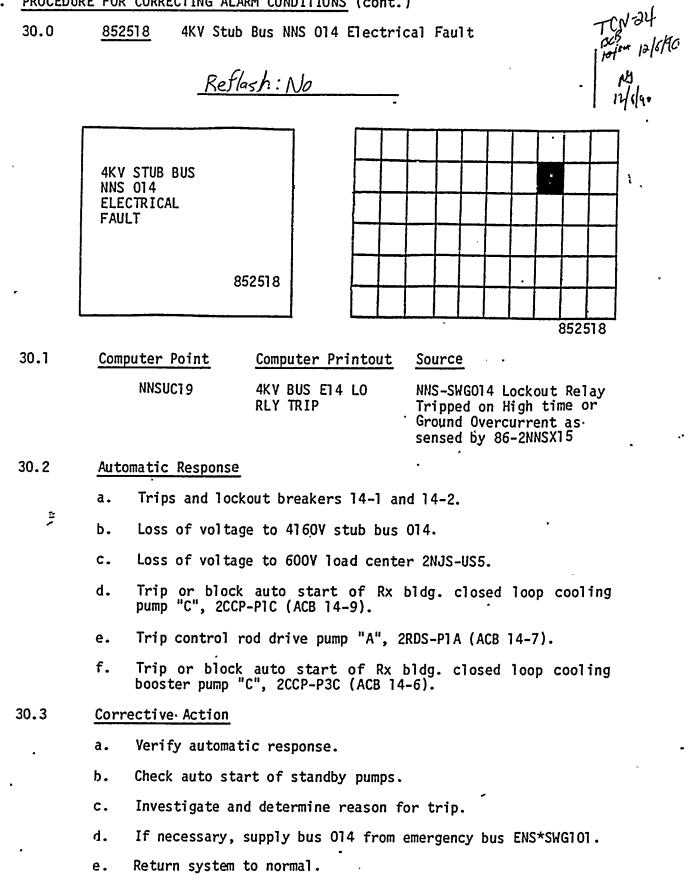
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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Ι.



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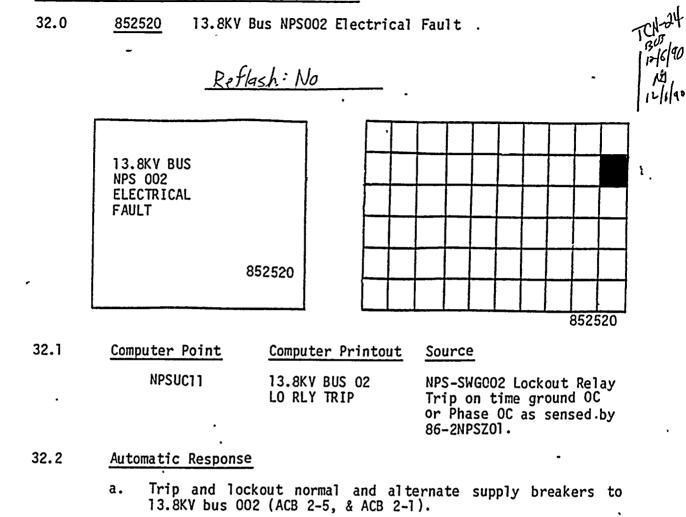
	Ι.	PROCEDU	RE FOR CORRECTING ALARM CONDITIONS (cont.)	
4د.	(.	31.0	852519 13.8KV Bus NPS002 Undervoltage	
12/010			Reflach: No	
			13.8KV BUS NPS 002 UNDERVOLTAGE	
			852519	
•	,		852519	
	:	31.1	Computer Point Computer Printout Source	
•			NPSEC13 13.8KV BUS NPS 2NPS-SWG002 sustained bus 2 UNDR VLT undervoltage as sensed by 27A&B-2NPSZ18	
	:	31.2	Automatic Response	
			a. 2NPS-SWG002 supply air circuit breaker, ACB 2-5, Trip.	
2	•		b. 2NPS-SWG002 supply air circuit breaker, ACB 2-1, Trip.	
			c. The loads on 2NPS-SWG002, Auxiliary Boiler A&B will trip.	
			d. If either 2NPS-SWG001 or SWG003 is connected to 2NPS-SWG002, they will trip their loads (unusual lineup).	
			e. If either emergency bus 2ENS*SWG101 or *SWG103 is being powered from 2NPS-SWG002 via 2NNS-SWG018, their emergency diesels will start (unusual line up).	
	3	31.3	Corrective Actions	
			a. Determine the cause of the undervoltage (loss of 115KV from Scriba or Auxiliary Boiler electrical fault).	
	1		b. Restore power to 2NPS-SWG002 as required using Mds-20 (or Mds-10).	

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



- b. Loss of voltage to the bus.
- c. Auxiliary boilers will trip if operating.
- d. If either 2NPS-SWG001 or SWG003 is connected to 2NPS-SWG002 (unusual lineup), their loads will trip.

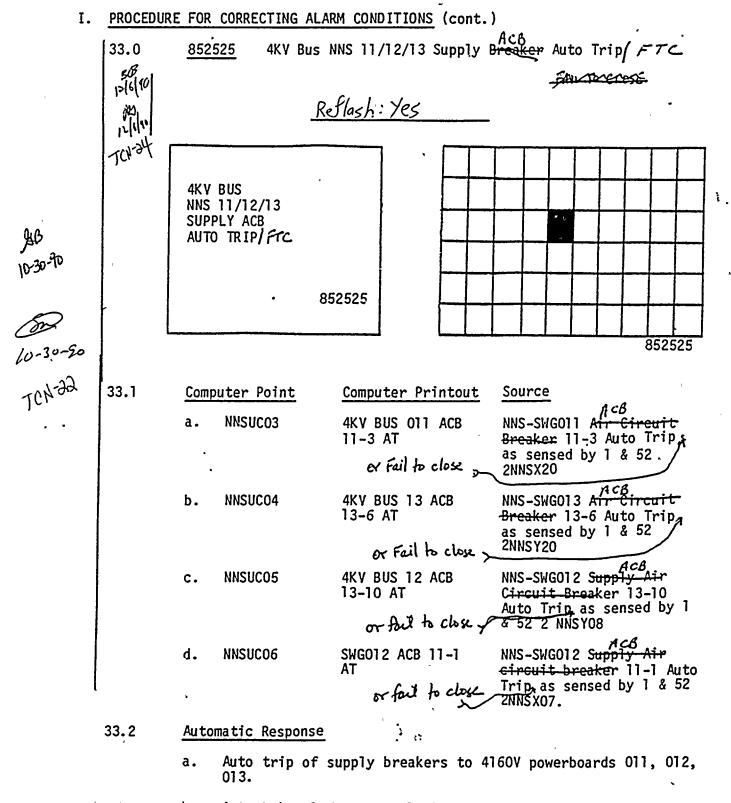
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32.3 Corrective Action

- a. Verify automatic response.
- b. Dispatch operator to aux. boilers (if operating)
- c. Investigate and determine reason for trip.
- d. Return system to normal.

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b. Auto trip of the motor feeders on the respective bus:

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33.3 <u>Corrective Action</u>

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a. Verify automatic response.

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b. Check computer point to determine which breaker tripped.

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c. Investigate and determine reason for trip.

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d. Return system to normal.

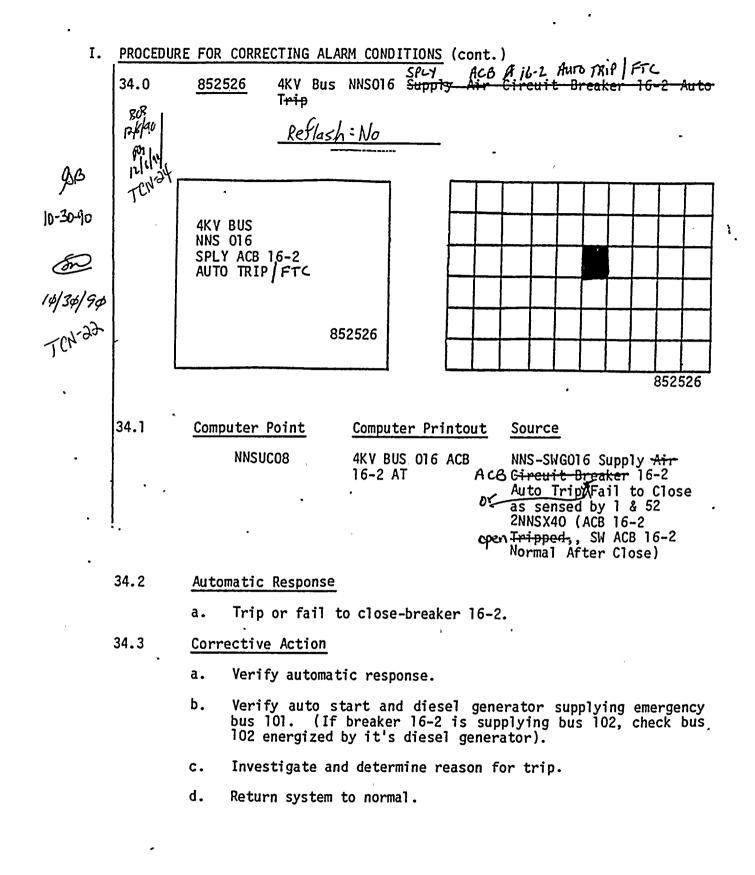
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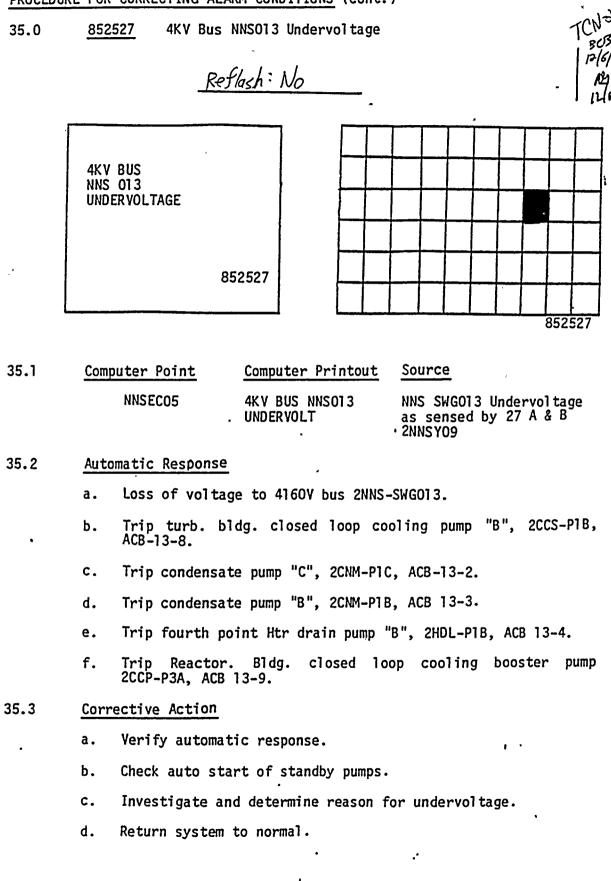


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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



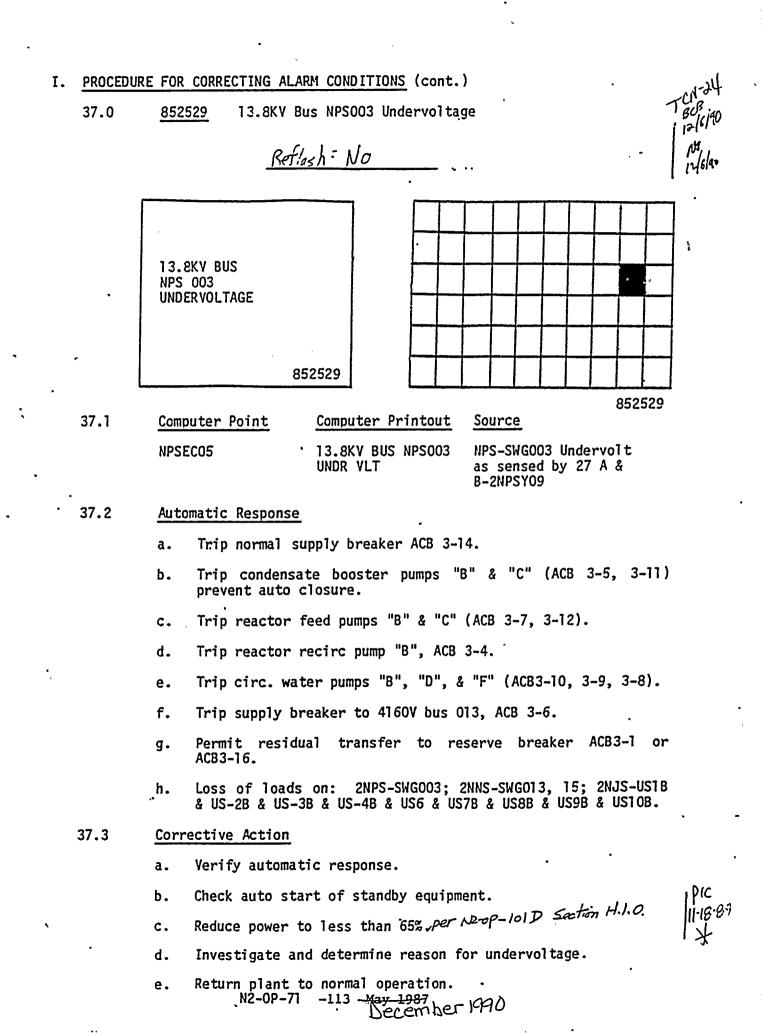
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•	I.	PROCEDUR	E FOR CORRECTING ALARM CONDITIONS (cont.)		
Ìrc		36:0	852528 4KV Stub Bus NNS015 Electrical Fault		
TCN-34 12/6/90	ł				
17/6/90			Roflash No		
12/6/20	, 1	г			
*					
			4KV STUB BUS NNS 015		
			ELECTRICAL FAULT		
	4.				
			852528		
		- [852528		
•			052528		
		36.1	Computer Point Computer Printout Source		
			NNSUC20 4KV BUS 015 LO NNS-SWG015 Lockout		
•			RLY TRIP Relay tripped on phase or ground overcurrent as		
			sensed by 86-2NNSY15		
		36.2	Automatic Response		
			a. Trip and lock out breakers 15-3 and 15-8.		
			b. Loss of voltage to 4160V stub bus 015.		
			c. Loss of voltage to 600V load center 2NJS-US6.		
			d. Trip Rx bldg. closed loop cooling pump "B", 2CCP-PlB, ACB 15-4.		
			e. Trip control rod drive pump "B", 2RDS-P1B, ACB 15-2.		
			f. Trip Rx bldg. closed loop cooling booster pump "B", 2CCP-P3B, ACB 15-6.		
		36.3	Corrective Action		
			a. Verify automatic response.		
			b. Check auto start of standby pumps.		
			c. Investigate and determine reason for trip.		
			d. If necessary, supply bus 015 from emergency bus ENS*SWG103.		
			e. Return system to normal. N2-0P-71 -112 Necember 1990		

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I. PRO	CEDURE FOR CORRECTING ALARM CONDITIONS (cont.)		
38.	0 <u>852530</u> 13.8KV Bus NPSOO3 Electrical Fault		
TCN-24 38. 124690	<u>Reflash: No</u>		
	13.8KY BUS NPS 003 ELECTRICAL FAULT 852530		
	852530		
38.	Computer PointComputer PrintoutSourceNPSUC1013.8KV BUS 03NPS-SWG003 Lockout Relay		
	LO RLY TRP Trip as sensed by 86- 2NPSY01.		
38.	2 Automatic Response		
	a. Trip and lockout reserve supply breakers 3-1 and 3-16.		
	b. Trip and lockout normal supply breaker 3-14.		
	c. Lockout "B" and "C" condensate booster pumps (ACB 3-5, 3-11).		
	d. Loss of loads on: 2NPS-SWG003; 2NNS-SWG013, 015, 2NJS-US1B . & US2B & US3B & US4B & US6 & US7B & US8B & US9B & US10B.		
• 38.3	Corrective Action		
	a. Verify automatic response.		
	b. Check auto start of standby equipment.		
Pic 11-18-99	c. Reduce power to less 65%, per N2-op-101D section H.1.0.		
×	d. Investigate and determine reason for trip.		
	e. Return system to normal operation.		
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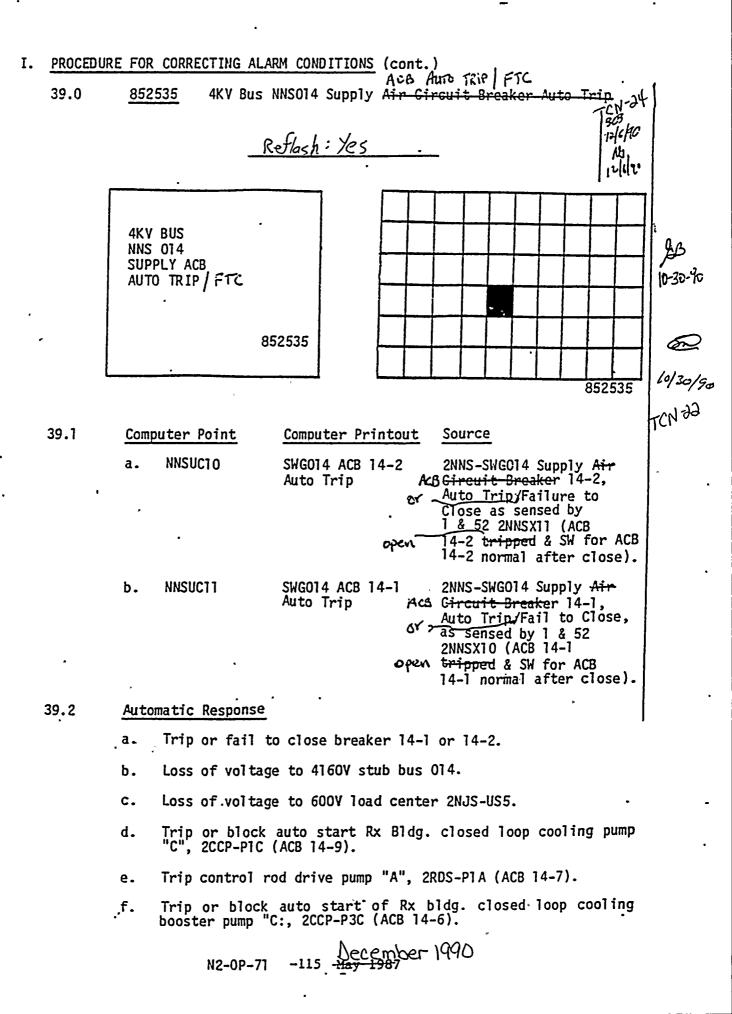
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39.3 <u>Corrective Action</u>

a. Verify automatic response.

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b. Check auto start of standby pumps:

c. Investigate and determine reason for trip.

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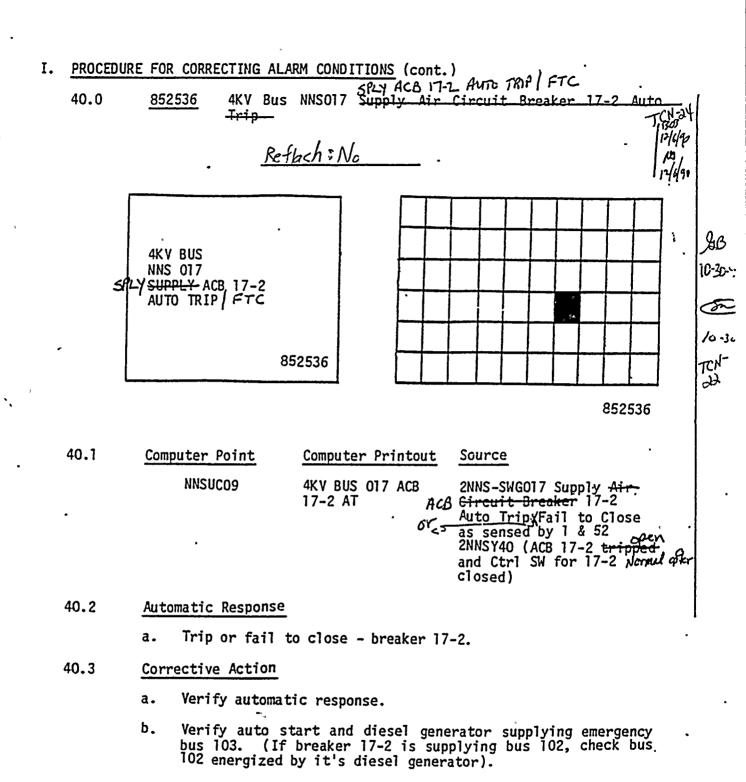
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d. If necessary, supply bus 014 from emergency bus.

e. Return system to normal.

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c. Investigate and determine reason for trip.

d. Return system to normal.

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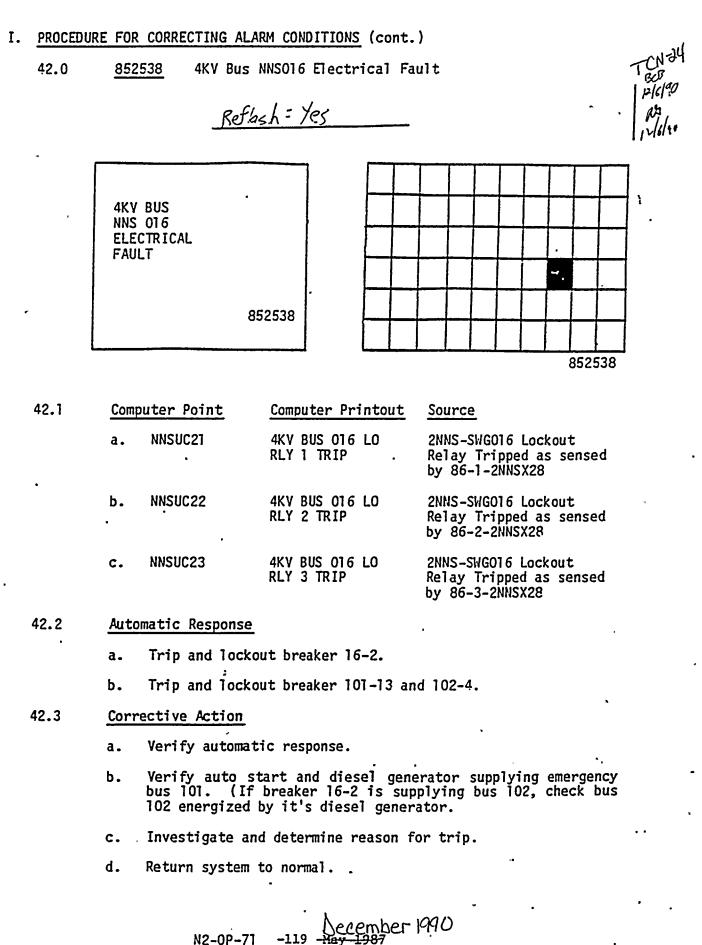
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TUN-24	••	41.0		2537				Underv	-		,								
TCN-24 FCB FCRF6 Maler					Refl	lash:	No										-		
			NNS	BUS 014 ER VOL	TAGE	852	537												2
•	•	÷	[1	L				[{8	3525	37	
		41 . 1	<u>Com</u>	<u>puter</u> NNSE		•	4KV E	uter Pr BUS NNSO RVOLT			NNS Brk ser	irce S-SW Sr U Ised ISX2	GO1 nde by	rvo	lt,	as	y		
	:	41.2			Respor						и.	_		•					
			a.					1760V st											
		•	ь. с.			-		500V loa start	-				•		100	n c		ina	
				pump	"C:, 2	2CCP-f	PIC (ACB 14-	-9).			I		٠					
			d.					ve pump									,		
			e.	boos	or bi ter pum	оска пр"С"	iuto ', 2C	start CP-P3C	OT (ACE	RX (3]4-	-6).	. с	1056	€a	100	рс		-	
	4	41.3	<u>Corr</u>	ective	e Actio	n							•					•	
			a.	Veri	fy auto	matic	res	ponse.											
			b.	Check	auto	start	of	standby	pum	ıps.									
			c.	Inves	stigate	and	dete	rmine r	easo	n fo	or ti	rip.	•						
			d.	Retur	n syst	em to	nori	mal											
					N2-OP	-71	-118		emb-	<u>e</u> r k	<i>7</i> 90		,	•					

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	I.	PROCEDUR	E FOR	CORRE	CTING AL	ARM CONDI	TIONS	<u>5</u> (co	nt.)							
TCN-24		43.0	852	<u>540</u>	13.8KV 1-1/1-3/	Bus /1-16/Aut		5001 p/Fa		Air e to		ircu e	it	B	reake	er
1= 140 = 140 15 m					Reflas	h = Yes			-						- ,	
_Ι Υ		,	NPS 1-1,	BKV BU 001 A /1-3/1) TRIP,	CB -16 /FTC	52540								85	2540	
		43.1	<u>Comp</u> a.	outer f NPSUC		<u>Compute</u> SWG001 AUTO _TF	ACB		<u>it</u>	Sour	 SWGO(
•		•								or Fa						
	:	×	b.	NPSUC	02	SWGOO1 AUTO TR	ACB I	1-16		NPS-S Break or Fa sense	ker, Ailun	1-1 re t	6 Au [.] 0 C1 0	to T ose	rip as	
	T		с.	NPSUC	07	SWGOO1 AUTO TR		1−1 ′	•	NPS-S Break or Fa sense	ker, Milur	1-1 e to	Auto D Clo	o Tr ose	ip as	•
		43.2	Auto	matic	Response											
			a.	break	trip or er to SWGOOl ur	13.8KV	bus	001	•	This	CO	ul d	re	sult	upply ir	/ 1
		43.3	Corr	ective	Action											•
		•	a.	Verif	y automat	ic respo	nse.									
			b.	Inves	tigate an	d determ	ine r	easor	n fo	r tri	p.					
			c.	Returi	n system	to norma	1 ope	ratio	on.	•						
				-	N2-0P-71	-120	Acc	embe	2-1	990						

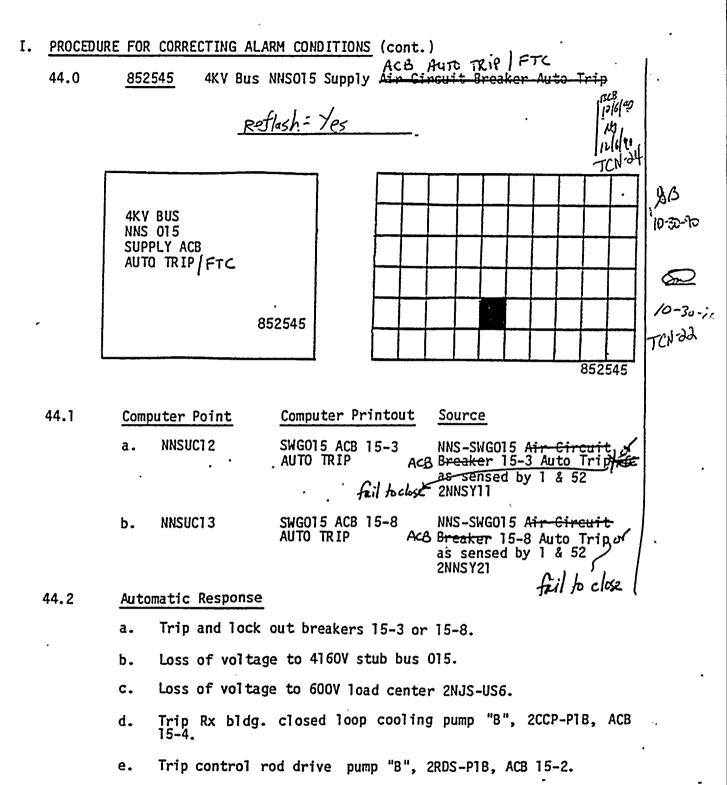
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f. Trip Rx bldg. closed loop cooling booster pump "B", 2CCP-P3B, ACB 15-6.

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44.3 <u>Corrective Action</u>

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- a. Verify automatic response.
- b. Check auto start of standby pumps.

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c. Investigate and determine reason for trip.

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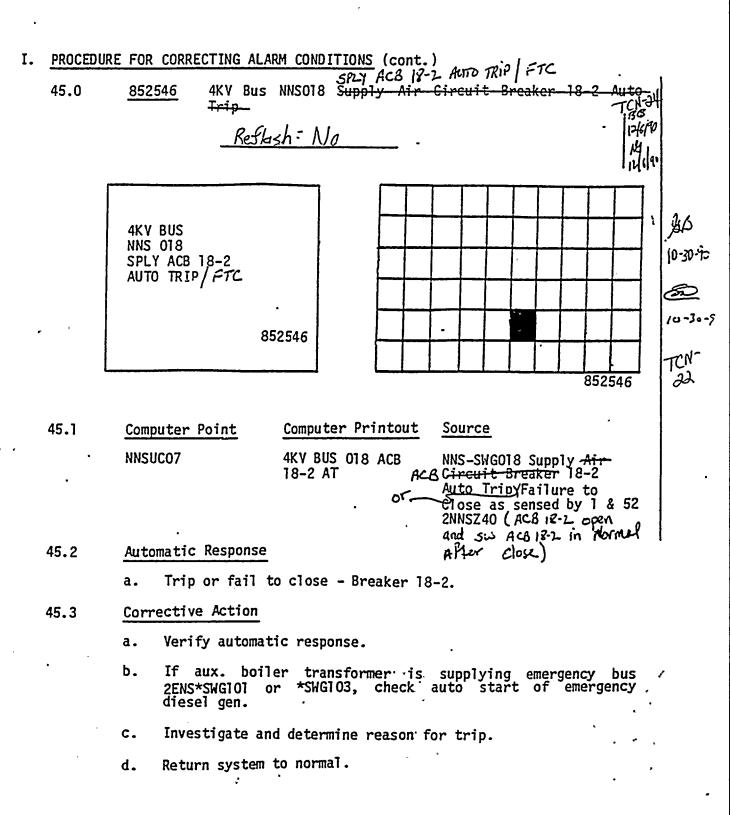
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d. If necessary, supply bus 015 from emergency bus ENS*SWG103.

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I.	PROCEDU	RE FOR CORRECTING ALARM CONDITIONS (cont.)								
	46.0	852547 4KV Bus NNS015 Undervoltage								
		Reflash: No								
		4KY BUS NNS 015 UNDER VOLTAGE								
	,	852547								
•		852547								
	46.1	Computer Point Computer Printout Source								
		NNSEC09 4KV BUS NNS015 UNDERVOLT 2NNSY17 4KV BUS NNS015 as sensed by 27A & B 2NNSY17								
	46.2	Automatic Response								
	•	a. Loss of voltage to 4160V stub bus 015.								
		b. Loss of voltage to 600V load center 2NJS-US6.								
		c. Trip Rx bldg. closed loop cooling pump "B", 2CCP-P1B, ACB 15-4.								
-		d. Trip control rod drive pump "B", 2RDS-P1B, ACB 15-2.								
	•	e. Trip Rx bldg. closed loop cooling booster pump "B", 2CCP-P3B, ACB 15-6.								
	46.3	Corrective Action								
		a. Verify automatic response.								
		b. Check auto start of standby pumps.								
		c. Investigate and determine reason for undervoltage.								
		d. If necessary, supply bus 2NNS-SWG015 from emergency bus ENS*SWG103.								
		e. Return system to normal.								
		N2-0P-71 -124 Neven ber 1990								

TCN-24 12/6/90 12/6/90

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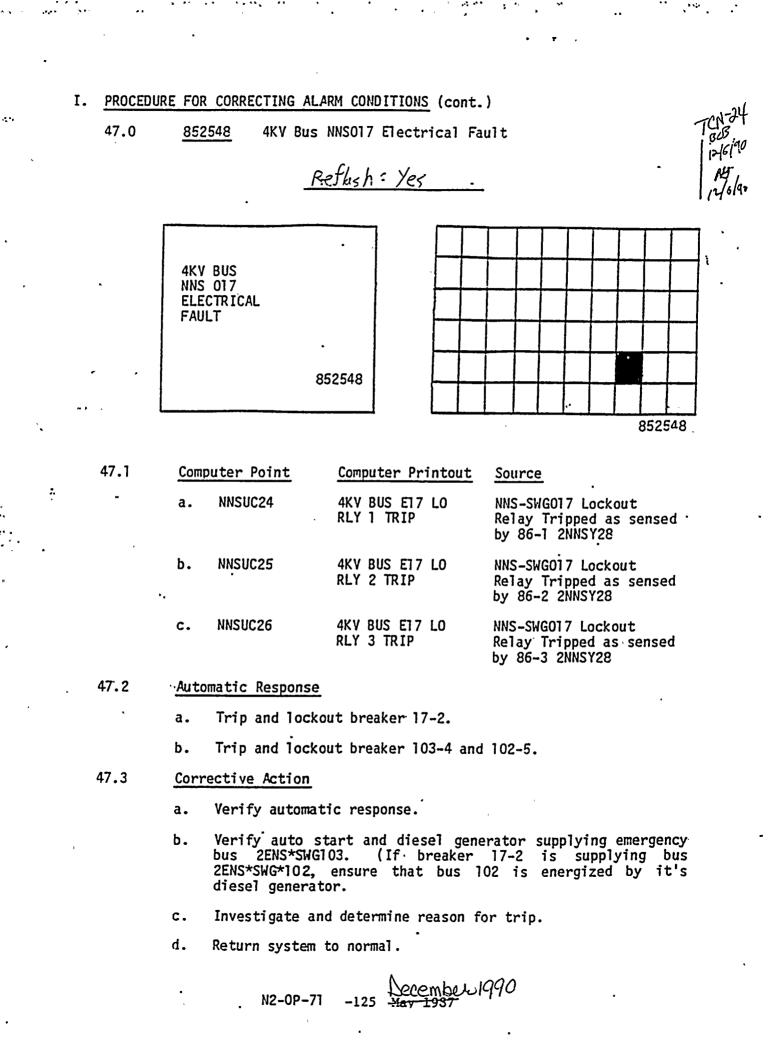
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I. <u>PROCEDUR</u> TCN-J4 48.0 TBO3 12/6/90 M/10 12/6/90	<u>E FOR CORRECTING ALARM CONDITIONS</u> (cont.) <u>852550</u> 13.8KV Bus NPSOO2 Air Circuit Breaker 2-1/2-5 Auto Trip/Failure to Close <u>Reflach: Tes</u>
	13.8KV BUS NPS 002 ACB 2-1/2-5 AUTO TRIP/FTC 852550
	852550
48.1	Computer PointComputer PrintoutSourcea. NPSUCO6SWG002 ACB 2-1 AUTO TRIPNPS-SWG002 Air Circuit Breaker 2-1 Auto Trip/ Failure to Close sensed by 1 & 52-2NPSZ13
	b. NPSUCO5 SWGOO2 ACB 2-5 NPS-SWGOO2 Air Circuit AUTO TRIP . Breaker 2-5 Auto Trip/ Failure to Close sensed by 1 & 52-2NPSZ15
48.2	Automatic Response
	a. Trip or fail to close normal or alternate supply breakers to 13.8KV bus 002. Check for the undervoltage annunciator 852519.
48.3	Corrective Action
	a. Verify automatic response.
	b. Investigate and determine reason for trip.
	c. Return system to normal.

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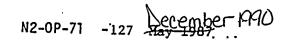
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

PROCEDU	RE FOR CORRECTING	ALARM CONDITIONS (cont.)
49.0	<u>852557</u> 4KV I Power	Bus NNSOll through Ol8	Protection Circuit Loss of TCN-24 BCB 1 2/C/90
		Reflash = Yes .	Protection Circuit Loss of TCN-24 328 12/6/90 14/6/90
	4KV BUS		
	NNS 011-018 PROT CIRCUIT LOSS OF POWER		
	,		
•	•	852557	
	L		852557
49.1	Computer Point	Computer Printout	Source
	a. NNSBC14	125VDC CONT PWR PNL814	Loss of 125VDC Power to 2NNS-SWG012, Incoming from SWG011; protection circuits for: GND DIR OC, Phase OC, DIR OC, sensed by 74-2NNSZ01
	b. NNSBC15	125VDC CONT PWR PNL814	Loss of 125VDC Power to 2NNS-SWGO11, Protection Circuits for: Phase OC, Gnd OC, DIR OC
	c. NNSBC16	125VDC CONT PWR PNL813	Loss of 125VDC Power to 2NNS-SWG013, Protection Circuits for: Phase OC, GND DIR OC
	d. NNSBC17	125VDC CONT PWR PNL815	Loss of 125VDC Power to 2NNS-SWG012, (incoming from SWG013) Protection Circuits for: Grnd OC, Dir OC
	e. NNSBC18	125VDC CONT PWR PNL815	Loss of 125VDC Power to 2NNS-SWGO12, protection Circuits for: Grnd OC, Dir OC



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49.1	Comp	<u>uter Point</u>	Computer Printout	Source (cont.)
	f.	NNSBC19	125VDC CONT PWR PNL 803	Loss of 125VDC Power to 2NNS-SWGO14 Phase OC, Gnd OC protection circuits. Sensed by 74-2NNSX15
	g.	NNSBC20	125VDC CONT PWR PNL 804	Loss of 125VDC Power to 2NNS-SWG015 Phase OC, Gnd OC protection circuits. Sensed by 74-2NNSY15
, grove ('e	h.	NNSBC21	125VDC CONT PWR PNL 805	Loss of 125VDC Power to 2NNS-SWGO16, Inst. Gnd, Overcurrent, Transformer 2RTX-XSR1A Gnd, Phase OC, Transfer Trip, Teritiary winding differential as sensed by 74-2NNSX28.
-	i.	NNSBC22	125VDC CONT PWR PNL808	Loss of 125VDC Power to 2NNS-SWG017, Inst Gnd OC, Xfmr 2RTX-XSR1B Gnd, Phase OC, Transfer Trip, 2RTX-XSR1A Tertiary Wind- ing differential as sensed by 74-2NNSY28
	j.	NNSBC23	125VDC CONT PWR PNL 811	Loss of 125VDC Power to 2NNS-SWGO18 Prot. Ckt. Inst. Gnd OC, Xfmr 2ABSX1 Tertiary Winding Gnd, Phase OC, Transfer Trip, 2ABSX1 Tertiary Winding Differential as sensed by 74-2NNSZ28
	k.	NNSBC24	4KV BUS PROT CKT LOS PWR -	Loss of 125VDC Power to the paralleling light indicators for 2NNS-SWGO11 as sensed by 74-2NNSN12
49.2	Autor	natic Response		

a:---Loss of prot. ckt control pwr for the respective 4160V normal switchgear 2NNS-SWG011 through 2NNS-SWG018 as indicated by the source, above. ,

49.3 <u>Corrective Action</u>

a. Check computer to determine which bus has a loss of power.

b.	Move fuses 018, move move fuses	tuses	to	the alte	erna	OP-73A) te pos	. 2NNS-SWG ition. 2NNS)16, 017, S-SWG011,
c.	NNSBC14 - 2BYSA16.	check	for	125VDC	at	panel	2CEC-P814,	circuit
đ.	. NNSBC15 - 2BYSA16.	Check	for	125VDC	at	panel	2CEC-P812,	circuit
e.	NNSBC16 - 2BYSA01.	Check	for	125VDC	at	panel	2CEC-P813,	circuit
f.	NNSBC17 - 28YSB01.	Check	for	125VDC	at	panel	2CEC-P815,	circuit
g	NNSBC18 - 28YSB01.	Check	for	125VDC	at	panel	2CEC-P815,	circuit
h.	NNSBC19 - 2BYSA16.	Check	for	125VDC	at	panel	2CEC-P803,	circuit
i.	NNSBC20 - 2BYSA01.	Check	for	1 25VDC	at	pane]	2CEC-P804,	circuit
j.	NNSBC21 - 2BYSA16.	Check	for	125VDC	at	panel	2CEC-P805,	circuit
k.	NNSBC22 - 2BYSA01.	Check	for	125VDC	at	panel	2CEC-P808,	circuit
1.	NNSBC23 - 2BYSA01.	Check	for	125VDC	at	pane]	2CEC-P811,	circuit
m.	NNSBC24 - CH	neck fo	r 125	SVDC (Sta	Ba	t "A")	at the swite	chgear.

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N2-OP-71 -129 May 1987

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•	I. PROCED	JRE FOR CORRECTING ALARM CONDITIONS (cont.)	
46.11.24	50.0	852558 4KV Bus NNSO18 Electrical Fault	
TCN 12/6/20 12/6/20		<u>Reflash = tes</u>	
, ,	r	4KV BUS NNS 018 ELECTRICAL FAULT 1 1 852558 1 1 1 852558 1 1 1	3
	50.1	Computer PointComputer PrintoutSourcea.NNSUC274KV BUS E18 L0 RLY 1 TRIP2NNS-SWG018 Lockout Relay 1 Tripped as	
	•	sensed by 86-1 2NNSZ28 b. NNSUC28 4KV BUS E18 LO 2NNS-SWGO18 Lockout RLY 2 TRIP Relay 2 Tripped as sensed by 86-1 2NNSZ28	
		c. NNSUC29 4KV BUS E18 LO 2NNS-SWGO18 Lockout RLY 3 TRIP Relay 3 Tripped as sensed by 86-1 2NNSZ28	
	50.2	Automatic Response	
	,	a. Trip and lockout breaker 18-2.	
	•	5. Trip and lockout breaker 101-10 and 103-2.	
	50.3	Corrective Action	
	•	a. Verify automatic response.b. If aux. boiler transformer is supplying emergency bus	
		2ENS*SWG101 or *SWG103, check auto start of emergency diesel gen.	
		c. Investigate and determine reason for trip.	
		d. Return system to normal.	
		N2-0P-77 -130 December 1990	

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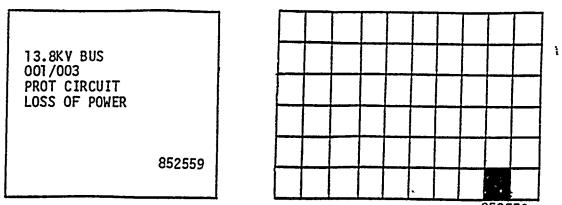
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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51.0 <u>852559</u> 13.8KV Bus 001/003 Protection Circuit Loss of Power

Reflach : Yes



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852559

TCN-24 1815 12/190.

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51.1	Com	outer Point	Computer Printout	Source			
	a.	NPSBC09	125VDC CONT PWR PNL812	Loss of 125VDC Protection Power for Phase OC, GND. OC, DIR OC for 2NPS-SWG001 as sensed by 74-2NPSX01			
	b.	NPSBC10	125VDC CONT PWR PNL813	Loss of 125VDC Protection Power for Phase OC, GND OC, DIR OC for 2NPS-SWG003 as sensed by 74-2NPSY01			
	с.	NPSBC11	125VDC CONT PWR PNL815	Loss of 125VDC Protection Power for Phase OC, GND OC, DIR OC for 2NPS-SWG002 as sensed by 74-2NPSZO1			
	d.	NPSBC12	125VDC CONT PWR PNL812	Loss of 125VDC for 2NPS- SWG001 bus load Trip and Fast Transfer Circuits as sensed by 74-2NPSX17			
	e.	NPSBC13	125VDC CONT PWR PNL813	Loss of 125YDC for 2NPS- SWG001 bus load Trip and Fast Transfer Circuits as sensed by 74-2NPSY21			

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51.2 Automatic Response

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a. Loss of prot. CKT control power for 13.8 switchgear.

- 51.3 Corrective Action
 - a. Check computer to determine which bus has a loss of control power.

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b. Restore control power as soon as possible.

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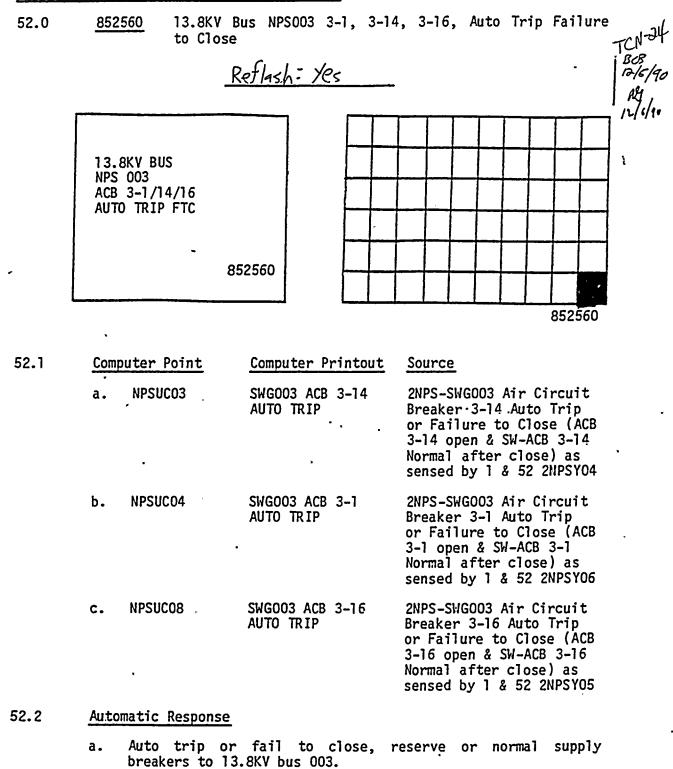
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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- 52.3 <u>Corrective Action</u>
 - a. Verify automatic response.
 - b. Investigate and determine reason for trip.
 - c. Return system to normal operation. N2-OP-71 -133 May 1987 December 1990

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	Ι.	PROCEDUR	E FOR CORRE	CTING ALA	RM CON	DITIONS	_ (con	nt.)						
TCN-24		53.0	852601	Auxiliary Protectio	/ Tran	sforme trol Po	r XS1 wer F	l, A Failu	luxili Ire	ary	Trans	forme	er X	\$3
12/6/20 12/6/20 12/6/20		•	•	Reflash	:Yes			-					-	
1. (46.			AUX XFMER AUX XFMER PROT CONT FAILURE	XS3 PWR			· ·							à.
•	e ••e•			85	2601		┝╼┾╸							-
	• ••	Ĺ										8	<u> </u>	
		53.1	Computer	point	Сотри	iter Pr	intou [.]	<u>t</u> .	Sourc	e				
	۰ •	1.1	a. SPXB(XST P PWR	PROT RL'	Y CON.	•	Loss circu INST XFMR XS1 Fa by 74	its: OC, P 2ATX- ault	GND PHASE XS1 D Press	OC, 0 OC, 7 IFF,	GND AUX 2AT:	
		·	b. SPXBC	:02	XS3 P PWR	ROT RLY	(CONT		Loss c circut PHASE XFMR (XS3 Fa by 74-	its: OC, 2ATX- ault	GND AUX XS3 D Press	OC, IFF,	2AT)	\- `
:		53.2 ,	<u>Automatic</u> NONE	Response	•					ı				
	:	53.3	Corrective	Action					ŧ					
			a. Check	computer	to de	termine	whic	ch po	oint i	s in	alar	m.		
			b. Resto	re control	power	r as so	on as	s pos	ssible	•				
			c. For ((circ	computer j uit 2BYSB1	point 6).	S <u>P</u> XBCO	1, cł	heck	1250	VDC P	PNL 2	CEC-P	NL80	7
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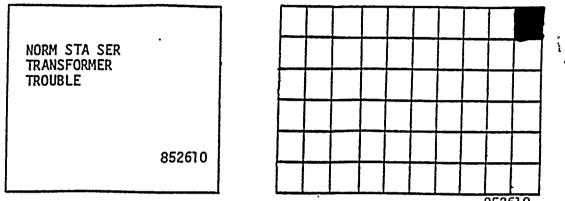
I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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54.0 <u>852610</u> Normal Station Service Transformer Trouble



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RB 12/6/90 14/1/10

54.1	Comp	outer Point	Computer Printout	Source
	a.	SPSTC02	XNSI WDG HOT SPOT T	2STX-XNSI Winding Hot Spot Temp High as sensed by 49T, 1,2,&3-2SPSNO2
	b.	SPSAC01	XNSI GAS DET ACTUATED	2STX-XNSI Gas Detector Actuated as sensed by 63TCG-2SPSNO2
	с.	SPSFC01	XNSI CLR GP1 OIL FLOW	2STX-XNSI Cooler Oil Flow Low as sensed by 74-1-2SPSNO2
	d.	SPSLC01	2STX-XNSI RSVR OIL LEVEL	2STX-XNSI Reservoir Oil Level Low as sensed by 71 QL (TR)-2SPSNO2
	e.	SPSLC02	XNSI LTC RSVR OIL LEVEL	2STX-XNSI LTC Reservoir Oil Level Low as sensed by 71 QL (LTC)-2SPSNO2
	f.	SPSPC01	XNSI PR RLF ACTUATED	2STX-XNSI Pressure Relief actuated as sensed by 63 PR (TR)-2SPSNO2
	g.	SPSPC02	XNSI FLT PR HE SIDE	2STX-XNSI Fault Pressure HE side as sensed by 30X-2SPSYOl
ı	h.	SPSPC03	XNSI FLT PR GR SIDE	2STX-XNSI Fault Pressure GR side as sensed by 30Y-2SPSY01

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54.1	Computer Point		Computer Printout	Source (cont.)
	i.	SPSPC04	XNSILTC PR RLF ACT -	2STX-XNSI LTC Pressure Relief Valve actuated as sensed by 63PR (LTC)-2SPSNO2
. معرور مع معرور مع	j.	SPSPC05	2STX-XNSI LTC FP GR SIDE	2STX-XNSI LTC Fault Pressure GR side as sensed by 30LX-2SPSY03
	k.	SPSTC01	XFMR 2STX-XNS1 OIL TEMP	2STX-XNSI Oil Temp High as sensed by 26Q-2SPSNO2
	1.	SPSPC07	XNSI FAULT PRESS MID	2STX-XNSI Fault Pressure as sensed by 30C-2SPSY01
	m.	SPCPC08	2STX-XNSI LTC FAULT PRESS	2STX-XNSI Fault Pressure as sensed by 30C-2SPSY03.

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54.2 Automatic Response

NONE

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- 54.3 Corrective Action
 - a. Check the computer to determine which point is alarming.
 - b. Dispatch an operator to the Normal Station Service Transformer to investigate and determine the cause.
 - c. Monitor the alarming parameters and take corrective action as required.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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55.0 <u>852611</u> Auxiliary Transformer XS1 Auxiliary Transformer XS3 Primary Lockout Trip <u>Reflash: Yes</u> AUX XFMER XS1 AUX XFMER XS1 AUX XFMER XS3 PR IM LOCKOUT TR IP 852611 852611

852611

55.1	Computer Point			Computer Printout	Source		
	a.	* SPXUCO1	•	XST PRIM LOCKOUT RLY	2ATX-XS1 Primary Lockout Relay Trip as sensed by 86-2SPXY01		
	b.	SPXUCO2	*	XS3 PRIM LOCKOUT RLY	2ATX-XS3 Primary Lockout Relay Trip as sensed by 86-2SPXX01		

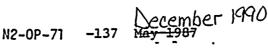
55.2 Automatic Response

- a. If 86-2SPXY01, trip 13.8KV supply breaker 1-4, 4160V breakers 11-3 and 14-2.
- b. If 86-2SPXX01, trip 13.8KV supply breaker 3-6, 4160V breakers 13-6 and 15-3.

55.3 <u>Corrective Action</u>

- a. Verify automatic response.
- b. Check auto start of standby equipment.
- c. Reduce power to less than 85%, per N2-op-101D Section H.1.0.

- d. Investigate and determine reason for trip.
- e. Return plant to normal operation.



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I. <u>PROCEDU</u>	RE FOR CORRECTING ALA	RM CONDITIONS (cont	t.)	-
sh-24 56.0	<u>852620</u> Normal S	tation Service Trar	nsformer Loss of Volt	age
TCN-24 56.0 12/670 NB 12/670	Refhs	<u>sh: Yes</u>	· .	-
	NORM STA SER TRANSFORMER LOSS OF VOLTAGE			
			┥╶┥┥	
· · · · [, 85	52620		
. 56.1	<u>Computer Point</u> a. NPSECO9	<u>Computer Printout</u> BUS SWGOO1 AUTO -XFR BLK	<u>Source</u> 2NPS-SWG001 Transf Blocked as sensed 59-2NPSX18	
<i></i> •	b. NPSEC10	BUS SWGOO3 AUTO -XFR BLK	2NPS-SWG003 Transf Blocked as sensed 59-2NPSY22	
56.2	Automatic Response a. Block closing 2NPS-SWG001.	g of the Normal	Supply Breaker	1-3 to
56.3	b. Block closing 2NPS-SWG003. <u>Corrective Action</u> NONE	of the Normal	Supply Breaker 3	-14 to
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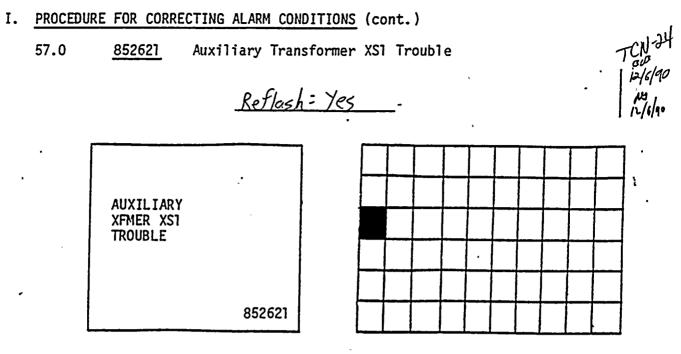
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57.1	Com	puter Point	Computer Printout	Source		
	a.	SPXAC01	XS1 GAS DETECTOR ACTUATED	2ATX-XS1 Gas Detector Actuated as sensed by 63 GD-2SPXA01		
	b.	SPXLC01	2ATX-XS1 RSVR OIL LEVEL	2ATX-XS1 Reservoir Oil Level Low as sensed by 710-2SPXA01		
•	c.	SPXPC01	XSI PR RELIEF ACTUATED	2ATX-XS1 Pressure Relief Actuated as sensed by 63 PR-2SPXA01		
	d.	SPXTCO1	XFMR 2ATX-XS1 OIL TEMP	2ATX-XS1 Oil Temperature High as sensed by 26Q-2SPXAO1		
	e.	SPXTC03	XS1 WDG HOT SPOT	2ATX-XS1 Winding Hot Spot Temperature High as sensed by 49-2SPXAO1		
57.2	Auto	matic Response	3			

57.2 <u>Automatic Response</u> NONE

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57.3 Corrective Action

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a. Check computer to determine which point is in alarm.

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b. Dispatch operator to transformer.

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- c. Investigate and determine reason for alarm.
- d. Return system to normal operation or consider removing transformer from service.

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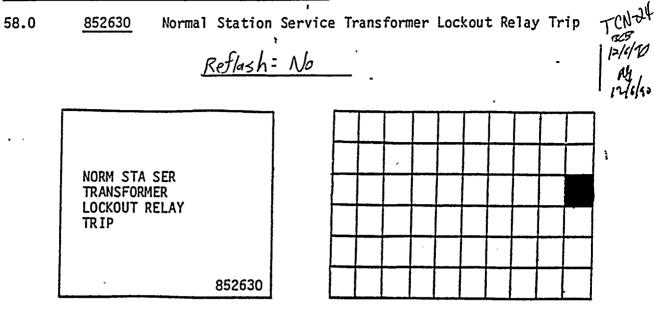
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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

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58.1	<u>Computer Point</u>	Computer Printout	Source
•	SPGUCO2	NSS XFMR LOCKOUT RELAY TRP	2STX-XNS1 Lockout Relay Trip as sensed by 86-2-2SPGZ01

58.2 Automatic Response

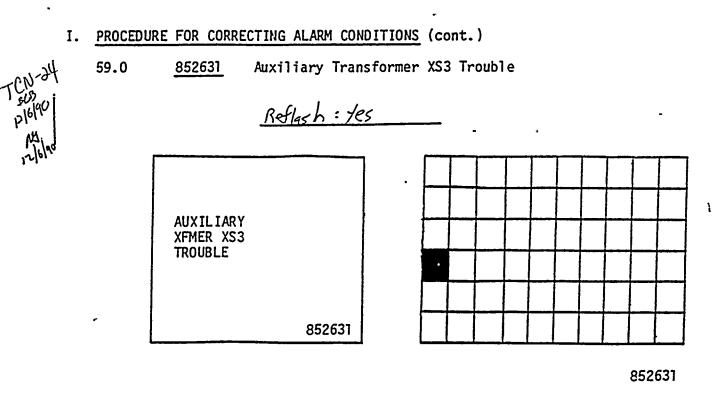
- a. Lockout reserve breakers ACB 1-1, 1-16, 3-1, 3-16.
- b. Blocks fast and modified transfer.
- c. Trips normal supply breakers.
- 58.3 Corrective Action
 - a. Check power available to emergency buses 2ENS*SWG101, 102, 103.
 - b. Verify turbine trip and Rx scram.

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59.1	Comp	uter Point	Computer Printout	Source
	a.	SPXAC02	XS3 GAS DET ACTUATED	2ATX-XS3 Gas Detector Actuated as sensed by 63GD-2SPXB01
	b.	2SPXLC02	2ATX-XS3 RSVR OIL LEVEL	2ATX-XS3 Reservoir Oil Level Low as sensed by 71Q-2SPXB01
	c.	SPXPC02	XS3 PR RELIEF ACTUATED	2ATX-XS3 Pressure Relief Actuated as sensed by 63PR-2SPXB01
	d.	SPXTC02	XFMR 2ATX-XS3 OIL TEMP	2ATX-XS3 Oil Temperature High as sensed by 26Q-2SPXBOl
·	е.	SPXTC04	XS3 WDG HOT SPOT	2ATX-XS3 Winding Hot Spot Temperature High as sensed by 49-2SPXB01

59.2 Automatic Response

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NONE

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59.3 Corrective Action

a. Check computer to determine which point is in alarm.

b. Dispatch operator to transformer.

- c. Investigate and determine reason for alarm.
- d. Return system to normal operation or consider removing transformer from service.

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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. 60.0 852641 Auxiliary Transformer XS1 Sudden Pressure Reflash : Yes AUX XFMER XS1 SUDDEN PRESSURE 852641 852641 60.1 Computer Point Computer Printout Source 2ATX-XS1 SUDD SPXBC03 2ATX-XS1 Sudden Pressure a. PR CKT PWR Circuit Power as sensed by 74-2SPXX05 b. SPXPC03 XST SUDDEN PRE 2ATX-XS1 Sudden Pressure LEFT Left as sensed by 30X-2SPXX05 SPXPC06 XS1 SUDDEN PRE 2ATX-XS1 Sudden Pressure с. RIGHT Right as sensed by 30Y-2SPXX05 60.2 Automatic Response Trip 13.8KV supply breaker ACB 1-4, to 2NPS-SWG001 and 4160V breaker ACB 11-3 to 2NNS-SWG011 and ACB 14-2 to a. 2NNS-SWG014, OR loss of sudden pressure control circuit. 60.3 **Corrective** Action a. ' Verify automatic response. b. If control power loss, restore as soon as possible. If breakers tripped, check auto start of standby equipment. c. Reduce power to less than 85%, per N2-op-10(D Section H.1.0) d.

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- e. Investigate and determine reason for trip.
- f. Return plant to normal operation.

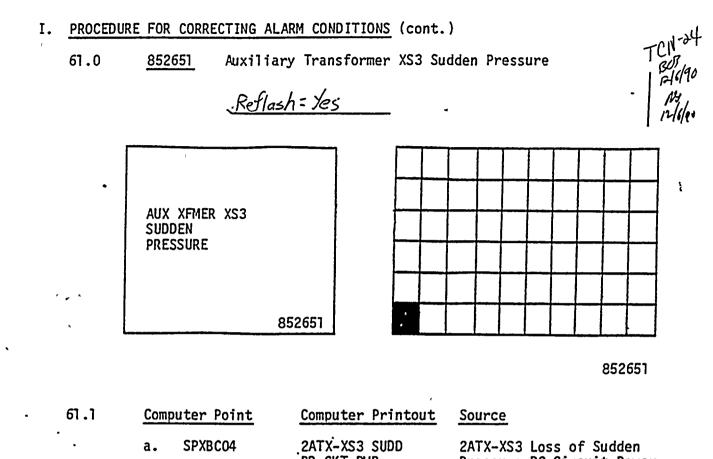
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	•	PR CKT PWR	Pressure DC Circuit Power as sensed by 74-2SPXY05
b.	SPXPC05	XS3 SUDDEN PRE LEFT	2ATX-XS3 Sudden Pressure Left as sensed by 30X-2SPXY05
c.	SPXPC07	XS3 SUDDEN PRE RIGHT	2ATX-XS3 Sudden Pressure Right as sensed by 30Y-2SPXY05

61.2 Automatic Response

All and the set of the set of the

a. Trip 13.8KV supply breaker ACB 3-6 to 2NPS-SWG003 and 4160V breakers ACB 13-6 to 2NNS-SWG0013 and ACB 15-3 to 2NNS-SWG015 OR loss of sudden pressure control circuit.

61.3 <u>Corrective</u> Action

a. Verify automatic response.

b. If control power loss, restore as soon as possible.

c. If breakers tripped, check auto start of standby equipment.

d. Reduce power to less than 85%, per N2-0p-101D Section H.1.0.

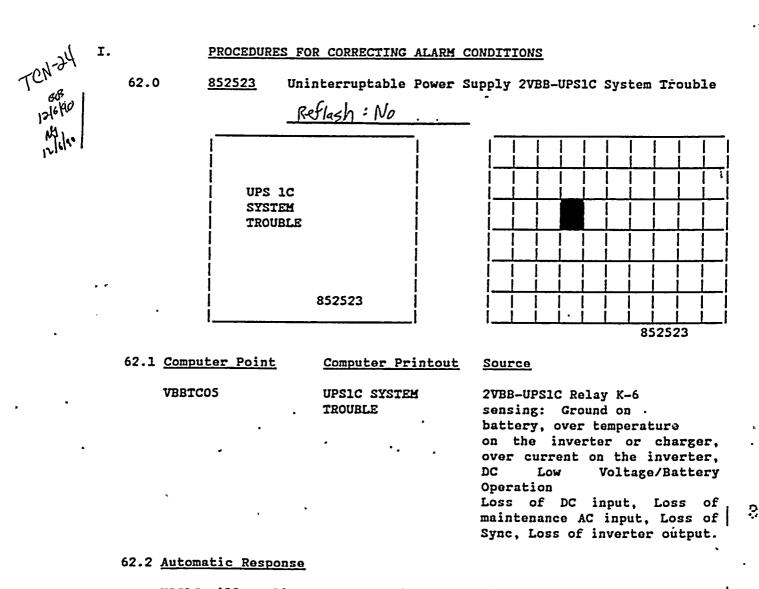
e. Investigate and determine reason for trip.

f. Return plant to normal operation.

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UPSIC will realign power supplies to provide power to vital bus.

62.3 Corrective Action

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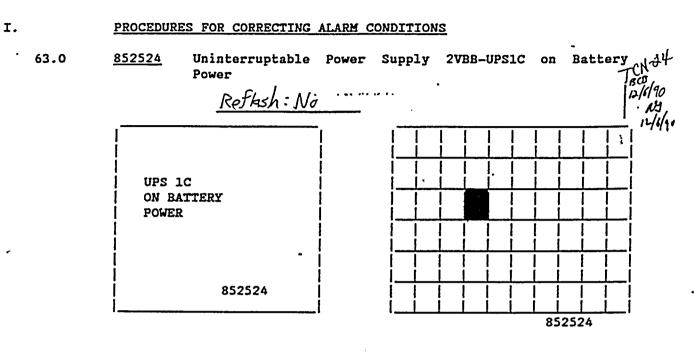
a. Dispatch an operator to the local 2VBB-UPS1C panel to record indications on the UPS front panel.

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- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

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63.1 Computer Point	Computer Printout	Source
VBBTC06	UPSIC ON BATT PWR	2VBB-UPS1C Relay K-2; (On Battery Power)

63.2 Automatic Response

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2VBBUPS1C Auto Transfer to DC battery power.

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63.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS1C to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.

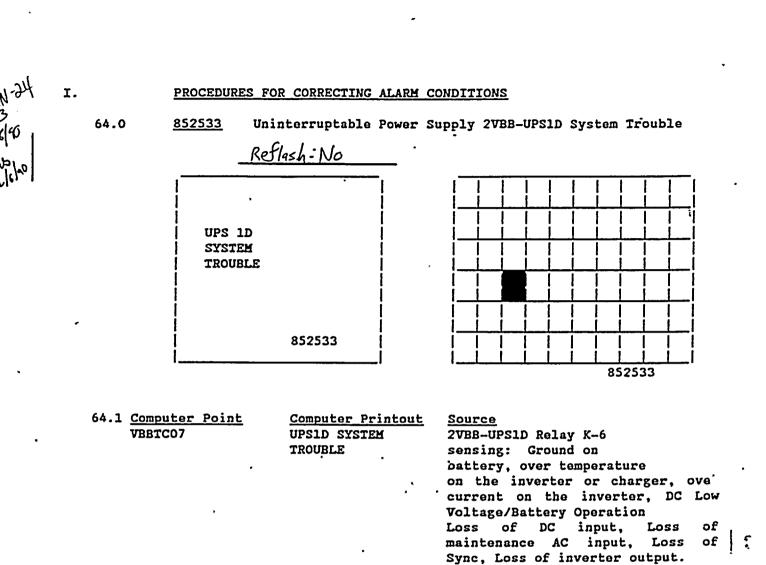
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c. Initiate maint. activities if the unit needs repair.

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64.2 Automatic Response

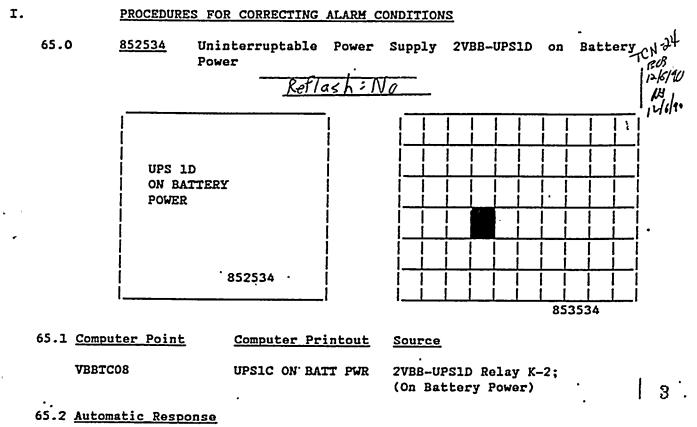
UPS1D will realign power supplies to provide power to vital bus.

64.3 Corrective Action

- a. Dispatch an operator to the local 2VBB-UPS1D panel to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

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2VBBUPS1C Auto Transfer to DC battery power.

65.3 Corrective Action

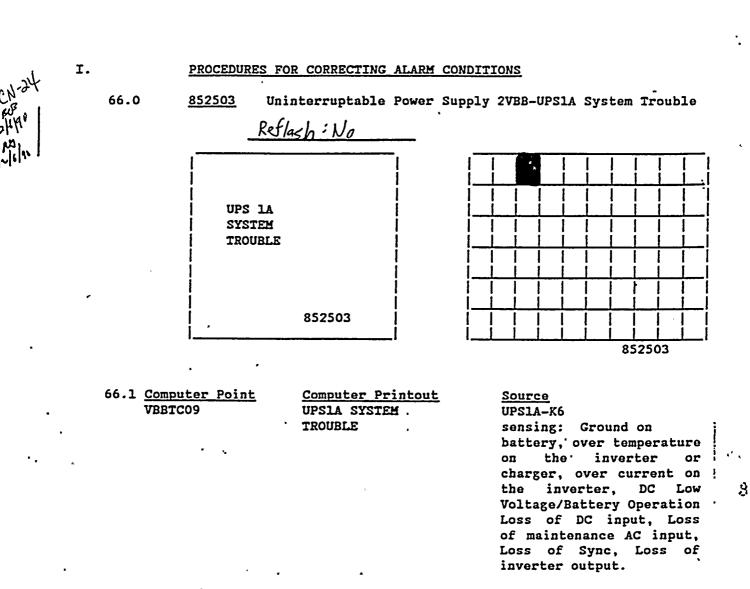
- a. Dispatch an operator to 2VBB-UPS1D to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.

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c. Initiate maint. activities if the unit needs repair.

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66.2 Automatic Response

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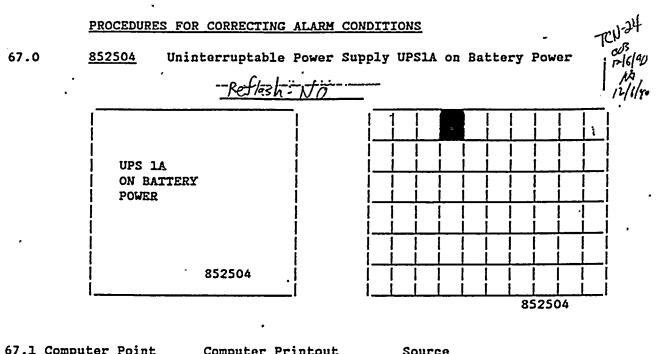
UPSIA will realign power supplies to provide power to vital bus.

66.3 Corrective Action

- a. Dispatch an operator to the local 2VBB-UPSIA panel to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

N2-OP-71 -150- December 1

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0,	dempatter rorne	Compacer Frincoac	Source		
	•				
•	VBSTC10	UPSLA ON BATT PWR	UPS1A-K2	1	3
			(On Battery Power)	1	U

67.2 Automatic Response

2VBB-UPS1A Auto Transfer to DC battery power.

67.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS1A to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

1990 N2-OP-71' -151- December 1987

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PROCEDURES FOR CORRECTING ALARM CONDITIONS

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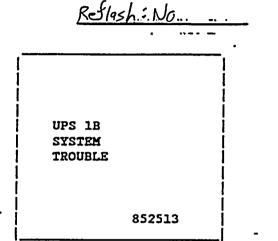
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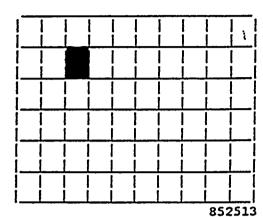
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I.

852513 Uninterruptable Power Supply 2VBB-UPS1B System Trouble





68.1 <u>Computer Point</u> VBBTC11 Computer Printout UPS1B SYSTEM TROUBLE Source UPS1B-K6 sensing: Ground on battery, over temperature on the inverter or charger, over current on the inverter, DC Low Voltage/Battery Operation Loss of DC input, Loss of maintenance AC input, Loss of Sync, Loss of inverter output.

68.2 Automatic Response

UPS1B will realign power supplies to provide power to vital bus.

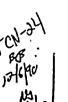
68.3 Corrective Action

- a. Dispatch an operator to the local 2VBB-UPS1B panel to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.

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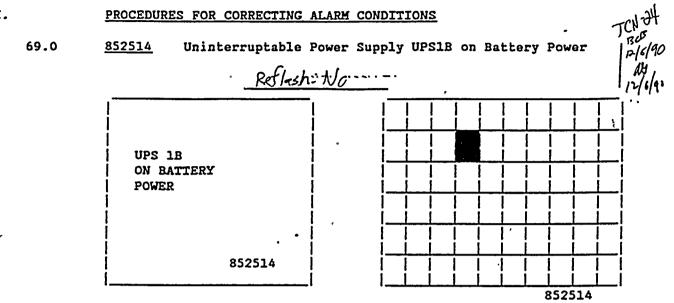
c. Initiate maint. activities if the unit needs repair.

N2-OP-71 -152- December -14



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69.1 <u>Computer Point</u>	Computer Printout	Source	
VBBTC12	UPSIB ON BATT PWR	UPS1B-K2	• 1
•	•	(On Battery Power)	

69.2 Automatic Response

2VBB-UPS1B Auto Transfer to DC battery power.

69.3 Corrective Action

- Dispatch an operator to 2VBB-UPS1B to record indications on the a. UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- Initiate maint. activities if the unit needs repair. c.

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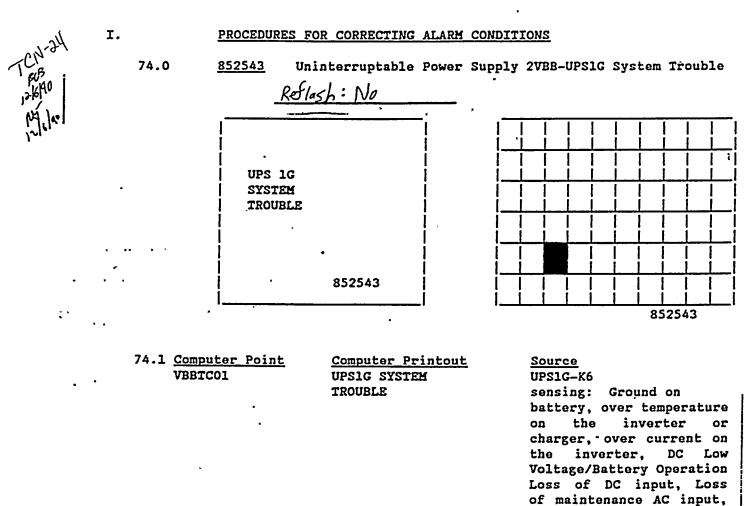
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74.2 Automatic Response

UPSIG will realign power supplies to provide power to vital bus.

74.3 Corrective Action

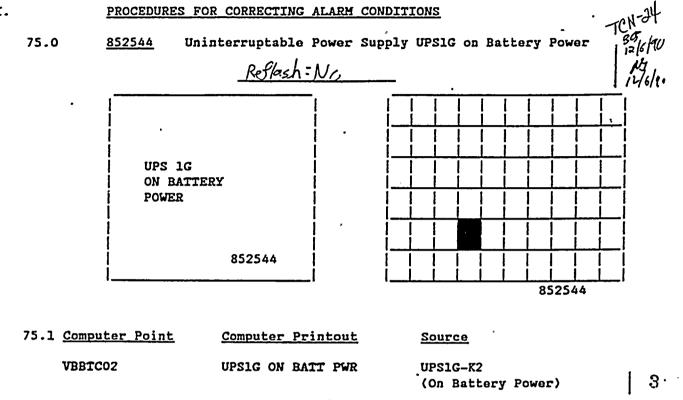
- a. Dispatch an operator to the local 2VBB-UPS1G panel to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

1990 N2-OP-71 -154- December 1987 З

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Loss of Sync, Loss of

inverter output.



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75.2 Automatic Response

2VBB-UPS1G Auto Transfer to DC battery power.

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75.3 Corrective Action

- 8. Dispatch an operator to 2VBB-UPS1G to record indications on the UPS front panel.
- Ъ. Refer to Section H to align power supplies to the desired off normal configuration.
- Initiate maint. activities if the unit needs repair. c.

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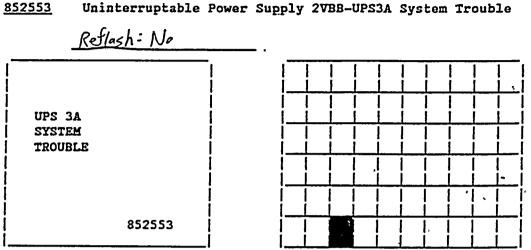
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PROCEDURES FOR CORRECTING ALARM CONDITIONS



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76.1	Computer Point	Computer Printout	Source
	VBBEC13	UPS3A SYSTEM . TROUBLE	UPS3A-K2

<u>NOTE</u>: UPS3A-K2 is energized by initiation of any local alarm (See Section 76.3).

76.2 Automatic Response

UPS3A wil realign power supplies to provide power to vital bus.

76.3 Corrective Action

- a. Dispatch an operator to the local 2VBB-UPS3A panel to record indications on the UPS front panel.

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- Refer to Section H to align power supplies to the desired off normal configuration, if required.
- c. Initiate maint. activities if the unit needs repair.

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76.3 Corrective Action (Cont'd)

d. Evaluate local alarm indication per description below:

	<u> Local Alarm Description - Corrective Ac</u>	tion
Alarm	Description	Corrective Action
Sync Loss	a) Maintenance AC is out offrequency tolerance	Notify maintenance
	Mainténance AC is not present	Restore Alt. AC (if fuse is blown in maintenance supply regulator, notify maintenance)
	c. UPS inverter out of freq. tolerance	Verify Freq. meter - notify maintenance
Low Inverter V	Voltage UPS inverter output voltage is 157	L low Verify on voltmeter - Notify maintenance - if EPA was tripped with this alarm in, manually transfer to maintenance A.C. power
Inverter Overt	emp Unit overheating	Maintenance required
Fuse Blown	Fuse within UPS blown	Maintenance to replace fuses
Rectifier DC Grounded	UPS internal D.C. Bus grounded	Maintenance required
Low D.C. Bus	UPS internal D.C. Bus voltage is 1	low Notify Elec./I&C for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit	Check output ammeter - if unit loaded, clear non-essential load If alarm false, contact Elec./I&C
Low Battery	UPS internal D.C. Bus voltage is below 110 volts	If batteries connected, (CB-2 Closed) Check battery volts, if battery volts OK, contact_Elect/I&C
Battery Drain/	Charge Current being drawn from batteries caused by: a) Loss of normal A.C. to UPS b) Voltage on associated D.C. switchgear higher than UPS internal D.C. voltage	a) Restore normal AC b) If associated charger on equalize, verify .UPS D.C. setpoint @

Local Alarm Description - Corrective Action

Alarm	Description	Corrective Action
Rectifier AC Loss	Loss of normal AC to Unit	a) Verify CB-1 not • tripped - if tripped, notify Elect/I&C
	····	b) If CB-1 is closed, restore upstream, normal AC supply
Reverse Transfer	Static switch is in maintenance position	a) If other alarms present, correct other alarms first
`` <i>`</i>	·	b) If all other alarms clear, yerify UPETAC output voltage present (meter), then push
		forward [,] transfer (to inverter) push button

Local Alarm Description - Corrective Action (Cont'd)

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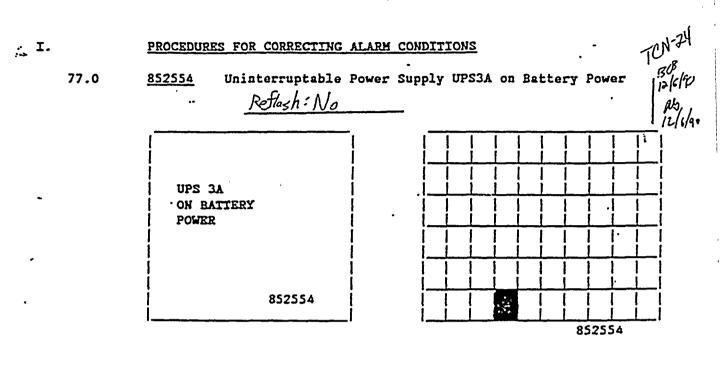
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77.1	Computer	Point	Computer	Print	cout	Source	i.		
	VBBBC11		UPS3A ON 2	BATT	PWR	UPS3A-K	:3 · ·		TCN
•••	NOTE:	UPS3A-K3 (See Sect		ру	local	alarm	"Battery	drain/charge"	• •

77.2 Automatic Response

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2VBB-UPS3A will operate on DC battery power.

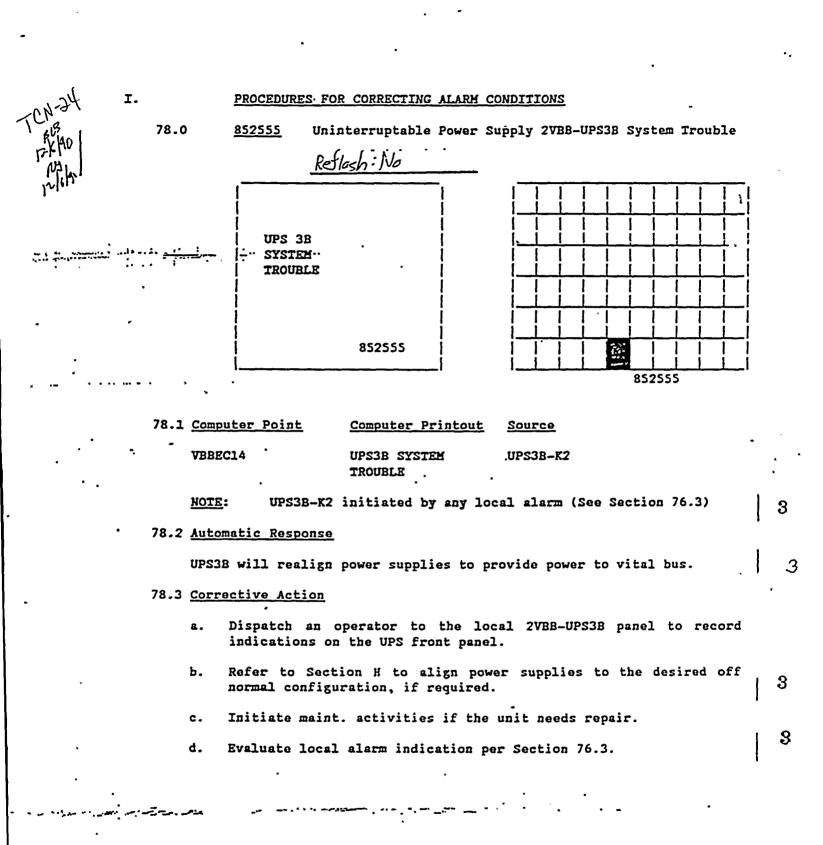
77.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS3A to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration, if required.
- c. Initiate maint. activities if the unit needs repair.
- d. Evaluate cause of local alarm "Battery drain/charge" per Section 76.3.

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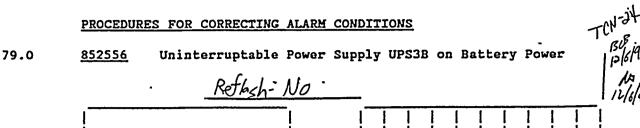


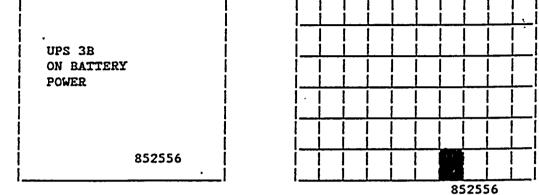
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79.1 <u>Computer Point</u> <u>Computer Printout</u> <u>Source</u> VBBBC12 UPS3B ON BATT PWR UPS3B-K3

<u>NOTE</u>: UPS3B-K3 is initiated by local alarm: "Battery S drain/charge" (See Section 76.3).

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79.2 Automatic Response

2VBB-UPS3B will operate on DC battery power.

79.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS3B to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration, if required.
- c. Initiate maint. activities if the unit needs repair.
- d. Evaluate local alarm "Battery drain/charge" per Section 76.3.

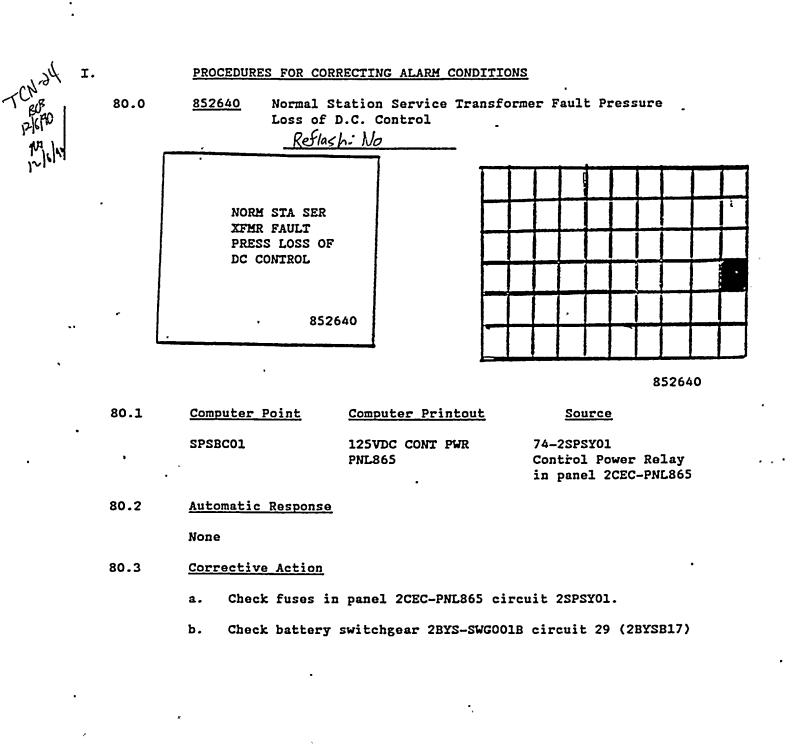
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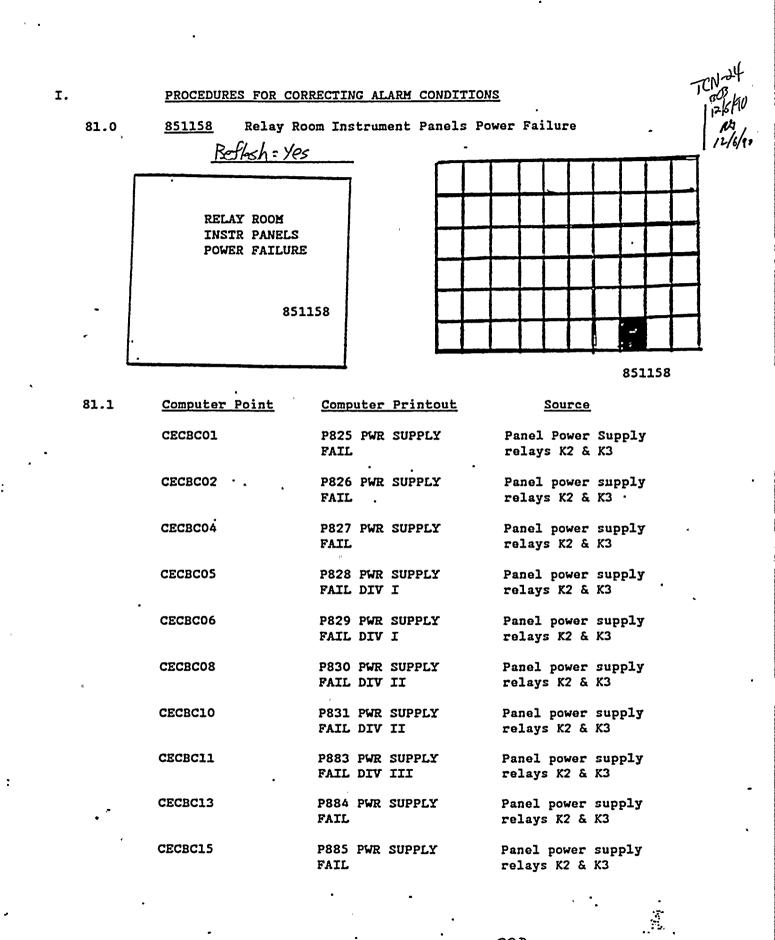


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	81.0	<u>851158</u> Relay Room	m Instrument Panels Powe	er Failure (Cont'd)
	81.1	Computer Point	Computer Printout	Source .
		CECBC16	P886 PWR SUPPLY FAIL	Panel power supply relays K2 & K3
		CECBC17	P887 PWR SUPPLY FAIL	Panel power supply relays K2 & K3
يېر مېلېرې ورو کې د دانس د د. در مېلېرې ورو کې د دانس د د. د د د د	ه- هه علامتن و المحر. مع من	CECBC19	P888 PWR SUPPLY	Panel power-supply relays K2 & K3
		CECBC21	P890 PWR SUPPLY FAIL DIV I	Panel power supply relays K2 & K3
•		CECBC22	P891 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3
		CECBC23	P894 PWR SUPPLY FAIL DIV I	Panel power supply relays K2 & K3
		CECBC24	P895 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3
		CECBC26	P896 PWR SUPPLY FAIL DIV I	Panel power supply relays K2 & K3
•		CECBC27	P897 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3

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81.2 Automatic Response

None

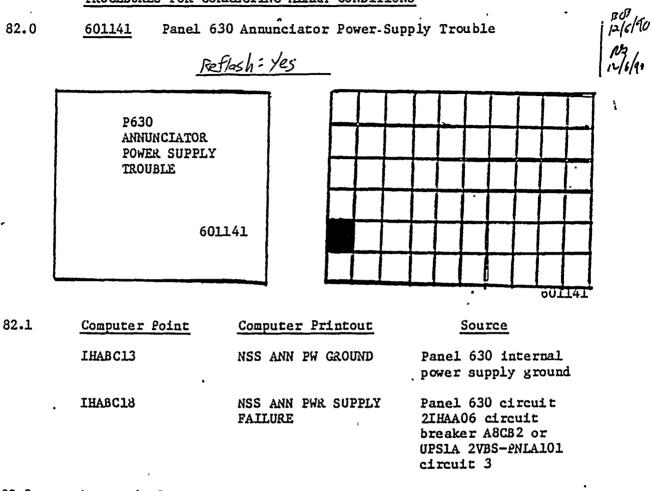
81.3 Corrective Action

a. Notify I&C of the alarm.

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PROCEDURES FOR CORRECTING ALARM CONDITIONS



82.2 Automatic Response

None

- 82.3 Corrective Action
 - a. 'Check panel circuits and breaker shown as "source".
 - b. Notify I&C of the alarm.
 - C. Refer to N2-0p-91A, Section H.3.0 "Loss of all Annunciators," if applicable

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TCN-24 I. BOR 1-16/90 . MSI 12/1 12/1 PROCEDURES FOR CORRECTING ALARM CONDITIONS 601142 Panel 630 Alarm Retransmit Power Supply Trouble 83.0 Reflash : Yes ... P630 ALARM RETRANSMIT POWER SUPPLY TROUBLE 601142 601142 83.1 Computer Printout Computer Point Source IHABC14 Panel 630 circuit NSS ANN PWR SUPPLY 2IHAN06 circuit FAIL breaker A8CB3 or UPS1B 2VBS-PNLB101 circuit 4 IHABC15 ALM REFL PS LOSS Panel 630 circuit OF PWR 2IHAN05 loss of power 83.2 Automatic Response

None

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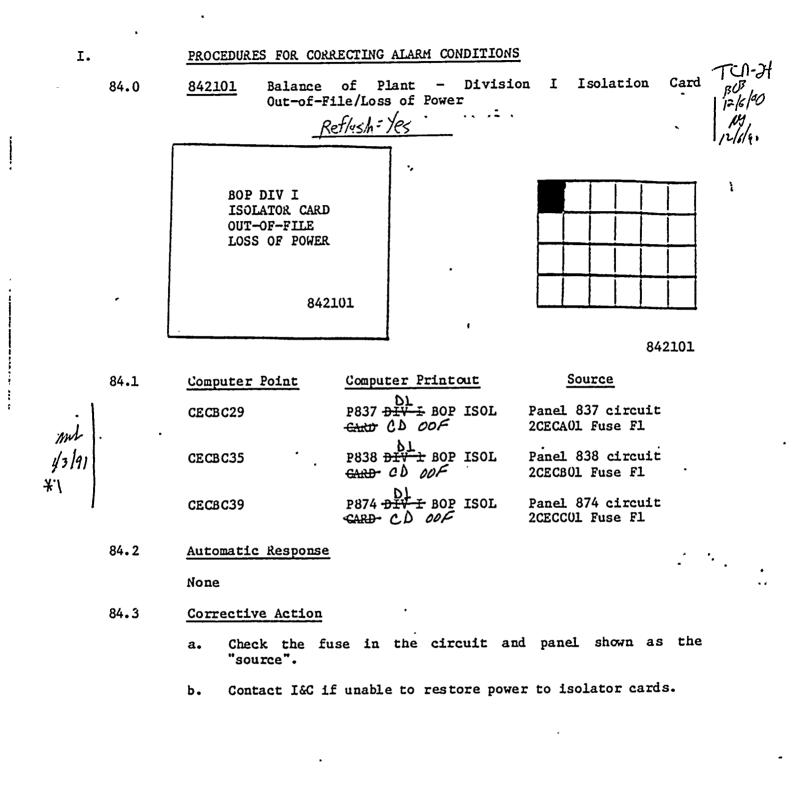
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- 83.3 Corrective Action
 - a. Check circuits and breaker shown as "source".

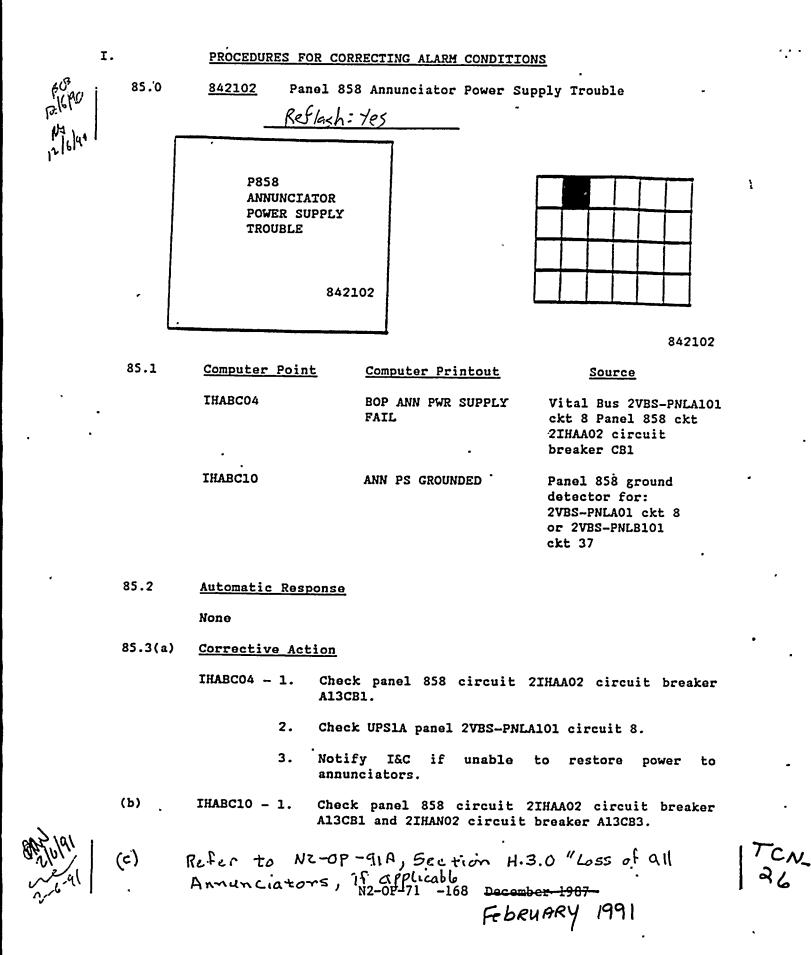
b. Notify I&C of the alarm if unable to restore power to annunciator isolators, or retransmitter relays.

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85.0 <u>842102</u> Panel 858 Annunciator Power Supply Trouble (Cont'd)
85.3(b) (Cont'd) 2. Check UPSIA panel 2VBS-PNLB101 circuit 37 and 2VBS-PNLA101 circuit 8.

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3. Notify I&C if unable to restore power to annunciators.

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PROCEDURES FOR CORRECTING ALARM CONDITIONS I. Emergency Response Facility Panel Isolation Card 842103 86.0 Out-of-File/Loss of Power . • Reflach: Yes • * •, ł ERF PANEL **ISOLATION CARD** OUT-OF-FILE/ LOSS OF POWER 842103 842103 86.1 Computer Point Computer Printout Source Panel 899 circuit CECBC45 P899D1 ERF ISOL CD OOF 2CECA03 Fuse F1 or UPS2A 2VBS*PNL101A circuit 3 P899D2 ERF ISOL Panel 899 circuit CECBC46 2CECB02 Fuse F1 or CD UOF UPS2B 2VBS*PNL301B circuit 20 P899 BLK ERF ISOL Panel 899 circuit CECBC47 2CECB04 Fuse F1 or CD OOF 2SCI-PNLA102 circuit 17 86.2 Automatic Response None 86.3 Corrective Action Check fuses and breakers in panels listed as "source". a. b. Notify I&C if unable to restore power to isolator circuits.

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I.		PROCEDURES FOR COR	RECTING ALARM CONDITIO	NS (ALLAY
	87.0	Out-of-F	of Plant Division II I ile/Loss of Power .	12/5/00
		<u></u>	Flash = tes	1/6/91
	-	BOP DIV II ISOLATOR CARD OUT-OF-FILE/ LOSS OF POWER 842:		
	territaria.			842107
	86.1	Computer Point	Computer Printout	Source
		CECBC30	D2 P874 DIV-2 BOP ISOL CARD CD OOF	Panel 874 Isol cards ZG-A, B, C, D
ml 1 3/91		CECBC36	P837 DIV 2 BOP ISOL CARD CD ODF	Panel 837 Isol cards ZAJ-A, B, C, D
*		CECBC40	62 P838 DIV-2 BOP ISOL CARD 20 00	Panel 838 Isol cards ZAH-A, B, C, D or panel 838 circuit 2CECBOl Fuse Fl
		IHABCO2	DIV 2 ISOL INP CARD OUT	Panel 838 Div 2 Isol input card(s) from 99-1A through 99-11B any card(s) out of file
	87.2	<u>Automatic Response</u>		
		None		
	87.3	Corrective Action		

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87.3 <u>Corrective Action</u>

a. Check panel cards and fuse as shown as "source".

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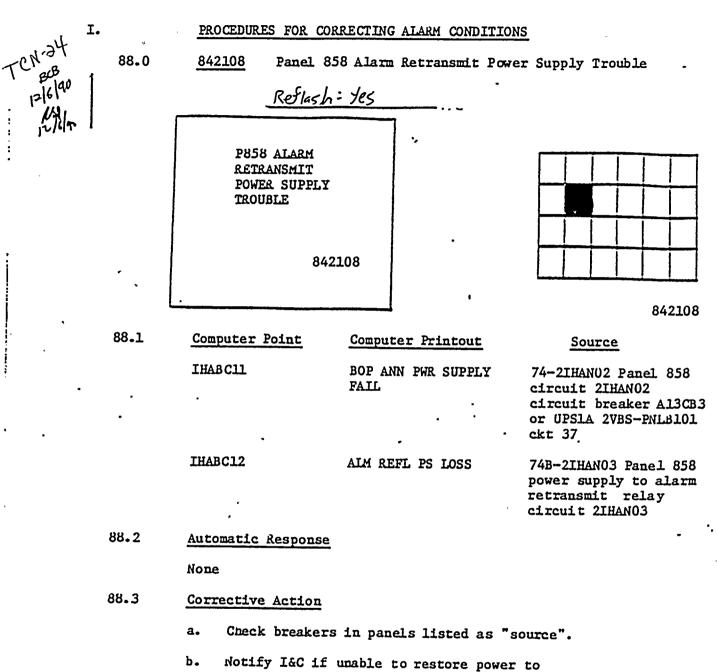
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b. Notify I&C if unable to restore power to isolator circuits.

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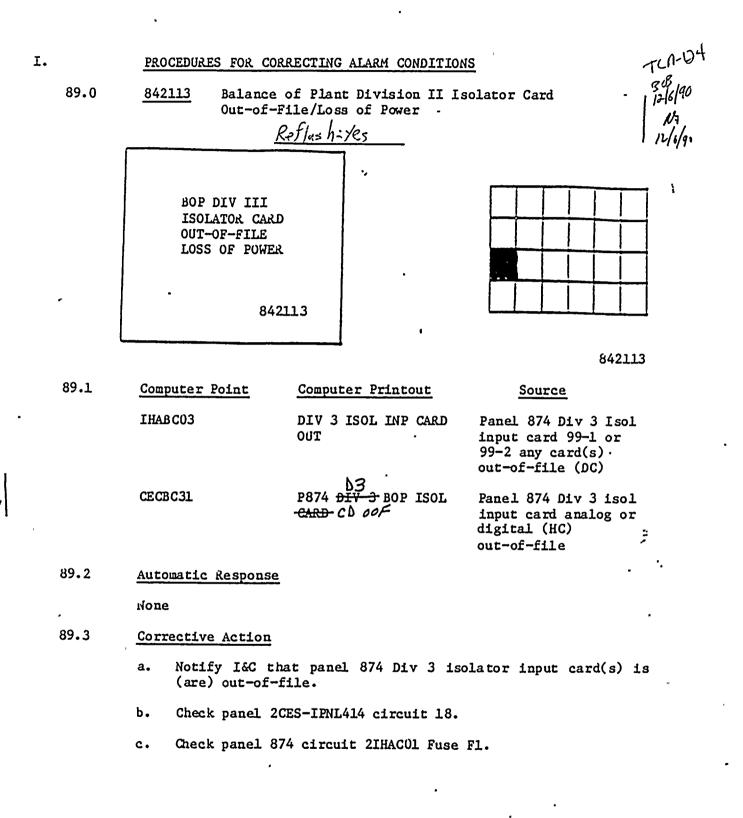
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retransmission circuits.

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1-124	I.	- <u></u>	RRECTING ALARM CONDITION	
TU1-124 1303 126/90	90.0	System .	of Plant Non-Divisiona Isolation Card Out-of-F: lash: 1995	l/Reactor Protection ile/Loss of Power -
	.	BOP NON-DIV RPS ISOL CAR OUT-OF-FILE LOSS OF POWE		842119
β	90.1	Computer Point	Computer Printout NoN-DIV P837 BLK BOP ISOL	Source
		CECBC32	-CARD- CD POR	Panel 837 analog or digital isolator output card out-of-file
//// 3 91		CECBC33	NUN-OIV P838 -BLK-BOP ISOL - GARD- CD OQ-	Panel 838 analog or digital isolator output card out-of-filé
¥I		CECBC34	P874 BLK-BOP ISOL GARD CD COF	Panel 874 analog or digital isolator output card out-of-file
		CECBC37	P837 KPS DI BOP ISOL CARD CD DOF	Power from panel 856 circuit 2SCIA06 fuse Fl
I		CECBC38	P838 RPS D2- D0P - ISOL CARD -CS OOL	Power from panel 857 circuit 2SCIB06 fuse Fl
		IHABC07	DIV 1 ISOL OUTP CARD OUT	Panel 857 optic Isol output card out-of-file

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90.1	Computer Point	Computer Printout	Source (Cont'd)
	IHABC08	DIV 2 ISOL OUTP CARD OUT,	Panel 838 optic Isol output card out-of-file
	LHABCO9	DIV 3 ISOL OUTP CARD OUT	Panel 874 optic Isol output card out-of-file

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90.2 <u>Automatic Response</u>

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None

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- 90.3 <u>Corrective Action</u>
 - a. Check panel cards and fuses listed as "source".
 - b. Notify I&C of the alarm.

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TABLE 'TI

COMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE REMARKS -
	13.8KV Reserve Station Service XFMR	2NPS-SWG001	1-1	Open .	Fuses in MAIN PEED- Note /
2STX-XNS1	13.8KV Normal Station Service XFMR Breaker (Norm Sta Svce XFMR 2STX-XNS1)	2NPS-SWG001	1–3	Closed	Note I
2RTX-XSR1B	13.8KV Reserve Station Service XFMR Breaker (RSV Sta Svce XFMR 2RTX-XSR1B)	2NPS-SWG001	1-16	Cubicle Only	
2RTX-XSR1A	13.8KV Reserve Station Service XFHR Breaker (RSV Sta Svce XFMR 2RTX-XSR1A)	2NPS-SWG002	2-1	Cubicle Only	····
2ABS-X1 .	13.8KV Aux Boiler Service XFMR Breaker (Aux Blr Svce XFMR 2ABS-X1)	2NPS-SWG002	2-5	Closed	D C-Power F usos_in MAIN-FEED
2RTX-XSR1B	13.8KV Reserve Station Service XFMR Breaker (RSV Sta Svce XFMR 2RTX-XSR1B	2NPS-SWG003	3-1	Open	Note I
2STX-XNS1	13.8KV Normal Station Service XFMR Breaker (Norm Sta Svce XFMR 2STX-XNS1)	2NPS-SWG003	3-14	Closed	Note.1
2NPS-SWG003	Metering Cubicle DC Control Power Fuses	2NPS-SWG003	3-15	Fuses Installed	DC Power fuses in MAIN FE
2NPS-SWG001	Metering Cubicle DC Control Power Fuses	2NPS-SWG001	1-2	Fuses Installed	DC Powe fuses in MAIN FEB
2NPS-SWG002	Metering Cubicle DC Control Power Fuses	2NPS-SWG002	2-4	Fuses Installed	DC Power fuses in MA ANA U

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TABLE_II .

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SYSTEM POWER SUPPLY LINEUP

COMPONENT N	COMPONENT ; D. DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
	13.8KV Reserve Station Service XFMR (Breaker (RSV Sta Svce XFMR 2RTX-XSR1A)	2NPS-SWG003	3-16	Cubicle Only		
2ATX-XS3	13.8KV Feed to Aux Stepdown transformer 2ATX-XS3	2NPS-SWG003	3-6	Closed		
2RCS-MG1A	Slow speed breaker for Reactor Recirc Pump 2RCS-PIA	2NPS-SWG004	47	Open		
2RCS-HG1B	Slow speed breaker for Reactor Recirc Pump 2RCS P1B	2NPS-SWG005	5-1 [′]	Open		
2NJS-X1H,J,I	< 13.8KV/600V Aux transformer 2NJS-X1H, 2NJS-X1J, 2NJS-X1K	2NPS-SWG001	1-1A	Closed	1	
2NJS-X1C,D	13.8KV/600V Aux transformer 2NJS-X1C, 2NJS-X1D	2NPS-SWG001	1-5	Closed		
2NJS-X1A,B,(G 13.8KV/600V Aux transformer 2NJS-X1A, 2NJS-X1B, 2NJS-X1G ,	2NPS-SWG001	1-14	Closed		
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TABLE II .

SYSTEM POWER SUPPLY LINEUP

	COMPONENT	POWER	SUPPLY	NORMAL ACTUAL	INITIALS/	
COMPONENT NO.		Bus Number	- Cubicle/ Breaker	POSITION POSITION	DATE	REMARKS
2ATX-XS1	13.8KV/4.16KV Aux Stepdown XFMR (Aux stepdown XFMR 2ATX-X51)	2NPS-SWG001	1-4	Closed -		
	13.8KV/600 Aux XFMR 2NJS-X3H, 2NJS-X3J, 2NJS-X3K	2NPS-SWG003	3-1A	Closed	<u> </u>	
2NJS-X3C,D	13.8KV/600V Aux XFMR 2NJS-X3C,2NJS-X3D	2NPS-SWG003	3-3	Closed	<u> </u>	
2NJS-X3A,B,G	13.8KV/600V Aux XFMR 2NJS-X3A,2NJS-X3B, 2NJS-X3G	2NPS-SWG003	3-13	Closed		•
	4.16KV to 2NNS-SWG011 (Aux stepdown XFMR 2ATX-XS1)	2NNS-SWGO11	11-3	Closed		uses in Bhi and Bhi R
	4.16KV to 2NNS-SWG012 (Bus the to 2NNS-SWG011)	2NNS-SWGO11	11-1	Closed		B C-Fuses 1 n-BAT-A B us-A , B AT-B , B US-B-
2ATX-XS1	4.16KV feed to 2NNS-SWG-014 (TAG) (Aux Stepdown XFMR 2ATX-XS1)	2NNS-SWG014	14-2	Closed		<u></u>
	4.16KV Tie to emergency Bus 2ENS-SWG101 (TAG) (4.16KV emergency switchgear 2ENS-SWG101	2NNS-SWG014	14-1	Open	<u></u> .	

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SYSTEM POWER SUPPLY LINEUP

COMPÔNENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ •Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-X1F	4.16KV/600V Aux transformer (TAG) , (Aux stepdown XFMR 2NJS-X1F)	2NNS-SWG014	34-4	Closed		
2NJS-X1E	4.16KV/600V Aux transformer (TAG) (Aux stepdown XFMR 2NJS-X1E)	2NNS-SWG014	14-8	Closed		DC Fuses in BAT A BUS A, BAT B, BUS B
2ATX-XS3	4.16KV to 2NNS-SWG013 (TAG) (Aux transformer 2ATX-XS3)	2NNS-SWG013	13-6	Closed		DC Fuses in BAT A BUS A, BAT B, BUS B
	4.16KV Tie Breaker to 2NNS-SWGO12 (TAG) (Bus Tie Breaker Cubicle)	2NNS-SWG013	13-10	Open	<u></u>	
2ATX-XS3	4.16KV to 2NNS-SWG015 (TAG) (Aux transformer 2ATX-XS3)	2NNS-SWG015	15-3	Closed		
2ENS-SWG103	4.16KV Tie Breaker emerg. Bus 2ENS- SWG103 (TAG)(4.16KV Emerg. Switchgear 2ENS-SWG103)	2NNS-SWG015	15-8	Open		
2NJS-X3F	4.16KV/600V Aux transformer (TAG) (4.16KV/600V Aux stepdown XFMR 2NJS-	2NNS-SWG015 X3F)	15-1	Closed		DC Fuses in BAT A BUS A, BAT B, BUS B
	 N	2-0P-71 -179 De	ecember 1987		•	

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		•	TABLE I	_	`		
			SYSTEM_POWER_SUP	PLY LINEUP			
COMPONENT NO	-	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-X3E		00V Aux transformer (TAG) 600V Aux stepdown XFMR 2N		15-7	Closed		
2RTX-XSR1A		o 2NNS-SWGO16 (TAG) (RSV R 2RTX-XSR1A)	sta 2NNS-SWG016	- 16-2	Closed		
2RTX-XSR1B		O 2NNS-SWGO17 (TAG) (RSV R 2RTX-XSR1B)	i Sta 2NNS-SWG017	17-2	Closed		
2ABS-X1 ,		O 2NNS-SWG018 (TAG) (Aux R 2ABS-X1)	BLR 2NNS-SWG-18	18-2	Closed		,
Aux XFMR 2NJS-X1C	600V to	2NJS-US1 Bus A	2NJS-US1	. 3B	Closed	ı	
Aux XFMR 2NJS-X3C	600V to	2NJS-US1 Bus B	2NJS-US1	14B ·	Closed		
2NJŠ-USIA&C'	600V Tie	Breaker between Bus A &	Bus C 2NJS-US1	88	Closed		
2NJS-US1B&C	600V Ti	e Breaker between Bus B &	Bus C 2NJS-US1	10B	Open	•	

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	,	TABLE 11 ·				•
	<u>SYST</u>	EM POWER SUPPLY LI	NEUP	•		
COMPONENT NO.	COMPONENT DESCRIPTION		LY Cubicle/ Greaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
	2NHS-MCCOO3 Bus A (TAG) CCOO3 Bus A)	2NJS-US1 Bus A	3C	Closed		
	2NHS-MCCOO3 Bus B (TAG) . CCOO3 Bus B)	2NJS-US1 Bus B	13D	Closed		
	distribution panel 2LAT-PNL100 00V Normal Dist. PNL 2LAT-PNL100)	2NJS-USI Bus C	9C	Closed		
	distribution Panel 2NJS-PNL100 OOV Normal Dist. PNL 2NJS-PNL100)	2NJS-US1 Bus C	98	Closed		
	distribution Panel 2WPS-PNL100 00V welding Distr PNL 2WPS-PNL100	2NJS-US1 Bus C)	80	Closed .		
Aux XFMR 600V to 2NJS-X1D	2NJS-US2 Bus A	2NJS-UŞ2A	3B	Closed		
Aux XFMR 600V to 2NJS-X3D	2NJS-US2 Bus B	2NJS-US2B	128	Closed		
2NJS-US2 600V T1	e Breaker between Bus A and Bus C	2NJS-US2	68	Closed		
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TABLE II .

SYSTEM POWER SUPPLY LINEUP

COMPONENT NO	COMPONENT DESCRIPTION	- ·· ·	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-US2	600V Tie Breaker between Bus B and Bus C	2NJS-US2	9B	Open		
2NHS-MCC005	600V to 2NHS-MCC005 Bus A	2NJS-US2 Bus	A 5C	Closed		
2NHS-MCCOO5	600V to 2NHS-MCC005 Bus B	2NJS-US2 Bus	B 12C	Closed		
2NHS-MCCO14	600V to 2NHS-MCCO14 Bus A	2NJS-US2 Bus	A 3C	Closed	·	
2NHS-MCCO14	600V to 2NHS-MCC014 Bus B	2NJS-US2 Bus	B 10B	Closed	•	T
2 LAR-PNI.200 NJ <u>S-PNL201</u>	600V Feed to Norm Dist Panel 2 LAR-PNL20 0 גאש <i>ב-PNL201</i>		C 76 6 D	Closed		R.
2NJS-PNL200	600V Feed to Norm Dist Panel 2NJS-PNL200	2NJS-US2 Bus	C 8B	Closed	,	
2WPS-PNL200	600V Feed to welding distribution Panel 2WPS-PNL200	2NJS-US2 Bus	C 8D	Closed		
2NJS-X1B	600V Feed to Load Center 2NJS-US3 Bus A	2NJS-US3A	38	Closed		

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	a lu			<u>TABLE []</u>	•	, D			
	Ý		SYSTER	1 POWER SUPPL	YL	INEUP			
COMPONENT NO.	·	COMPONENT DESCRIPTION		POWER Bus Number	SU -	PPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARK
2NJS-X3B Aux transformer		eed to Load Center	2NJS-US3 Bus B	2NJS-US3 B		14B	Closed		
2NJS <u>-</u> US3 Bus C	600V T	le Breaker between	Bus A & Bus C	2NJS-US3 Bus	A	78 *	Closed		
2NJS-US3 Bus C	600V T	le Breaker between	Bus B & Bus C	2NJS-US3 Bus	B	118 [.]	Open .		
		eed to motor contr CCOO6 Bus A	ol center	2NJS-US3 Bus	A	3C	Closed		<u></u>
		eed to motor contr CCOO6 Bus B	ol center	2NJS-US3 Bus	B	120 '	Closed		
	600V Fe 2NJS-PI	eed to normal dist VL300	ribution Panel	2NJS-US3 Bus	C	9B	Closed .	,	
	600V Fe 2NJS-PI	eed to normal dist NL301	ribution Panel	2NJS-US3	, .	9D °	Closed		
2WPS-PNL300	600V F 2WPS-Pi		tribution Panel	2NJS-US3 Bus	С	70 <u>.</u>	Closed		
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<u>TABLE II</u>.

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SYSTEM POWER SUPPLY LINEUP

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COMPONENT NO.	COMPONENT DESCRIPTION 	PNWER SUPPLY Bus Number – Cubicle/ , Breaker	NORMAL ACTUAL INITIALS/ POSITION POSITION DATE REMARKS
, 2LAT-PNL300	600V Feed to normal distribution Panel 2LAT-PNL300	2NJS-US3 Bus B 12B	Closed
2VBB-TRS1	600V Feed to automatic transfer switch 2VBB-TRS1	2NJS-US3 Bus B 13A	Closed
2VBB-TRS1	600V Feed to switchgear room automatic transfer switch 2VBB-TRS1	2NJS-US4 Bus A 6C	Closed
2NJS-X1A Aux Transforme	600V Feed to load center 2NJS-US4 Bus A	2NJS-US4A 3B	Closed
2NJS-X3A. Aux transformer	600V Feed to load center 2NJS-US4 Bus B	2NJS-US4B 15B	Closed
2NJS-X3A Aux transformer	600V Tie Breaker between Bus A & Bus C	2NJS-US4B 8B	Closed
2NJS-US4 Bus C	600V Tie Breaker between Bus B & Bus C	2NJS-US4 Bus B 11B	Open
ŽNHS-MCC007 Bus A	600V Feed to motor control center 2NHS-MCC007 Bus A	2NJS-US4 Bus A 3C	Closed

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		<u>TABLE ÎI</u>			d	
		YSTEM_POWER_SUPPLY	/ 1 TNC (10			
· .	<u></u>	·	LINCOF	<u> </u>		
COMPONENT NO	COMPONENT DESCRIPTION	POWER SU Bus Number -	_ .	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NHS-MCCOO7 Bus B	600V Feed to motor control center 2NHS-MCCOO7 Bus B	2NJS-US4 Bus B	15C ²	Closed		
2NHS-MCCO13 Bus A	600V Feed to motor Control Center 2NHS-MCCO13 Bus A	2NJUS4 Bus A	60	Closed		
2NHS-MCCO13 Bus B	600V Feed to motor control center 2NHS-MCCO13 Bus B	2NJS-US4 Bus B	14D	Closed		
2NJS-PNL401	600V Feed to normal distribution Pane 2NJS-PNL401	1 2NJS-US4 Bus A	48	Closed		
2NJS-PNL400	600V Feed to normal distribution Pane 2NJS-PNL400	1 2NJS-US4 Bus C	98	Closed	•	
2LAS-PNL400	600V Feed to normal distribution Pane 2LAS-PNL400	1 2NJS-US4 Bus C	· 9C	Closed		
2WPS-PNL402	i 600V Feed to welding distribution Pan 2WPS-PNL 400	el 2NJS-US4 Bus C	80	Closed		
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		TABLE II	•			
•	<u>S</u>	YSTEM POWER SUPPLY	LINEUP			٠
COMPONENT NO	COMPONENT DESCRIPTION	POWEP SU Bus Number -	PPLY Cubicle/ ,Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-PNL402	600V Feed to normal distribution Pane 2NJS-PNL402	1 2NJS-US4 Bus B	14A . :	Closed		
Aux XFMR 2NJS-X1E	600V Feed to load center 2NJS-US5	2NJS-US5	3B i	Closed		
Aux XFMR ' 2NJS-X1F.	600V Feed to load center 2NJS-US5	2NJS-US5	; 88	Open		
2NHS-MCCOO8.	600V Feed to motor control center 2NHS-MCC008	2NJS-US5	3D :	Closed		
2NHS-MCC008	600V Feed to motor control center 2NHS-MCC008	2NJS-US5	5A	Closed .	•	•
2NHS-MCCOI1	600V Feed to motor control center 2NHS-MCCOll	2NJS-US5	4A	Closed -		-
2NHS-MCCOII Bus B	600V Feed to motor control center ' 2NHS-MCCOll	2NJS-US5	50	Closed		
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		•	TABLE_I	<u>u</u> .			
		. <u>SY</u>	<u>STEM POWER SUF</u>	PPLY_LINEUP			
COMPONENT NO	· COMPONENT . DESCRIPTION	* * *	POWER Bus Number	SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-PNL500	600V Feed to normal distribution F 2NJS-PNL500	anel	2NJS-US5	68	Closed		
Aux XFMR. 2NJS-X3E	600V Feed to load center 2NJS-US6		2NJS-US6	38	Closed		
Aux XFMR 2NJS-X3F	600V Feed to load center 2NJS-US6	7 1 1	2NJS-US6	78	Open		
-2NHS-MCC009	600V Feed to motor control center 2NHS-MCC009	;	2NJS-US6	30	Closed		
2NHS-MCC009	600V Feed to motor control center 2NHS-HCCOO9	4 6 8 7 7	2NJS-US6	50	Closed .		
2NHS-MCCO12	600V Feed to motor control center 2NHS-MCCO12		2NJS-US6	· 4D	Closed		
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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT 3 DESCRIPTION	POWER SUPPLY Bus Number – Cubicle/ ·Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE REMARK
2NHS-MCCO12 600V Fee 2NHS-MCC	d to motor control center	2NJS-US6 5A	Closed	
2NJS-PNL600 600V Fee 2NJS-PNL	d to normal distribution Panel 600	2NJS-US6 6B	Closed	
Aux XFMR 600V Fee 2NJS-X1G	d to load center 2NJS-US7 Bus A	2NJS-US7A 3B	Closed	
Aux XFMR 600V Fee 2NJS-X3G	d to load center 2NJS-US7 Bus B	2NJS-US7B 7B	Closed	
2NJS-US7 600V Tie	Breaker between Bus A & Bus B	2NJS-US7 5B	Open	
2NJS-PNL702 600V Fee 2NJS-PNL	d to normal distribution Panel 702	2NJS-US7 Bus A 3C	Closed	
2NJS-PNL700 600V Fee 2NJS-PNL	d to normal distribution panel 700	2NJS-US7 Bus A 4B	Closed	
2NJS-PNL704 600V Fee 2NJS-PNL	ed to normal distribution Panel 704	2NJS-US7 Bus A 4C .	Closed	
•	N2-0F	2-71 -188 Cecember 1987	••••••••••••••••••••••••••••••••••••••	r

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•		<u>TABLE II</u>		,		
· ·		SYSTEM POWER SUPPLY	LINEUP			
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COMPONENT NO.	COMPONENT DESCRIPTION	POWER SU Bus Number -		NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARK:
2NJS-PNL706 600V F 2NJS-P	eed to normal distribution P. NL706	anel 2NJS-US7 Bus A	4D	Closed		
2NJS-PNL701 600V F 2NJS-P	eed to normal distribution P NL701	anel 2NJS-US7 Bus B	6B	Closed		
2NJS-PNL705 600V F 2NJS-P	} eed to normal distribution P NL705	; anel 2NJS-US6 Bus B	6C	Closed		
2NJS-PNL707 600V F . 2NJS-P	eed to normal distribution P NL707	anel 2NJS-US7 Bus B	6D	Closed ;	•	-
2NJS-PNL703 600V F , 2NJS-P	eed to normal distribution P NC703	anel 2NJS-US7 Bus B	7C ·	Closed		
2NJS-X1H 600V F Aux. Transformer	eed to Load Center 2NJS-US8	Bus A 2NJS-US8B	3B	Closed		
2NJS-X3H 600V F Aux. Transformer	eed to Load Center 2NJS-US8	Bus B 2NJS-US8B	138	Closed	•	
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•			TABLE J	<u>I</u> .			•
	,		SYSTEM POWER SUP	PLY LINEUP	`		
•	COMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
•	2NJS-US8 Bus C	600V Tie Breaker between Bus A & Bu	s C 2NJS-US8 Bus	А 7В	Closed		
•	2NJS-US8 Bus C	600V Tie Breaker between Bus B & Bu	s C 2NJS-US8 Bus	B 9B	Open		
	2NHS-MCCOO2 Bus A	600V Feed to motor control center 2NHS-MCCOO2 Bus A	2NJS-US8 Bus	A 3C	Closed		······································
	2NHS-MCCOO2 Bus B	600V Feed to motor control center 2NHS-MCC002 Bus B	2NJS-US8 Bus	B 13C	Closed		
•	2NHS-MCCO15 Bus A	600V Feed to motor control center 2NHS-MCCO15 Bus A	2NJS-US8 Bus	A 4D	Closed	٩	
•	2NHS-MCCO15 Bus B	600V Feed to motor control center 2NHS-MCCO15 B	2NJS-US8 Bus	B ⁷ 120	Closed		
	2NJS-X1J Aux Transfor	600V Feed to load center 2NJS-US9 B mer	us A 2NJS-US9A	38	Closed		
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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	-	PLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-X3J Aux Transfor	600V Feed to load center 2NJS-US9 Bus B mer	2NJS-US9B		138	Closed		
2NJS-US9 Bus B	600V Bus Tie between Bus A & Bus C	2NJS-US9 Bus	A	7B	Closed		-
2NJS-US9 Bus C	600V Bus Tie between Bus B & Bus C	2NJS-US9 _. Bus	B	9B	Open		•
2NHS-MCCOO1 Bus A	600V Feed to motor control center 2NHS-MCCOOl Bus A	2NJS-US9 Bus	A	4D	Closed		
2NHS-MCCOOT Bus B	600V Feed to motor control center 2NHS-MCCOOl B	2NJS-US9 Bus	B	120	Closed .		
2NHS-HCCO16 Bus A	600V Feed to motor control center 2NHS-MCCOl6 Bus A	2NJS-US9 Bus	A	6B	člosed		
2NHS-MCCOO2	600V Tie Breaker between Bus B & Bus C	2NHS-MCCOO2		11A ,	Öpen		

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		ξ	STEM POWER SUPPL	<u>Y LINRUP</u>	,		
COMPONENT NO	•	L COMPONENT DESCRIPTION	POWER S Bus Number -	UPPLY Cubicle/ Breaker	NORMAL ACTUAL Position Position	INITIALS/ DATE	REMARKS
2NJS-US8 Bus B		coming feed to motor control 2NHS MCC002 Bus B	2NHS-MCC002R	18A	Closed		
2NJS-US1 Bus A		ncoming feed to motor control 2NHS MCC003 Bus A	2NHS-MCC003A	1A	Closed		
2NHS-MCC003	600V t	ie breaker between Bus A & Bus C	2NHS-MCC003	8A	Closed		
2NHS-MCC003	600V T	ie Breaker between Bus B & Bus C	2NHS-MCC003	18A	Open		¢
2NJS-US1 Bug B		ncoming feed to motor control 2NHS MCC003 Bus B	2NHS-MCC003B	19A	Closed	•	-
2NJS-PNL402		y. mergency feed to motor control 2NHS MCC004 4	2nhs-McCoo4	1A -	Closed '		
2NJS-PNL401		ormal feed to motor control 2NHS MCC004	2NHS-HCC004	1C	Closed		

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	TABLE II	· · · · · · · · · · · · · · · · · · ·
	SYSTEM POWER SUPPLY LINEUP	• • • • •
COMPONENT COMPONENT NO. DESCRIPTION	POWER SUPPLY Bus Number – Cubicle/ Breaker	NORMAL ACTUAL INITIALS/ POSITION POSITION DATE REMARKS
2NJS-US2 600V incoming feed to motor control Bus A center 2NHS-MCC004 Bus A	2NHS-MCCOO5A 1A	Closed
2NHS-MCC005 600V Tie Breaker between Bus A & Bu	s C 2NHS-MCCOO5 5A	Closed
2NHS-MCCOO5 600V Tie Breaker between Bus B & Bu	s C 2NHS-MCCOO5 BA	Open
2NJS-US2 600V incoming feed to motor control Bus B center 2NHS-MCC005 Bus B	2NHS-MCCOO5B 12A	Closed
2NJS-US3 600V incoming feed to motor control Bus A center 2NHS-MCC006 Bus A	2NHS-MCCOO6A 1A	Closed
2NHS-MCC006 600V tie breaker between Bus A & Bu	s C 2NHS-MCCOO6 9A	Closed
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SYSTEM POWER SUPPLY LINEUP

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COMPONENT NO	COMPONENT DESCRIPTION		POWER Bus Number		bicle/ aker	NORMAL ACTUAL POSITION POSITION ÷	INITIALS/ DATE	REMARKS		
2NHS-MCC006	600V tie breaker between Bus B & Bu	s C	2NHS-MCC006		14A	Open				
2NJS-US3 Bus B	600V incoming feed to motor contro center 2NHS-MCC006 Bus B		2NHS-MCC006B		15A	Closed				
2NJS-US4 Bus A	600V incoming feed to motor contro center 2NHS-MCCOO7 Bus A		2NHS-MCCOO7A		١٨	Closed				
2NHS-MCCO16 Bus B	600V feed to motor control center 2NHS-MCCO16 Bus B		2NJS-US9 Bus	B	108	Closed				
2NJS-PNL101	600V feed to normal distribution Pa 2NJS-PNL101	ane 1	2NJS-US9 Bus	C	70	Closed				
2LAN-PNL900	600V feed to normal distribution Pa 2LAN-PNL900	anel	2NJS-US9 Bus	C	8D	Closed .	•			
2NJS-X1K Aux transformer	600V feed to load center 2NJS-US10 Bus A		2NJS-US10A		38	Closed				
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			, 1	<u>SY</u>	TEM POWER SUPP	PLY_LINEUP	X			
•,	COMPONENT NO	a transmo pini . Nyi	COMPONENT DESCRIPTION	,	POWER Bus Number	SUPPLY - Cubicl Breaker		ACTUAL POSITION	INITIALS/ DATE	REMARKS
	2NJS-X3K Aux transformer	600V fee Bus B	d to load center 2NJS	-US10	2NJS-US10B	128	Closed			
•	2NJS-US10	600V tiệ	breaker between Bus	A & Bus C	2NJS-US10	68	Closed			
	2NJS-US10	600V tiể	breaker between Bus	B & Bus C	2NJS-US10	9B	Open			
	2NHS-MCCO10 Bus A		d to motor control ce OlO Bus A	nter	2NJS-US10 Bus	SA 3C	Closed	-		ż
•	2NHS-MCCO10 Bus B		d to motor control ce OlO Bus B	nter	2NJS-US10 Bus	SB 12C	Closed		٠	
	2NHS-MCCO17 Bus A		d to motor control ce CO17 Bus A	nter	2NJS-US10 Bus	5 A 4B	Closed		•	
•	2NHS-MCCO17 Bus B	600V fee 2NHS-MCC	d to motor control ce COl7 Bus B	nter	2NJS-US10 Bus	5 B 118	Closed			
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SYSTEM POWER SUPPLY LINEUP

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 	COMPÓNENT NO).	COMPONENT DESCRIPTION	Bus	POWER Number	SUPPLY - Cubicle/ ,Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
	2NJS-US9 Bus A	600V in center	coming feed to motor contro 2NHS-MCCOO1 Bus A	2NHS	5-MCC001A	1A	Closed			
•	<u> </u>	600V ti	breaker between Bus A & Bus C	2NHS	5-MCC001	- 7A	Closed		······	
	2NHS-MCC001	600V ti	breaker between Bus B & Bus C	2NHS	-MCC001	13A	Open	······		
•	2NJS-US9 Bus B	600V in center	oming feed to motor control NHS-MCCOOl Bus B	2NHS	-MCC001B	19A	Closed			
•	2NJS-US8 Bus A ,	600V in center	oming feed to motor control NHS MCCOO2 Bus LA	2NHS	-MCCOO2A	٦٨	Closed			· · · · · · · · · · · · · · · · · · ·
-	2NHS-MCC002 Bus C	600V tie	breaker between Bus A & Bus C	2NHS Bus	-MCC002 A	8A	Closed	د ۱ ۳	•	
•	2NHS-MCCOO7	Tie Brea	ker Bus A and C 2NHSMCC007	2NHS	-MCC007	5A .	Closed	·		
	2NHS-MCC007	Tie Brea	ker Bus B and C 2NHSMCC007	2NHS	-MCC007	10A	Open			
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• :	• • •			TABLE]	<u>I</u> .			
•	:		· ·	SYSTEM POWER SUP	<u>PLY'LINEUP</u>			
COMPONENT N	0.	COMPONENT DESCRIPTIC		POWER Bus Number	SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-US4	600V from	n 2NJS-US4 ((incoming main)	2NHS-MCC007	14A	Closed		
2NJS-US5	600V from	n 2NJS-US5 ((incoming main)`	2NHS-MCC008	١٨	Closed		
2NJS-US5	600V from	1 2NJS-US5 (incoming main)	2NHS-MCC008	9A	Open		
2NJS-US6	600V from	2NJS-US6 (incoming main)	2NHS-MCCOO9	1A	Closed		
. 2NJS-US6	600V from	.2NJS-US6 (incoming main)	2NHS-MCCOO9	7A	Open	-	
2NJS-US10	∙600V from	2NJS-US10A	(incoming main) 2NHS-MCCO10	1A	Closed		
2NHS-MCCO10	Tie Break	er Bus A an	Id C 2NHS-MCCOIO	2NHS-MCCO10	13A	Closed	•	
· 2NHS-MCCO10	Tie Break	er Bus B an	d C 2NHS-MCCOIO	2NHS-MCCO10	24A	Open .		
2NJS-US1.0	600V from	2NJS-US108	l 3 (incoming main) 2NHS-MCCO10	36A	Closed		
2NJS-US5	- 600V from	2NJS-US5 (incoming main)	2NHS-MCCO11	1A	Closed		
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,	:		<u>TABLE II</u> YSTEM POWER SUPPI		x.	-		
COMPONENT NO	COMPONI DBSCRI		POWER : Bus Number ·	SUPPLY - Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2NJS-US5	600V from 2NJS-US	S5 (incoming main)	2NHS-MCC011	10A	Open	£.		
2NJS-US6	600V from 2NJS-US	S6 (incoming main)	2NHS-MCC012	1A	Closed			
2NJS-US6	i 600V from 2NJS-US	36 (incoming main)	2NHS-MCC012	10A	Open			
2NJS-US4	600V from 2NJS-US	54 (incoming main)	2NHS-MCC013	18	Closed			
2NHS-MCC013	Tie breaker Bus A	A and C 2NHS-MCC013	2NHS-MCC013	5 A ´	Closed			·
2NHS-MCC013	Tie breaker Bus I	B and C 2NHS-MCCO13	2NHS-MCC013	9A.	Open		1	
2NJS-US4		54 (incoming main)	2NHS-MCC013	13A	Closed	į		
2NJS-US2	600V from 2NJS-U	52 (incoming main)	2NHS-MCC014	1A	Closed			
2NHS-MCCO14	Tie breaker Bus A	A and C 2NHS-MCCO14	2NHS-MCC014	5A	Closed	4 1		
2NHS-MCC014	Tie bresker Bus I	B and C 2NHS-MCC014	2NHS-MCCO14	8 A	Open	•	,	
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ÇOMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - - Cubicle/ Breaker	NORMAL POSITION	ACTUAL POSITION	INITIALS/ DATE	REMARKS
2njs-us2	600V feed from 2NJS-US2 (incoming main)	2NHS-MCC014	124	Closed			
. 2NJS-US8	600V feed from 2NJS-US8 (incoming main)	2NHS-MCC015	1A	Closed	Ś		
2NHS-MCC015	Tie breaker 2NHS-MCC015 Bus A and C	2NHS-MCC015	7A	Closed			-
2NHS-MCC015	Tie breaker Bus B and C 2NHS-MCC015	2NHS-MCC015	12A	Open		·	
2NJS-US8	600V feed from 2NJS-US8 (incoming main)	2NHS-MCC015	18A	Closed			
2NJS-US8	600V feed from 2NJS-US9 (incoming main)	2NHS-MCC016	1A	Closed		•	
2NHS-MCC016	Tie breaker Bus A-C 2NHS-MCC016	2NIIS-MCC016	6A	Closed			
2NHS-HCC016	Tie breaker Bus B and C 2NHS-MCC016	2NHS-MCC016	9A	Open	-		
2NJS-US9	600V feed from 2NJS-US9 (incoming line)	2NHS-MCC016	14A	Closed			
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		TABLE II		•		
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	<u>.</u>	STEM POWER SUPPL	Y LINEUP			
			• 			
COMPONENT NO	COMPONENT DESCRIPTION	POWER S		NORMAL ACTUAL	INITIALS/	
OULONDUI NO	. I DESCRIPTION	Bus Number -	Cubicle/	POSITION POSITION	DATE	REMAR
			Breaker			
				<u> </u>		
NJS-US10	600V feed from 2NJS-US10 (incoming	2NHS-MCC017	1A	Closed		
	line)		~~~			
•						
				······································		
NHS-MCC017	Tie breaker Bus A and C 2NHS-MCC017	2NHS-MCC017	5 A	Closed		
•	j :				•	
·····	ě,			_		
NHS-MCC017	Tie breaker Bus B and C 2NHS-MCCO17	2NHS-HCC017	8A	Open		
	• • • • • • • • • • • •			· · · · · ·		
NJS-US10	600V feed from 2NJS-US10 (incoming	2NHS-MCC017	12A	Closed		
	line)					
		······		· · · · · · · · · · · · · · · · · · ·		
VBB-UPS3B	600V normal supply to 2VBB-UPS3B	2NJS-PNL402	32	Closed		
	:				•	
	4 , 2	·····	-	······································		-
VBB-XRC603	600V supply to 2VBB-XRC603 (UPS3B)	2NJS-PNL600	2	Closed		
				······································		
			•		_	
VBB-UPS3B	120V maintenance supply to 2VBB-UPS3B	2VBB-XRC603	CB1	Closed	·	
· .	······	<u> </u>				
	125VDC supply to 2VBBUPS3B	2BYS-SWG001B	3D	Closed .		
`.	ITTADE BUDDIA CO TAPP-01228	2013-3800010	50			
	· · · · · · · · · · · · · · · · · · ·			¢.		
VBS*ACB1B	120V supply breaker from	2VBB-BKR3B	3B	Closed		
VBS*ACB2B	2VBB-UPS-3B to 2VBS-*ACB1B & *ACB2B				.*	
	<u>}.</u>				• 	
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N2-OP-71 -200- December 1987

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TABLE II

SYSTEM POWER SUPPLY LINEUP

	COMPONENT	POWER SI	UPPLY	NORMAL ACTUAL	INITIALS/	
COHPONENT NO.	DESCRIPTION .	Bus Number -	Cubicle/ Breaker	POSITION POSITION	DATE	REHARKS
100		LVES			`	
2VBS*PNLB1 01	120V supply breaker from 2VBB-UPS3B	2VBB*ACB1B	18	Closed		
	2483-PNLB101-	2 VBB *ACB2B	2B			
	avesa fulbioo	2VBS				
2VBB-UPS3A	600V normal supply to 2VBB-UPS3A	2LAT-PNL100	26	Closed		* *
2VBB-XRC503	600V supply to 2VBB-XRC503 (UPS3A)	2NJS-PNL500	2	Closed		
,		XRC503				*
2VBB-UPS3A	120V maintenance supply 2VBB-UPS3A	2VBB- XD503	CB1	Closed		
2VBB-UPS3A	125VDC supply to 2VBB-UPS3A	2BYS-SWG001C	2D	Closed	• • • • • • • • • • • • • • • • • • • •	
2VBS*ACB1A	120V supply breaker from 2VBB-UPS3A	2VBB-BKR3A	3A	Closed		
2VBS*ACB2A	to 2VBS*ACB1A & 2VBS*ACB2A		54	ciusea		
		•	,			
100		ives .				
ZARZ×BNLV101	120V supply breaker from 2VBB-UPS3A	2VBB*ACB1A	1A	Closed		
	to 2VBS*PNLA 101 /00 ,	2V BB*ACB2A ∡V&S	2A		*	
2VBB-UPS1C	600V normal supply to 2VBB-UPS1C	01 m DW 200		A]]		-
	coos normal subbia to sapp-ob210	2LAT-PNL300	Sub Feed	Closed	•	

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		<u>TABLE II</u> SYSTEM POWER SUPPL	Y_LINEUP	•	-	
COMPONENT NO.	COMPONENT DESCRIPTION	POWER S Bus Number -		NORMAL ACTUAL Position positio ?	INITIALS/ N DATE	REMARKS
2VBB-XD501 6	00V supply to 2VBB-XD501 (UPS1C)	2NJS-US5	4B	Closed		
	i 20V maintenance supply o 2VBB-UPS1C	2VBB-XD501	CB1	Closed	-	
2VBB-UPS1C 1	25VDC supply to 2VBB-UPS1C	2BYS-SWG001A	2D	Closed		
2VBB-UPS1A 6) OOV normal supply to 2VBB UPSIA	2VBB-PNL301	1	: Closed :		
2VBB-XD500 6	.1 OOV supply to 2VBB-XD500 (UPS1A)	2NJS-US5	8D	Closed .	•	
2VBB-UPS1A 1	25VDC backup power to 2VBB-UPS1A	2BYS-SWG001A	2C	Closed		
2VBB-UPS1B 6	OOV normal supply to 2VBB-UPS1B	2VBB-PNL301	2	Closed :		
2VBB-UPS1G 6	00V normal supply to 2VBB-UPS1G	2VBB-PNL301	7	(Closed		
2VBB-UPSIA 1	20V maintenance supply to 2VBB-UPS	1A 2V8B-XD500	CB1	Closed	. <u></u>	
•						
	N2-OP-71 -202- Decemb	or 1987)		

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		SYSTEM POWER SU	PPLY LINEUP			
COMPONENT NO.	COMPONENT DESCRIPTION	POWE Bus Number	ER SUPPLY - Cubicle/ Breaker	NORMAL ACTÙAL Position position	INITIALS/ 'DATE REMARK	< <u>s</u>
2VBB-XD601	600V maintenance supply to 21	VBB-XD601 2NJS-US% (UPS1B)	4B	Closed		
2VBB-UPS1B	125VDC supply to 2VBB UPS1B	2BYS-SWG001	IC 2A	Closed		•
2VBB-UPS1D	600V normal supply to 2VBB UF	IPS1D 2NHS-MCC006	5 8A	Closed	· · ·	
2VBB-XD600	600V supply to 2VBB-XD600 (Uf	IPS1D) 2NJS-US6	6C	Closed ·	· · · · · · · · · · · · · · · · · · ·	
2VBB-UPS1D	125VDC supply to 2VBB-UPS1D	28¥S-SW(;001	IB 2D	Closed	4 24 24 24 24 24 24 24 24 24 24 24 24 24	
2VBB-UPS1B	120V maintenance supply to 21	VBB-UPS1B 2VBB-XD601	CB1	Closed		_
2VBB-UPS1D	120V maintenance supply to 2V	VBB-UPS1D 2VBB-XD600	СВ1 •	Closed		
2VBB-UPS1G	125VDC supply to 2VBB-UPS1G	2BYS-SWG001	IC 2C	Closod	·	
2VBB-UPSIG	120VAC maintenance supply to	2VBB-UPSIG 2VBB-XD602	CB1	Closed	1	
2VBB-XD602	600VAC supply to 2VBB-XD602 ((UPS1G) 2NJS-US6	6D	Closed		
	Normal supply to 2VBB-UPS1H	2NJS-PNL901	L 26	Closed	<u> </u>	· .

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NUMCHAWR PROCEDURE CHANG	E EVALUATION (PCE)	PCE No.
1. Initiation	01	. 765-91
Procedure No. N2-09-71 Rev. No. Title	instinger AC Pouron	NSPIRITUM
Procedure No. <u>N.CC.P71</u> -escribe Change: <u>Change type</u> IN <u>Comparte</u> <u>For Antipintic response cruic</u>	Privitant Kowa (1	SLADUNION
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Reason for Change:		
_ NCTS No C CER No	Mod/SDC No.	
2. Method of Change		
Minmediate Change	🗆 Future Ch	ange
Change Is: X Permanent C One Time Only	Initiator (Print)	
Technical Change to TSR Procedure SR Procedure SR Procedure	Mail Location	Phone Date
Pages Affected: 94		
alor (Print & Initial)	Disposition	
DON NEWMIN OM 6/25/91	RPO Name	PPU
RPO App'l:(Both # Site) Accept Image: Redirect to Future Date: 4/25/91 Date:		(<u></u>
Date: 6/25/91. Date:		
Safety Review Req'd		4
DE. No NTSR of Editorial		<u> </u>
Interim Approval (Technical TSR Changes Only)		
Add1 Technical Review: Accept: Reject: NA.		
Date		
SRO: Accept C: Reject:	 Redirect to IMMEDIATE Change (To RP Inactivate Procedure (To PPU) 	²⁰⁾ [P <u>P</u> U]
۱ د بر	 Future Revision or New Procedure (To F Reject (To PPU) 	2PU)
	RPO Approval	Date
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	Implementation	
Signature Date:	Incorp'd Rev, Proc No.:	
Signature Date :	Cancel, C Transfer to Proc. No.:	
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NUMCHAWR PROCEDURE CHANC	E EVALUATION (PCE)
1. Initiation	. ,
Procedure No. N2-0P-71 Rev. No. Title J3.8KV/4	160 V/600 A.C. power Distruction
Jescribe Change: ASS THE FOLLOWILL ADN: TO	N2-01-71 STAF H,23.0 0
NOTE: THIS PROCEDURE WILL	NESGLT IN UPS CRITICAL LOADS BEING
SUPPLIES FROM THE	MAIN TENATCH SOLACE , THE UPS INVERTES
And UPS LOGIC pince	WILL BR DE-BUGAGIZED - WITH UPS LOGIC
	CONTROL ROOM ANWHIC IATTON FOR THE ASSOCIATED
UPS WILL INHIBITED.	//
Reason for Change:	
C NCTS No C DER No	Mod/SDC No
X Other (Explain): CLARIFY DESCRIPTION AND	FINAL CONDENS OF PROCEDANL SECTION
for TRANSFER DE UPS I SARIAS TO TRUE MI	the transce pourse . Supply And . SHUT DOWN
OF THE UPS INVERTER and beare power	
2. Method of Change-	
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Pages Affected: pg 63	Disposition
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dorf Technical Review Accept Reject DNA	<u> </u>
Date	
RO::///////////////////////////////////	Redirect to IMMEDIATE Change (To RPO) PPU PPU
Date	Inactivate Procedure (To PPU) Future Revision or New Procedure (To PPU)
RO (Sile Only)	Reject (To PPU)
Date	RPO Approval
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ignature: Date:	Incorp'd Rev Proc No.:
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APRA Anna Aman

TEMPORARY/PUBLICATION CHANGE NOTICE

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e attached Procedure No	d change was made to 	Page Numbers Affected By TCN	;;;	6 <i>6</i>			
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	Author Signature	Revisiti (Date	5/2/	31		
The temporar	y procedure revision/publication ch	ange was approved	by:	-1.1	, 7,		
Uwn v. or '	ership Dept. Head Signature Designee	Trustill	Jate	<u> []]</u>			
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	URE TEMPORARY CHANGES, CONTINUE FOR PROCEDURE TEMPORAR	TECHNICAL SPECIFI					
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SODC MEME	BER RECOMMENDATIONS (Minimum of 3 r	agular members)					
	ommend full SORC committee review th		1	2 .	3	4	5
Reco	mmend full SORC committee review the	is temporary chan	ge 🗆			Щ.	
	mmend Approval - this temporary cha ge the intent of the original proce		. 1	2	3	· · ·	5
	involve an unreviewed safety quest		D.	ā	ū	ū	ū
	SORC Member Signatures	Date o	r SORC	Meeti	ng		
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· Plant Man	ager (or designee) Approval	•				×	
The tempo	rary change is approved in accordan	ce with Technical	Specif	icatio	on 6.8	3.3.	
ine compe	rary change is approved in accordan						
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-		Date ure of the Plant M	lanager				
-	ature * Procedures requiring signat are Technical Specification	Date ure of the Plant M	lanager				
-	ature * Procedures requiring signat are Technical Specification FIGURE 2.0	Date ure of the Plant M related procedure	lanager		2.0		

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WALL SHOLL MIN ON

TEMPORARY/PUELICATION CHANGE NOTICE

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attached change was made to	Page Numbers Affected By		6				
e attached change was made to rocedure No. <u>N2. OP-71</u> Rev. <u>3</u> Itle <u>13.8KU14160V1600V A.C. Power</u> <u>Distribution</u>			<u> </u>				
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nd is recommended to be:		•		4			
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PUBLICATION CHANGE e intent of the original procedure is not a Printed NameA Author SignatureA	itered	Extensi	on_2	168			
e temporary procedure revision/publication			•				•
Ownership Dept: Head Signature		Date <u>3</u>	-2-9	1		ŗ.	
PROCESS TO HERE FOR PUBLICATION CHANGE OR PROCEDURE TEMPORARY CHANGES, CONTINUE F	OR TECHNICAL SPEC.	IFICATION					
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Received in Plant Manager's Office Da	ate regular members)	Initia	als			5	
Received in Plant Manager's Office Da SORC MEMBER RECOMMENDATIONS (Minimum of 3 Recommend full SORC committee review Recommend Approval - this temporary of change the intent of the original pro-	regular members) this temporary ch change <u>does not</u> cedure and <u>does</u>	Initia	als			50.50	-
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Received in Plant Manager's Office Data SORC MEMBER RECOMMENDATIONS (Minimum of 3 Recommend full SORC committee review Recommend Approval – this temporary of change the intent of the original pro- not involve an unreviewed safety ques SORC Member Signatures 1. 2. 3. 4. 5. Plant Manager (or designee) Approval The temporary change is approved in accord	ate regular members) this temporary ch change <u>does not</u> ocedure and <u>does</u> stion. Date ance with Technic	Initiange I or SORC Number (2 2 0 Meeti if re	3 J J quire	4 	[.] 5	
Received in Plant Manager's Office Da SORC MEMBER RECOMMENDATIONS (Minimum of 3 Recommend full SORC committee review Recommend Approval - this temporary of change the intent of the original pro- not involve an unreviewed safety ques SORC Member Signatures 1. 2. 3. 4. 5. Plant Manager (or designee) Approval The temporary change is approved in accord Signature * Procedures requiring signates	ate regular members) this temporary ch change <u>does not</u> occedure and <u>does</u> stion. Date ance with Technics Date ature of the Plan	Initia hange [] I or SORC Number (Al Specif t Manager	2 2 2 Meeti if re-	3 J J quire	4 	[.] 5	•
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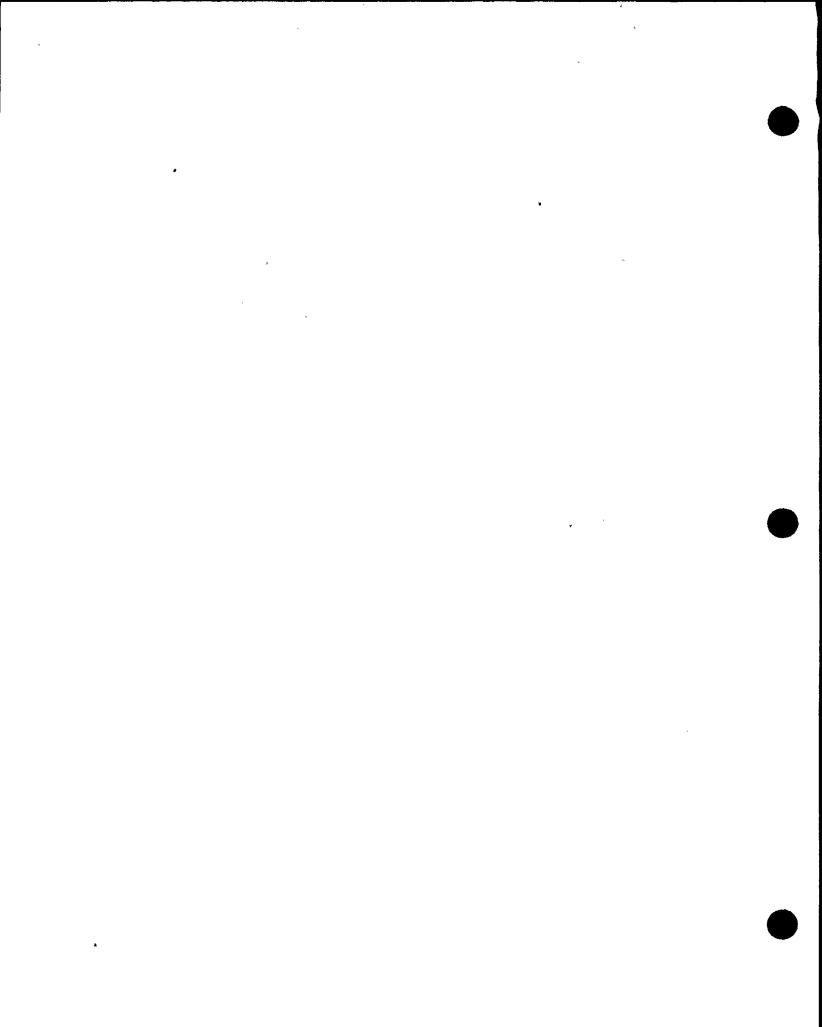
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(AP-20, Form 2, Rev 00)

TEMPORARY/PUBLICATION CHANGE NOTICE

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The attached change was made to 22	TCN No Page Numbers
Procedure No. <u>N2-OP-71</u> Rev. 03	Affected By TCN 26, 28, 30, 32, 33
Title 13.8KV 14/60 GOOV A.C. Power BISTO 14 The	
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PUBLICATION CHANGE	
The intent of the original procedure is not altered	
Printed Name Michael A. A.	$\frac{1}{2} \frac{1}{2} \frac{1}$
Author Signature	Date 2-27-51
i ma	
The temporary procedure revision/publication change was	Date 2/27/91
Ownership.Dept. Head Signature	Dategoirn
or Designee	•
•PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-TEC PROCEDURE TEMPORARY CRANGES, CONTINUE FOR TECHN	
PROCEEDURE TETFORARY CHARGES, CONTINUE FOR TECHN	NGES [*]
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Note: Deliver TCN to Plant Manager's office by the end of the	he next business day.
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Plant Manager (of designee) Approval The temporary change is approved in accordance with	Technical Specification 6.8.3.
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* Procedures requiring signature of the Plant Manager	12
are Technical Specification related procedures.	
FIGURE 2.0.3 SH 1 OF	1
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Page 35	AP-2.0
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(AP-2.0, Form 2, Rev 00)

TEMPORARY/PUBLICATION CHANGE NOTICE

TCN No. _ 26 a stached change was made to Page Numbers Procedure No. NZ-09-71 Rev. Affected By TCN 165.168 Title 13.8 KV / 4160V / 600V A.C. Power Distribution MODIFICATION RELATED Reason to provide a Cross reference between Annuncia CHANGE " I YES & NO 601/141 842102 and near off normal titled MOD CONTROL NUMBER "Loss of ALL Annunciators" in NZ-OP-9/A. And is recommended to be: TEMPORARY CHANGE, ONE TIME ONLY TECH SPEC PROCEDURE...... TEMPORARY CHANGE, ONE TIME ONLY NON-TECH SPEC PROCEDURE TEMPORARY CHANGE, PERMANENT CHANGE NON-TECH SPEC PROCEDURE...... PUBLICATION CHANGE The intent of the original procedure is not altered. Printed Name ____ Alfred T. Denny Extension 7446 Author Signature allel to Denny The temporary procedure revision/publication change was approved by: Ownership Dept. Head Signature Ange or Designer PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-TECHNICAL SPECIFICATION RELATED PROCEDURE TEMPORARY GHANGES, CONTINUE FOR TECHNICAL SPECIFICATION RELATED PROCEDURES TEMPORARY CHANGES* Date 2-6-41 Time %// SRO Signature Note: Deliver TCN to Plant Manager's office by the end of the next business day. Received in Plant Managers Office Date Inititals .SORC MEMBER RECOMMENDATIONS (Minimum of 3 regular members) Ľ 2 3 - 5 Recommend full SORC committee review this temporary change []. [] Π. . 🗆 🗅 يدينه المرجع المناجع 4 Recommend Approval - this temporary change does not change the intent of the original procedure and does XXXXX not involve an unreviewed safety question. or SORC Meeting QRC Member Signatures/ *ΩH* 1. Number (if required) 2-5-4 2-9-91 3. 4 Plant Manager (or designee) Approval The temporary change is approved in accordance with Technical Specification 6.8.3. 2/12/11 - Signature · Procedures requiring signature of the Plant Manager ÷ are Technical Specification related procedures. FIGURE 2.0.3 SH 1 OF 1 AP-2.0 Page 35 **Rev** 20

(AP-2.0, Form 2, Rev 00)

TEMPORARY/PUBLICATION CHANGE NOTICE

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	nger (or designee) Approval corary change is approved in accorda	unce with Technical Spe	cifica	cion 6.8	8.3.
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51 <u>5</u>	nature	Date	<u></u>	<u> </u>	
•	 Procedures requiring signature of the Plan are Technical Specification related procedu 	nt Manager 1095.			1
	FIGURE 2.0.3	3 SH 1 OF 1		* 1	
	Page	35		AP-	-2.0 / 20

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TEMPORARY/PUBLICATION CHANGE NOTICE

тая No. 25 The actached change was made to Procedure No. N2-0P-7/ Page Numbers Affected By TON 65.66a 7 ----Title 13.8×V/4160V/600V A.C. POWER DISTRIBUTION MODIFICATION RELATED REASCE CLARIEY PROCEDURE FOR REMOVING CHANGE I YES UNO UPSJA / 3B MAINTERANCE SUPPLY AND HOD CONTROL NUMBER ADD STEPS FOR RESTORING MAIN FENANCE And is recommended to be: TEMPORARY CHANGE, FIRMANENT CHANGE TECH SPEC PROCEDURE TEMPORARY CHANGE, PERMANENT CHANGE NON-TECH SPEC PROCEDURE...... PUBLICATION CHANGE .. The intent of the original procedure is not altered. Printed Name <u>Robert W.</u> 1/uck Extension 2168 Author Signature Roberle Rulle Cate The temporary procedure revision/publicationy change was approved by: Ownership Dept. Head Signature <u>VILLIAMB</u> Date MI10/90 ar Desiznee . . . -PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-TECHNICAL SPECIFICATION RELATED PROCEDURE TYMPORARY CHANGES, CONTINUE FOR TECHNICAL SPECIFICATION RELATED PROCEDURES TEMPORARY CHANGES* Time 0310 Date 12-10-90 SAO Siznature M meren. Note: Deliver TCN to Plant Manager's office by the end of the next business day. 91 Initials Received in Plant Managers Office Date. SORC MEMBER RECOMMENDATIONS (Minimum of 3 regular members) α. α α Recommend full SORC committee review this temporary change Q Recommend Approval - this temporary change does not 2 2 3 4 5 change the intent of the original procedure and does not invoive an unreviewed safety question. or SORC Meeting SORGe Member Signatures Date Number (if required) 190 1. 2 NB 12/17/9 Dret 3. 11.18.917 a market Plant Manager (or designee) Approval The temporary change is approved in accordance with Technical Specification 6.8.3. KBH-Signature Date much · Proceedures requiring signature of the Plant Manager are Technical Specification related procedures. FIGURE 2.0.3 SH 1 OF 1 *1 AP-2.0 Page 35 Rev 20 62 MA 31 ***

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TE PUBLICATION C	
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L. PROCEEDER	TCN No. 12 24 Page Numbers 67, 68, 70, 76, 74, 75, 76, 77
ministration were made to	Page Numbers 67, 68, 70, 75, 74, 75, 76, 77
P = P = V_0 $N_1 = (I_1 = I_1 = I_2 = I_2)$	Affected By TCN 78,81,92,53,84,86.87,98,84
Title 13.5 KV / 4160 V / 600 V A.C. Power N. stribution	91,92,93,94, 15,96,97,98 100 MODIFICATION RELATED 102,103,104, 05,106,107 CHANGE I YES X NO 108, 109,109,111
Reason Edutity Retlash windows	MODIFICATION RELATED 102, 103, 104, 05, 106, 107
Ners TOO 187- 29	MODIFICATION RELATED $103, 103, 104, 105, 106, 107$ CHANGE I YES A NO $103, 100, 101, 101, 102, 100$ MOD CONTROL NUMBER $1/A$ $13, 104, 105, 100, 101, 102, 100$
	113,114,115
And is recommended to be:	, 15, 18, 19, 15, 15, 15, 15, 15, 15, 15, 15, 15, 15
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Author Signature	Dete 12/5/90 148,149
The temporary procedure revision/publication change Ownership Dept. Head SignatureBUBcon	Mes approved by: 153,154,155 Date 13/6/90 156,159,
or Designee	bace_ <u>10/8/_10</u> 156, 159,
· · ·	160,161,162,
PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-I	
PROCEDURE TEMPORARY CHANGES, CONTINUE FOR TEC	
	700 Date 12/6/90 170, 171, 172,
	173,174
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Note: Deliver TCN to Plant Manager's office by the end of	of the next business day.
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Recommend full SORC committee review this te	mporary change u u u- u u
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2 12-12-90	
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Plant Manager (or designee) Approval The temporary change is approved in accordance with	th Technical Specification 6.8.3.
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	21- Date 12/17/80
 Procedures requiring signature of the Plant Manage are rechnical Specification related procedures. 	er ?
FIGURE 2.0.3 SH 1	OF 1
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Page 35	Rev 20
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(AP-2.0, Form 2, Rev 00)

TEMPORARY/PUBLICATION CHANGE NOTICE

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	TEN No.	23
the attached change was made to	Page Numbers	
Procedure No. N2-0P-71 Rev. 3	Affected By TCN63	
Title 13.8 Kr/41601/Low AC Power	•	
DISTRIBUTION	MODIFICATION RELATED	
Reason TO CORRECT UPS STUTTING SECULENCE	CHANGE CI YES 🕱 NO	
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The intent of the original procedure is not altered		
	Cranonu Extension 4640 G Date 11/12/90	
Author Signature Refere	UUateUa	
The temporary procedure revision/publication chang Ownership Dept. Head Signature ////////////////////////////////////	e was approved by: Date <u>////24</u>	10
PROCESS TO HERE FOR PUBLICATION CHANGE OR NON PROCEDURE TEMPORARY CHANGES, CONTINUE FOR T PROCEDURES TEMPORAR	TECHNICAL SPECIFICATION RELATED	
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4. <u>F. Swaffard</u> <u>II-16-</u>	<u></u>	
5. <u>K.J. Eawen</u>		
Diana Managara (an dariman) Americani		
Plant Manager (or designee) Approval The cemporary change is approved in accordance	with Technical Specification 6.	.8. 3.
Signature Am T Conum for RBF	Date 11/19/10	
Procedures requiring signature of the Plant Manare Technical Specification related procedures.		1 ×
FIGURE 2.0.3 SH	1 OF 1	1
Page 35		1 P-2.0 ev 20

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TEMPORARY/PUBLICATION CHANGE NOTICE

(AP-2.0, Form 2, Rev 00)

TCN No. e attached change was made to Page Numbers -Ocedure No. N2-0971 Affected By TCN 46, 103, 108 115 111 Rav. HOWER Title 13.8 Ky /4160 / 600 A.C. NYTIAUNS 10,117, 123 MODIFICATION RELATED Reason Human Factors - Annunciator Window Nomenclature CHANGE BY YES I NO 7-035 chanacs MOD CONTROL NUMBER M 20886 7500577 And is recommended to be: TEMPORARY CHANGE, ONE TIME ONLY TECH SPEC PROCEDURE ... TEMPORARY CHANGE, PERMANENT CHANGE TECH SPEC PROCEDURE TEMPORARY CHANGE, ONE TIME ONLY NON-TECH SPEC PROCEDURE TEMPORARY CHANGE, PERMANENT CHANGE NON-TECH SPEC PROCEDURE...... PUBLICATION CHANGE The intent of the original procedure is not altered. Extension 7519 Printed Name _____Gerald___ Date 10-30-40 1soble Haved Author Signature The temporary procedure revision/publication change yas approved by: Ownership Dept. Head Signature Date 10-30-90 or Designer -PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-TECHNICAL SPECIFICATION RELATED PROCEDURE TEMPORARY CHANGES, CONTINUE FOR TECHNICAL SPECIFICATION RELATED PROCEDURES TEMPORARY CHANGES* (ho Time 151/2 Date 10-30-90 SRO Signature Note: Deliver TCN to Plant Manager's office by the end of the next business day. nc. 31 9.8 Inititals _ Received in Plant Managers Office Date SORC MEMBER RECOMMENDATIONS (Minimum of 3 regular members) Recommend full SORC committee review this temporary change I α α. α Recommend Approval - this temporary change does not change the intent of the original procedure and does not involve an unreviewed safety question. or SORC Meeting ORC Member Signatures Number (if required) work 1. 2 Doct 100 3. homeon 4. 5. Plant Manager (or designee) Approval The temporary change is approved in accordance with Technical Specification 6.8.3. 11/13/90 for RBA Date Signature nua · Procedures requiring signature of the Plant Manager 12 are Technical Specification related procedures. FIGURE 2.0.3 SH 1 OF 1 *1 AP-2.0 Page 35 Rev 20



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TEMPORARY/PUBLICATION	CHANGE NOTICE
	21
The attached change was made to	TCN No Page Numbers
Procedure No. N2.0P.71 Rev. 3	Affected By ICN _ 19,20,21
Title 13.8 KV/4160V/600V AC POWER DISTRIBUTION	
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or Designee	· /
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This TEMPORARY CHANGE shall be documen Superintendent-Nuclear Generation based upon-	
14 days in accordance with Technical Specifica	tion 6.8.3.
SEQ Signature Dokawa LI.	Date9/8/90 .
A station Supt	Date 9/10/90
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not involve an unreviewed safety question	
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1	<u>Number (if required)</u>
2 9/il/	<u>}o</u>
3 (hive the cale	
4	7-20
GENERAL SUPERINTENDENT (or designee) APPROVAL	
The temporary change is approved in accordance	
Signature <u>RBGbbrb</u>	Date 9/20/92
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or Designee	•
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This TREPORARE CEANGE shall be documents	ed and approved by The Ge
Superintendent-Nuclear Generation based upon r	ecompendation of SCSC members V
<i>Th dama in construct the Technical Considient</i>	
14 days in accordance with Technical Specificati	ion 6.8.3.
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· WGPAY	TEMPORARY/PUBLICATION CE	ANGE NOTTOE	•
			.20
The attached change	was made to	Page Numbers	ICN No. 26, 27, 28, 27, 30, 31, 32
Procedure No. 12-01	<u>2-71 Rev.</u> 3		1 33 34 35 63,65,6
Title <u>/3.g x//4/2007/200</u>	WAR POLOR PISTRIBUTION	MODIFICATION R	ELATED
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PUBLICATION	CHANGE		
The intent of the ori	ginal procedure is not altered Printed Name <u>Roser</u> J. A		nsion 1291
	Author Signature Third Ca	Date	
The temporary procedu	vre revision/publication. dance	was approved by:	
Ownership De	re revision/publication, change pt. Head Signature	<u>M</u>	Date2.78-95
or Designee			-
PROCESS TO HERE PROCEDURE TEM	FOR PUBLICATION CHANGE OR NON- PORARY CHANGES, CONTINUE FOR TH	TECHNICAL SPECIFIC	CATION RELATED
	PROCEDURES TEMPORARY		TION RELATED
TO: STATION SUPE	RINTENDENT, UNIT_2_		
This TEMPORARY		ed and approved	
Superintendent-Nu 14 days in accord	clear Generation based upon r ance whig Ischnical Specification	ecommendation of ion 5.8.3.	SORC members within
SRO Signatur	e_V/MMMB	Date 2/2	18/90
Station Supt	WH	Date_3	<u>1190</u>
SORC MEMBER RECOM	MENDATIONS (Minimum of 2 regula	ar members)	
Recommend fu	LI SORC committee review this t	emporary change	
•	proval - this temporary change		5.7 pt -
change the in	tent of the original procedure		2 3 14
<u>not</u> involve a	m unreviewed safety question.		
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3 622	<u>1317</u>	<u>190</u>	
	<u> </u>	· … ·	• •
GENERAL SUPERINTEN	DENT (or designee) APPROVAL		··· ,
The temporary cham	ge is approved in accordance w	ith Technical Speç	ification 6.8.3.
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* Process entire form			· · ·
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TEMPORARY/PUBLICATION CHANGE NOTICE

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The att.	ached change was made to re NoN2-OP71Rev3	Page Numbers
Procedu	13.8 KY / 4160Y /600Y A.C. ROWER	Affected By TCN 18
11C1e	DISTRUZITION	MODIFICATION RELATED
Reason	TYPOCKAPHICAL GRACINS	CEANGE CI YES & NO
Neason_		MOD CONTROL NUMBER
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	orary procedure revision/publication chan Ownership Dept. Head Signature	-
	DCESS TO HERE FOR PUBLICATION CHANGE OR NO PROCEDURE TEMPORARY CHANGES, CONTINUE FOR PROCEDURES TEMPORA	TECHNICAL SPECIFICATION RELATED
TO:	STATION SUPERINTENDENT, UNIT	
	TEMPORARY CHANGE shall be docume	
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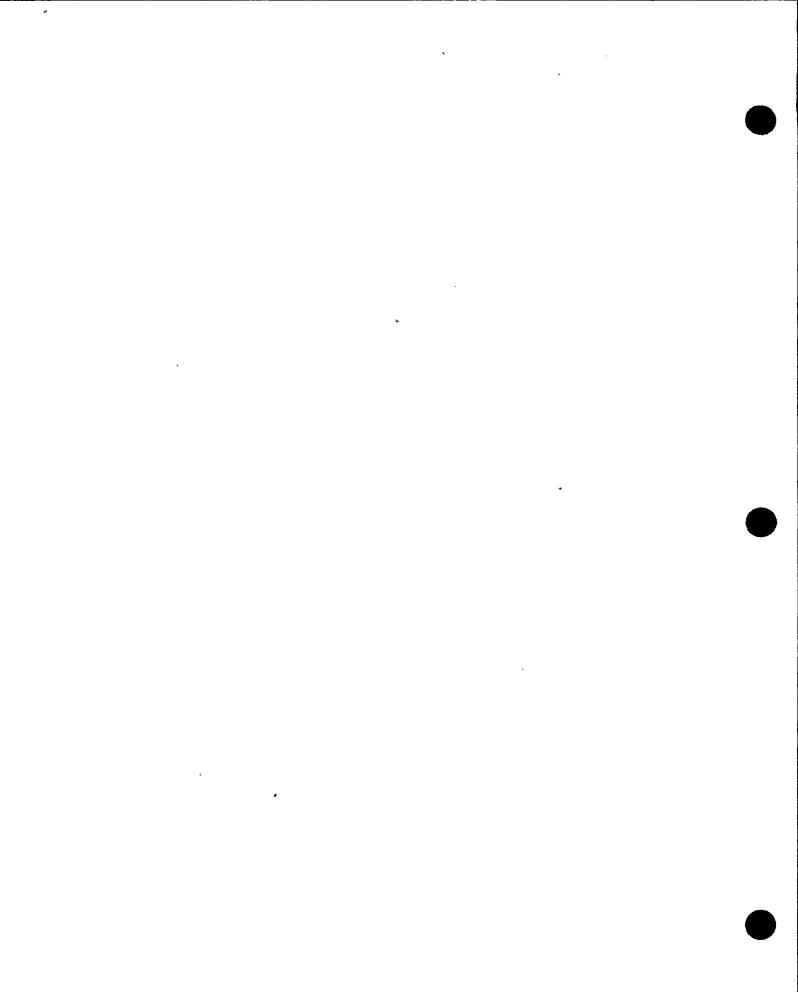
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TEMPORARY/PUBLICATION CHANGE NOTICE

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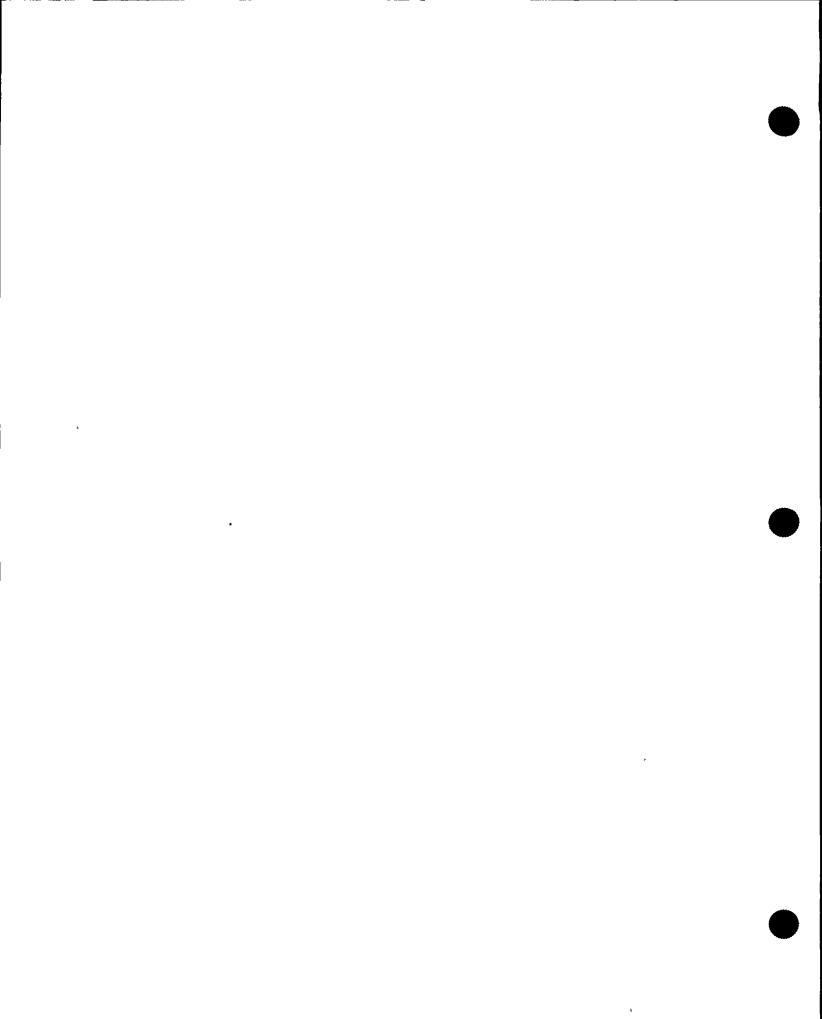
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The attached change was made to edure No. 02-02-71 Rev. 0.3	Page Numbers Affected By TCN <u>101, 102, 113, 114</u>	13
= 13.8 KV/416 OY/600V A.C. Douer	$\frac{137,144,145}{1000}$ MODIFICATION RELATED	
Reason Unice quilance in Section I	MODIFICATION RELATED . CHANGE I YES XI NO	
(Ann, Response) IAW na co-1010	MOD CONTROL NUMBER	
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The intent of the original procedure is not altered. Printed Name U. T. Huu	Extension 4938	
Author Signature	Extension 4938 	
The temporary procedure revision/publication_change	was approved by:	,.
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OF Designee PROCESS TO HERE FOR PUBLICATION CHANGE OR NON-	L	อี
PROCEDURE TEMPORARY CHANGES, CONTINUE FOR TE	CHNICAL SPECIFICATION RELATED	
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TO: STATION SUPERINTENDENT, UNIT		
This TEMPORARY CHANGE shall be documente	d and approved by The General	
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SRO Signature	Date	
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SORC MEMBER RECOMMENDATIONS (Minimum of 2 regula	r members)	5
Recommend full SORC committee review this t		
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Recommend Approval - this temporary change change the intent of the original procedure		
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GENERAL SUPERINTENDENT (or designee) APPROVAL		
The temporary change is approved in accordance wi	th Technical Specification 6.8.3.	
Signature	Date	
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Process entire form Process form through department head approval, for	ward to procedures 15	
FIGURE 2.0.5 SH 1 OF		-
FIGURE 2.0.3 SA I OF		
AP-2.0 -37 August 1989		



11) hite. TEMPORARY //PUBLICATION CHANGE NOTICE pa. 57,60 The attached change was made to Procedure No. N2-0P-7/ .3 Rev. Title 13.8 Ky / 41604 1 4004 4. : Friend الردجيبي فيوجيك وآل MODIFICATION RELATED CHANGE I YES X NO Reason CLARIFS TARS RALARIA TA ARANIZER DIVISION I MOD CONTROL NUMBER SWATTALAR CENSESIFIUS from SATK-XSRIB & A ANK. BUSCHL TRANSFILMEL (2865-KI) PUBLICATION CHANGE ** The intent of the original procedure is not altered. Printed Name <u>Doualoc</u> Rich pails, Author Signature <u>Vision N. Eithera</u> Extension 2169 Date 4/15/39 The temporary procedure revision was approved by: Date 9/15 Dept. Supv. Signature_ -PROCESS TO HERE FOR PUBLICATION CHANGE, CONTINUE FOR TEMPORARY CHANGES STATION SUPERINTENDENT, UNIT_2 TO: This TEMPORARY CHANGE shall be documented and approved by The General Superintendent-Nuclear Generation based upon recommendation of SORC members within 14 days in accordance with Technical Specification 6.8.3. Ilhordo N Richard Date 9/15/59 SRO Signature Station Supt. SORC MEMBER RECOMMENDATIONS (Minimum 2 regular members, 2 alternates) Recommend full SORC committee review this temporary change Ξ Π . 🗖 Recommend Approval - this temporary change does not change the intent of the original procedure and does not involve an unreviewed safety question. SORC Member Signatures or SORC Meeting Date 1 number (if required) 2 3 ١. GENERAL SUPERINTENDENT (or designee) APPROVAL The temporary change is approved in accordance with Technical Specification 6.8.3. <u>9/38/fi</u> Date Signature Process entire form Process form through department supervisor approval, forward to procedures FIGURE 2.0.5 SH 1 OF 1 AP-2.0 -36 April 1989

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White Copy OK TEMPOBARY/PUBLICATION CHANGE NOTICE CN-17 PA- 56,57,58 The attached change was made to Procedure No.__ NZ-00-71 Rev. Title 13.8 KV/4160 V/ 680V A.C. Pouce Distribution MODIFICATION RELATED CHANGE I YES X NO Reason Remove steps in section H.13 which were written MOD CONTROL NUMBER When AMS- SUE 018 WAS A CULICLE MAY SWITCH AGAL. (CLARIFY STOPS NEEdled to tEANSTER 2ENS# SWEIDI to 2AB5-XI, AW. Boiler TRANFORMER) And is recommended to be: TEMPORARY CHANGE, ONE TIME ONLY \Box * TEMPORARY CHANGE, PERMANENT CHANGE . . . R * PUBLICATION CHANGE . 🖸 ** The intent of the original procedure is not altered. Printed Name ______ Dawlas Richalds Extension 2169 _Date_<u>9//4/*S*A</u> Author Signature NUBARHS KATHAMPS The temporary procedure revision was approved by: Dept. Supv. Signature Date 8 PROCESS TO HERE FOR PUBLICATION CHANGE, CONTINUE FOR TEMPORARY CHANGES TO: STATION SUPERINTENDENT, UNIT <u>2</u> TEMPORARY CHANGE shall and This Ъe documented approved The General by Superintendent-Nuclear Generation based upon recommendation of SORC members within 14 days in accordance with Jechnical Specification 6.8.3. AL Kichart 9 | 14 | 89 · Date SRO Signature_ CA about ma any and the Date Station Supt._ SORC MEMBER RECOMMENDATIONS (Minimum 2 regular members, 2 alternates) a the line Stelly2 rack dur and tota to 1 ~×2 Recommend full SORC committee review this temporary change I _0: Recommend Approval - this temporary change does not change the intent of the original procedure and does not involve an unreviewed safety question. Straw Standar or SORC Meeting SORC Member Simatures Date number (if required) 1 2 3 1.12 GENERAL SUPERINTENDENT (or designee) APPROVAL بېرى قۇر ، مە The temporary change is approved in accordance with Technical Specification 6.8.3. Date Signature Process entire form ** Process form through department supervisor approval, forward to procedures FIGURE 2.0.5 SH 1 OF 1 AP-2.0 -36 April 1989



TEMPORARY/PUBLICATION CHANGE NOTICE

67 TEW-17 69 The attached change was made to Procedure No. <u>12-0P-71</u> Rev. Title 13.8 KU/4/KOV/KOV MODIFICATION RELATED CHANGE I YES X NO Reason Clority Corrective Action steps MOD CONTROL NUMBER And is recommended to be: TEMPORARY CHANGE, ONE TIME ONLY TEMPORARY CHANGE, PERMANENT CHANGE . . .) * PUBLICATION CHANGE . The intent of the original procedure is not altered Author Signature Date 4/25/89 The temporary procedure revision was approved by: _Date_1/25 Dept. Supv. Signature < -PROCESS TO HERE FOR PUBLICATION CHANGE, CONTINUE FOR TEMPORARY CHANGES TO: STATION SUPERINTENDENT, UNIT 2 This TEMPORARY CHANGE shall be documented and approved by The General Superintendent-Nuclear Generation based upon recommendation of SORC members within 14 days in accordance with Technical Specification 6.8.3. astol Date 4-29-9 SRO Signature_ HELLER Date 5/1/8-Station Supt._ W Hor SORC MEMBER RECOMMENDATIONS (Minimum 2 regular members, 2 alternates) .4 2 3 Recommend full SORC committee review this temporary change Recommend Approval - this temporary change does not change the intent of the original procedure and does not involve an unreviewed safety question. SORC Member Similares or SORC Meeting number (if required) 1 ner 2 3 GENERAL SUPERINTENDENT (or designee) APPROVAL The temporary change is approved in accordance with Technical Specification 6.8.3. Simature Date Process entire form ** Process form through department supervisor approval, forward to procedures FIGURE 2.0.5 SH 1 OF 1 AP-2.0 -34 January 1989

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TEMPORARY CHANGE NOTICE

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This temporary change shall be documented and approved by. The Gener Superintendent-Nuclear Generation based upon recommendation of SORC members within days in accordance with Technical Specification 6.8.3.	
to: station superintendent, unit 2 $TCN - 10$	
The attached Temporary Change was made to Procedure No. <u>N2-OP-71</u> Rev. <u>3</u> Title <u>13.8KV/4/60V/600V A.C. Power</u> <u>Distribution</u> Reason <u>To correct electrical line-up</u> <u>pages 176, 178, 78×182 + 201</u> MOD CONTROL NUMBER	
And is recommended to be: ONE TIME ONLY	
The intent of the original procedure is not altered. Author SignatureAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAuthorAUthorAuthorAUthor_	
The temporary procedure revision was approved by: Dept. Supv. Signature //// Date ///6/89 SRO Signature ///// Date ////6/89 Station Supt RACAL Date ////69	
SORC MEMBER RECOMMENDATIONS (Minimum 2 regular members, 2 alternates) 1 2 3 4 Recommend full SORC committee review this temporary change 0 0 0 0	
Recommend Approval - this temporary change <u>does not</u> change the intent of the original procedure and <u>does</u> 1 2 3 4 <u>not</u> involve an unreviewed safety question.	
SORC Member Signatures 1 Date or SORC Meeting 2 number (if required) 3 1/20/59 4 1/20/59	
GENERAL SUPERINTENDENT (or designee) APPROVAL	
The temporary change is approved in accordance with Technical Specification 6.8.3.	
Signature Date	
FIGURE 2.0.5 SH 1 OF 1	

AP-2.0 -33 February 1938

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NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-71

13.8KV/4160V/600V A.C. POWER DISTRIBUTION

		COPT	·	ND INITIALS	
PPROVALS	SIGNATURES	-	REVISION 2	REVISION 3	REVISION 4
uperintendent Op MP Unit #2 . G. Smith	perations	l	13/2/97 Mal	12/~[87 ;{{d]	
tation Superinte MPNS Unit 2 . B. Abbott	inder Provide	1	10/3/87 P.B.	121. 57	· · · ·
eneral Superinte uclear Generatic . J. Perkins		COP	1013lf) DSCRTTP	12/11/57	
	~ <u>s</u>	Summary of Pag	ges	•	,
	Revision 3	(Effective	12/11/87	<u>)</u>	
•	46,51,53,5 55 viii.2.26- 158,160-20 40	1 38,39,41,43,4 56,67-145 -37,62-64,146 03 57-59,61,34	May 198 June 19 Decembe Decembe Decembe March 1 October	37 (TCN's 3,6 987 (TCN-9)	-11) -12) sue)
	. *65,66	•		-	-15 and Reis w
*Changes, per S	NIAC			USED AFTER	RE NOT TO BE December 1997 ERIODIC REVIE <u>1 / / 21/3 P</u> Date

*Channes per Section 11.5. AP-2.9

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NINE MILE POINT NUCLEAR STATION UNIT 2

OPERATING PROCEDURE

PROCEDURE NO. N2-OP-71

13.8KV/4160V/600V A.C. POWER DISTRIBUTION

Cover Sheet Continuation (Page 2)

Summary of Pages (Cont'd)

Pages	Date Handwritten Pages
69,176,178,182,201	May 1989 (TCN-16 and TCN-17)
56-58	September 1989 (TCN-18 Handwritten
	Pages)
59,60	October 1989 (TCN-19 Handwritten
	Pages)
i-iii ,18,101	December 1989 (Publication Changes
	Handwritten Pages)
27,29,31,34,35	March 1990 (TCN-20 Handwritten Pages)
47	June 1990 (Publication Change
	Handwritten Page)
19-21	September 1990 (TCN-21 Handwritten
	Pages)
, jú	November 1990 (TCN-23. Handwritten
	· Page)
65,66a,67,68,70,72,74-78,81-84,	
86-89,91-98,100,102-108,110-115, 117-121,123-127,130,131,133-135,	
137-139,141,142,144-156,159-163,	
166,172	December 1990 (TCN-24 and TCN-25
	Handwritten Pages)
167,170,171,173,174	February 1991 (Publication Change *1
	Handwritten Pages)
165,168	February 1991 (TCN-26 Handwritten
•	Pages)
66	March 1991 (Publication Change *2
	Handwritten Page)
26,28,30,32,33	March 1991 (TCN-27 Handwritten Pages)

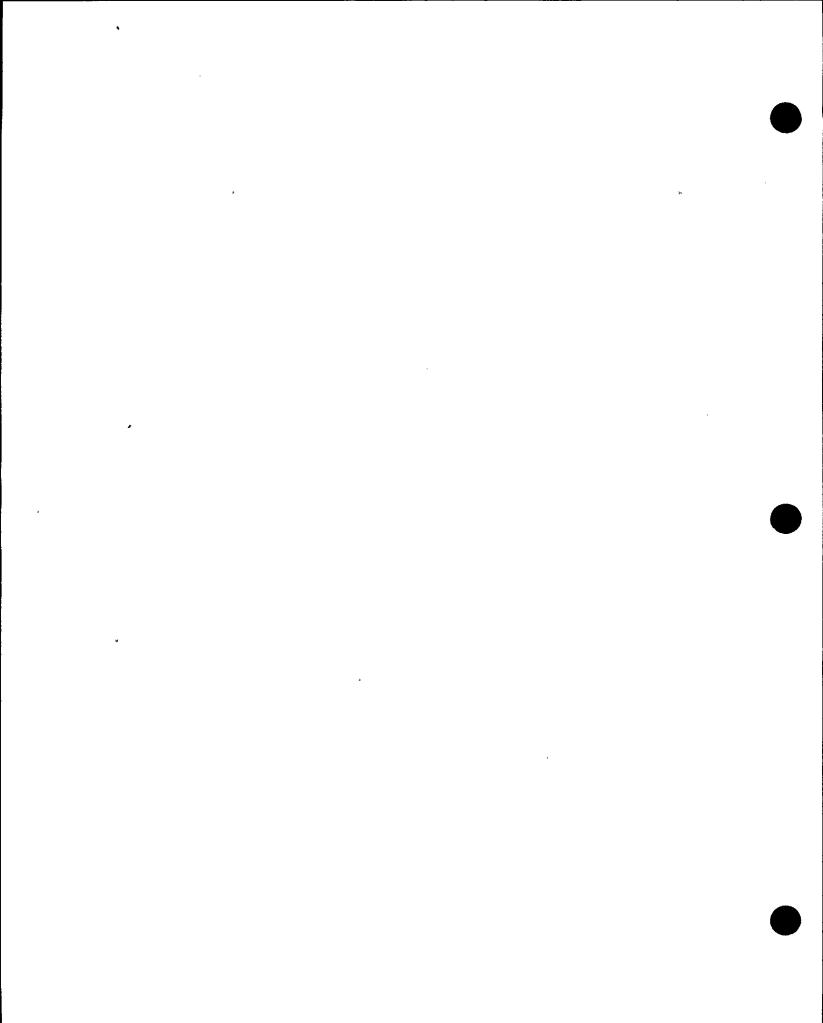
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SM-5 NINE MILE POINT NUCLEAR STATION UNITS ATELLITE MASTER OPERATING PROCEDURE PROCEDURE NO. N2-OP-71 13.8KV/4160V/600V A.C. POWER DISTRIBUTION DATE AND INITIALS APPROVALS SIGNATURES REVISION 2 REVISION 3 REVISION 4 12/2/87 2/87 Superintendent Opera NMP Unit #2 1 ÅS R. G. Smith Station Superintendent 12.1.15 ic 13/87 NMPNS Unit 2 likter R. B. Abbott General Superintendent 10.13187 12/11/ 57 Nuclear Generation 10 T. J. Perkins . Summary of Pages (Cont'd on Cover Sheet 2) 3 (Effective Revision 12/11/87) Pages Date iv-vii/1 -August 1986 3-17.22-25,38,39,41,43,44,46,51, 53,71,73,79,80,85,90,99,109,116, 122, 128, 129, 132, 136, 140, 143 May 1987 (TCN-3 through TCN-8) 55 June 1987 (TCN-9) 2**, 26, 37, 6**2, 64, 157, 158, 164, 169 977, 179–181, 183–200; 202; 203 175, Necmeber 1987 December 1987 (TCN-11) December 1987 (TCN-12) March 1988 (TCN-13) October 1988 (Reissue) 40 42,49,54,61 48,50,52 *45 NIAGARA MOHAWK POWER CORPORATION THIS PROCEQURE NOT TO BE USED AFTER December 1991 SUBJECT TO PERIODIC REVIEW 11/21/88 *Changes per Section 11.5, AP-2.) Date



SECTION	TITLE	PAGE
Α	TECHNICAL SPECIFICATIONS	1
В	SYSTEM DESCRIPTION	1
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3.2 .Electrical Schematics (cont.)

		• • •
ESK	6NJS23	Unit Sub 2NJS-US1 Supply Breaker
ESK	6NJS24	Unit Sub 2NJS-US3 Supply Breaker
	6NJS25	Unit Sub 2NJS-US1 Supply Breaker
	6NJS26	Unit Sub 2NJS-US3 Supply Breaker
		Unit Sub 2NJS-US7 Supply Breaker
		Breaker Control Interlocks
		Unit Sub 2NJS-US2 Supply Breaker
		Unit Sub 2NJS-US2 Supply Breaker
534	6113330	Unit Sub 2015-052 Supply Dieaker
CON	001221	Unit Sub 2NJS-US4 Supply Breaker
t SN	CN1232	Unit Sub 2NJS-US4 Supply Breaker
E SK	001222	Unit Sub 2NJS-US4 Supply Breaker Unit Sub 2NJS-US4 Supply Breaker Unit Sub 2NJS-US2 Supply Breaker Unit Sub 2NJS-US2 Supply Breaker Unit Sub 2NJS-US2 Supply Breaker
E SK	6NJS34	Unit Sub 2NJS-US4_Supply_Breaker
ESK	6NJ235	Unit Sub 2NJS-US2 Supply Breaker
ESK	6NJS36	Unit Sub 2NJS-US4 Supply Breaker Bus 2NJS-US8 Under Vltge Protec
ESK	6NJS37	Bus 2NJS-USB Under Vitge Protec
		Bus 2NJS-US9 Under Vitge Protec
		Bus 2NJS-US10 Under Vltge Protec
ESK	6NJS40	Breaker Control Interlocks
ESK	6NJS41	Breaker Control Interlocks
ESK	6NJS42	Unit Sub 2NJS-US8A-C Supply Breaker
ESK	6NJS43	Unit Sub 2NJS-US8A Supply Breaker
ESK	6NJS44	Unit Sub 2NJS-US8B Supply Breaker
ESK	6NJS45	Unit Sub 2NJS-US8B-C Supply Breaker
ESK	6NJS46	Unit Sub 2NJS-US8A-C Supply Breaker Unit Sub 2NJS-US8A Supply Breaker Unit Sub 2NJS-US8B Supply Breaker Unit Sub 2NJS-US8B-C Supply Breaker Unit Sub 2NJS-US9A&US9C Breaker Unit Sub 2NJS-US9A Supply Breaker
ESK	6NJS47	Unit Sub 2NJS-US9A Supply Breaker
ESK	6NJS48	Unit Sub 2NJS-US9B Supply Breaker
	6NJS49	Unit Sub 2NJS-US9B Supply Breaker Unit Sub 2NJS-US9B&9C Sply Brkr
	6NJS50	Unit Sub 2NJS-US10A&US10C Tie Bkr
ESK	6NJS51	Unit Sub 2NJS-USIOA Supply Breaker
		Unit Sub 2NJS-US108 Supply Breaker
		Unit Sub 2NJS-US10B&10C Tie Brkr
ESK	8NJS01	FDR to XFMR 2NJS-X1A, B, C, &D R1y & Htr
	8NJS02	FDR to XFMR 2NJS-X3A,B,C,&D,Rly & Htr
FSK	8NJS03	FOR to XFMR 2NJS_X1F&FRI Y&HTR
FSK	8NJS04	FDR to XFMR 2NJS-X1E&FRLY&HTR FDR to XFMR 2NJS-X3E&FRLY&HTR FDR to XFMR 2NJS-X1HJ&K Relay&Htr
ESK	8NJS05	FOR to XFMR 2NJS_X1HJ&K Relay&Htr
FSK	8NNS01	4.16KV Bus 2NNS-SWG011&012 Bus Prot
	8NNS03	4KV Bus 2NNS-SWG011 Rly & Htr
	8NNS04	4KV Bus 2NNS-SWG012&013 Rly & Htr
	8NNS09	XMFR 2ATX-XS1&Bus 2NNS-SWG014R1y&Htr
	8NNS10	XMFR 2ATS-SX3&Bus 2NNS-SWG015R1y&Htr
	8NNS11	4.16KV Bus 2NNS-SWG013&012 Bus Prot
	8NNS12	4.16KV Bus 2NNS-SWG018 R1y & Htr
	8NNS13	4.16KV Bus 2NNS-SWG016 RTy & Htr
	8NNS14	4.16KV Bus 2NNS-SWG016 RIY & Htr
	8NNS15	4.10KV BUS 2NNS-SWG014&015 Riy & Htr
	8NPS01	13.8KV Bus Protection (TX2RTX-XSRIA)
	8NPS02	13.8KV Bus Protection (TX2RTX-XSR1A) 13.8KV Bus 2NPS-SWG001 Rly & Htr
	8NPS04	
ESK	8NPS03	13.8KV Bus 2NPS-SWG003 Rly & Htr

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. Electrical Schematics (cont.)

ESK 8NPS05	13.8KV Bus 2NPS-SWG002 Rly & Htr
ESK 8SPX01	XFMR 2ATX-XS1 R1y
ESK 8SPX02	XFMR 2ATX-XS3 RIY
ESK 8SPX04	2ATX-XS1 Pri Prot
ESK 8SPX08	XMFR 2ATX-XS3 Pri Prot
ESK 8SYSO1	Synchronizing Station Service

3.3

Electrical One-Line Drawings

EE-0018 One Line Dgm Res & Norm SS XFMR EE-001C Main One Line Dgm Aux XFMR Norm 4KV EE-0010 Main One Line Dgm Emer 4KV & 600V SY 13.8KV One Line Dgm Bus 2NPS-SWG001 EE-001F EE-001G 13.8KV One Line Dgm Bus 2NPS-SWG002 EE-001H 13.8KV One Line Dgm Bus 2NPS-SWG003 13.8KV One Line Dgm Bus 2EPS*SWG001 EE-001J 4160V One Ling Dgm Bus 2NNS-SWG001 EE-001K 4160V One Line Dgm Bus 2NNS-SWG013 EE-001L 4160V One Line Dgm Bus 2NNS-SWG014 EE-001M EE-001N 4160V One Line Dgm Bus 2NNS-SWG015 EE-001P 4160V One Line Dgm Bus 2NNS*SWG 016 EE-001Q 4160V One Line Dgm Emer Bus 2ENS*SWG EE-001R 4160V One Line Dgm Emer Bus 2ENS*SWG EE-001S 1 LN Dia 600V LD Ctr Bus 2NJS-US7 T.B. EE-001T 1 LN Dia 600V LD Ctr Bus 2NJS-US1 Turb. 600V One LN Diag 2NJS-US2 Reac Bldg EE-001U 1 LN Dia 600V LD Ctr Bus 2NJS-US3 Turb. EE-001V 1 LN Dia 600V LD Ctr Bus 2NJS-US4 Norm. EE-001W EE-001X 1 LN Dia 600V LD Ctr Bus 2NJS-US5 & US6 1 LN Dia 600V LD Ctr Bus 2NJS-US6 Norm EE-001Y EE-001Z 1 LN Dia 600V LD Ctr Bus 2EJS*US1 & US 600V One Line Diag MCC 2NHS-MCC 001A EE-001AA EE-001AB 600V One Line Diag MCC 2NHS-MCC 002A EE-001AD 600V One Line Diag MCC 2NHS-MCC 003A **EE-001AE** 600V One Line Diag MCC 2NHS-MCC 004&15 EE-001AF 600V One Line Diag MCC 2NHS-MCC013 **EE-001AG** 600V One Line Diag MCC 2NHS-MCC 005A EE-001AH 600V One Line Diag MCC 2NHS-MCC 006A EE-001AK 600V One Line Diag MCC '2NHS-MCC 007A **EE-001AL** 600V One Line Diag MCC.2NHS-MCC 008 EE-001AM 600V 1-LN D1 2NHS-MCCO10 Trb Rm E 600V 1-LN D1 2NHS-MCCO10 Trb Rm E EE-001AN 600V One Line Dgm Reac Bldg North&Sth 600V One Line Diag MCC 2NHS-MCCO14 EE-001AP' EE-001AZ" EE-00188 600V One Line Dgm Normal Bus Dist PN EE-0018G 600V.One Ln Dg Dist Pnl 2NJS-PNL500 One Line Dgm Low Vltg Pwr Dist PlB EE-0018H EE-001BR 125V DC One L Dia Norm B DPNL 2BYS-P 600V One Line Dgm Emer & Vital Bus Pwr EE-001CA **EE-001CB** 600V One Ln Dg Dist Pnl 21AC*PNL100A

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EE-001CC 600V One Ln Dg Dist Pnl 2EJS*PNL100A EE-001CX 600V One Line Diag 2NJS-US8 Turb Bldg EE-001CY 600V One Line Diag 2NJS-US9 Rad Bldg 600V One Line Diag 2NJS-US10 Turb EE-001CZ EE-001FB 600V One Line Diag 2NHS-MCCO17 Scrn EE-001FC 600V One Line Diag 2NHS-MCCO16 RD/B Plnt Mstr One Line Diag NCRM Dist EE-M0001A EE-M0001B Plnt Mstr ONe Line Diag Emer Power Plnt Mstr One Line Diag Norm EE-M0001C Plnt Mstr One Line Diag Norm EE-M0001D Plnt Mstr One Line Diag Emerg BE-M0001E EE-M0001F Plnt Mstr One Line Diag Emerg Plnt Mstr One Line Diag Norm EE-M0001G

4.0 Man

Manufacturer's Instruction Manual

UPS (Exide) - "System Handbook for Uninterruptable Power System," #101-710-343-77223, Oct. 28, '81 (S&W# INST. 1.560-5004), Access No. 430000742.

Breakers (ITE) - "ITE Low Voltage Power Circuit Breakers" - #1B-9.1.7-6, Issue F

Transfer Switch - (ASCO) - "Automatic Transfer Switch" - Manual #ID4800 - R2

UPS (ELGAR) - Instruction Manual for UPS #103-1-176, 6/82 -Instruction Manual for Power Line Conditioner, PLC #253-1-2, 8/82 (S&W # INST. 1.560-5003), Access No. 430002477.

Electrical Protection Assembly - "Instruction Manual for Electrical Protection Assémbly #914E175, Issued 17 Dec. 80.

P.O. Specifications:

NMP2 - E011C - Normal Station Service Transformer
 E011G - Auxiliary Stepdown Transformer
 E015E - 13.8KV Metal Clad Switchgear
 E015F - 4.16KV Metal Clad Switchgear
 E015N - 600V Load Centers
 E015Q - 600V Motor Control Centers
 E022D - 13.8KV & 4.16KV Non-segregated Phase Bus
 Duct
 E035A - Uninterruptable Power Supplies
 E0902 - Transfer Switch 2VBB-TRS1
 E014T - 600V.Distribution Panels
 MPL-C72 (G.E. Spec.) - Electrical Protection

5.0 Reg. Guides

1.32, 1.68, 1.6, 1.75, 1.93

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13.8 KV/4160V/600V A.C. POWER DISTRIBUTION

A. TECHNICAL SPECIFICATIONS

- 1.0 Section 3/4.8 Electrical Power Systems
- 1.1.0 Section 3.8.1 A.C. Sources
- 1.1.1 Section 3.8.1.1 A.C. Sources Operating
- 1.1.2 Section 3.8.1.2 A.C. Sources Shutdown
- 1.2.0 Section 3.8.3 On-site Power Distribution Systems
- 1.2.1 Section 3.8.3.1 Distribution Operating
- 1.2.2 Section 3.8.3.2 Distribution Shutdown
- 1.3.0 Section 3.8.4 Electrical Equipment Protective Devices
- 1.3.1 Section 3.8.4.1 A.C. Circuits Inside Primary Containment
- 1.3.2 Section 3.8.4.2 Primary Containment Penetration Conductor Overcurrent Protective Devices
- 1.3.3 Section 3.8.4.4 Reactor Protection System Electric Power Monitoring

B. SYSTEM DESCRIPTION

The 24.9KV main generator leads are tapped to provide power to the normal station service transformer 2STX-XNS1, which has two 13.8KV windings.

During normal operation, 13.8KV bus 2NPS-SWG001 is fed from the "X" winding of normal station service transformer 2STX-XNS1; and 13.8KV bus 2NPS-SWG003 is fed from the "Y" winding of normal station service transformer 2STX-XNS1. 13.8KV bus 2NPS-SWG002 is fed from auxiliary boiler service transformer 2ABS-X1. During startup, shutdown and standby, reserve transformer 2RTX-XSR1A feeds 13.8KV bus 2NPS-SWG003. Reserve transformers 2RTX-XSR1B feeds 13.8KV bus 2NPS-SWG003. Reserve transformers 2RTX-XSR1A and 1B and auxiliary boiler service transformer 2ABS-X1 are fed at 115KV from two off-site sources.

Transformer 2ATX-XS1, fed from 13.8KV bus 2NPS-SWG001, supplies 4160V power to normal 4160V buses 2NNS-SWG011 and 2NNS-SWG014. Bus 2NNS-SWG011 has a tie breaker which feeds 4160V bus 2NNS-SWG012.

Transformer 2ATX-XS3, fed from 13.8KV bus 2NPS-SWG003, supplies 4160V power to normal 4160V buses 2NNS-SWG013 and 2NNS-SWG015. Bus 2NNS-SWG013 has a tie breaker which can feed 4160V bus 2NNS-SWG012.

There are two 600V load centers supplied by the 4160V buses 2NNS-SWG014 and 2NNS-SWG015. The two 600V load centers, 2NJS-US5 and 2NJS-US6, are fed from two supply breakers, one normally closed and one normally open. There is no tie breaker supplied between the separate feeds.

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B. <u>SYSTEM_DESCRIPTION</u> (Cont.)

There are eight 600V load centers, supplied by the 13.8KV buses 2NPS-SWG001 and 2NPS-SWG003. Seven 600V load centers, 2NJS-US1,2,3,4,8,9,10, are divided into "A", "B" and "C" sections, The "A" section is fed from 13.8KV bus 2NPS-SWG001 and a tie breaker supplies the "C" sections. The "B" sections are fed from 13.8KV bus 2NPS-SWG003 and a tie breaker can supply to "C" sections. One 600V load center, 2NJS-US7, is divided into "A" and "B" sections. The "A" section is supplied from 13.8KV bus 2NPS-SWG001; and the "B" section is supplied from 13.8KV bus 2NPS-SWG003. There is a normally-open tie breaker between the two sections.

4160V Emergency bus 2ENS*SWG101 is designated Division I. 4160V Emergency bus 2ENS*SWG103 is designated Division II. 4160V Emergency bus 2ENS*SWG102 is designated Division III. Division I and II'supply all safety-related loads required for safe plant shutdown, except high pressure core spray system which is supplied by Division III.

All three divisions are normally energized from off-site power by Reserve A and Reserve B transformers, with auxiliary boiler transformer 2ABS-X1 as a back up for division I and II. In the event of a loss of off-site power, each division has a standby diesel generator which would start automatically in order to provide power to that division.

Division I (II) consists of one 4160V bus 2ENS*SWG101 (2ENS*SWG103), one 600V load center 2EJS*US1 (2EJS*US3), three 600V motor control centers 2EHS*MCC101,102,103, (2EHS*MCC301,302,303) and various 600 volt distribution panels.

Division III consists of one 4160V bus 2ENS*SWG102 and one motor control center 2EHS*MCC201.

There are five 75KVA Uninterruptable Power Supplies (UPS) and two 10 KVA UPS. Each UPS System has a normal A.C. source (600V), a D.C. source (125V) and a maintenance source supplying the same voltage as its associated UPS output. The UPS is normally fed from its normal source. Upon loss of normal A.C. source the UPS automatically is fed from the D.C. source. Upon loss of both the A.C. normal and D.C. sources or an inverter section failure the UPS load will automatically transfer to the maintenance source. The maintenance source is also used when maintenance [3] is being performed on the UPS.

The 75 KVA UPS supplies 120/208. 3-phase power as follows:

UPSIA/1B feed selected nonsafety-related instrumentation and control loads UPSIA feeds Radwaste computer, UPS1B feeds leaky-wire radio system. UPS1C/1D feeds essential lighting loads and Gaitronics, UPS1G feeds PMS computer loads.

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The normal feed for UPSIA, 1B & 1G is fed through transfer switch 2VBB-TRS1. Upon loss of normal feed (from 2NJS-US3) to - TRS1. The transfer switch will automatically transfer to 2NJS-US4. The load will automatically transfer back upon re-energization of 2NJS-US3. (After a 10-30 sec. time delay).

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B. SYSTEM DESCRIPTION (Cont.)

The 10 KVA UPS (UPS 3A/3B) supply their loads through electrical protection assemblies (EPA's). These are molded case circuit breakers that will trip upon an over voltage, under voltage or under-frequency condition. After a trip to return to normal these must be manually reset.

C. OPERATING REQUIREMENTS

1.0 <u>Systems</u>

The following systems must be in operation in accordance with their respective operating procedures to support the 13.8KV, 4160V, 600V A.C. Power distribution System:

1.1	Normal 125V D.C. Power Distribution	N2-0P-73
1.2	Station Electrical Feed 115KV Switchyard	N2-0P-70
1.3	Emergency D.C. Distribution	N2-0P-74
1.4	Normal 125V D.C. Power Distribution	N2-0P-73
ŀ.5	Control Bldg Air Cond. & Vent Sys. (UPSIG)	N2-0P-53
1.6	Normal Switchgear Bldg. Vent Sys. (For all except UPSIG)	N2-OP-54

D. PRECAUTIONS/LIMITATIONS

- 1.0 For 13.8KV, 4160V, 600V switchgear: Before racking in a breaker, the control switch for the breaker should be in the "Pull-to-Lock" position; and the control circuit fuses must be removed, and the breaker should be in the open position.
- 2.0 For all 600V motor control centers: Before closing a breaker, the control switch for the start associated with this breaker must be in the "Pull-to-Lock" position where applicable.
- 3.0 For normal operation of reserve transformer "A", neutral switch 2RTX-SW001 must be in the "Open" position.
- 4.0 For operation with neutral switch 2RTX-SW001 in the "Closed" position, refer to Section H, Step 11.
- 5.0 At no time will both emergency bus 2ENS*SWG101 and 2ENS*SWG103 be paralleled to bus 2NNS-SWG018.
- 6.0 Prior to energizing any 600V load center or motor control center bus, the associated loads should be individually investigated to assure that they are in a condition to prevent damage to equipment or personnel.

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- 7.0 Prior to energization of any UPS, the associated loads should be individually investigated to assure that they are in a condition to prevent damage to equipment or personnel.
- 8.0 Before installing breakers in switchgear, verify that spring charging motor circuits have fuses installed and, where applicable, switches are on. After closing breakers, verify that springs are charged.
- 9.0 All applicable evolutions described in this procedure shall be monitored and controlled in accordance with Radiation Protection procedures.
- 10.0 Load tap changers for 2STX-XNS1, 2RTX-XSR1A and 2RTX-XSR1B will normally be operated in the "Manual" mode.

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E. <u>STARTUP_PROCEDURE</u>

This section includes procedures for placing de-engerized 13.8KV, 4160V, 600V station service buses in service from the reserve supply. It also includes procedures for placing the UPS in service.

<u>NOTE</u>: For the purpose of this procedure the following equipment may be identified as follows:

Equipment_ID	Location	<u>Alternate 1D</u>
2NPS-SWG001	Normal Switchgear Bldg. Elev. 261'	13.8KV Bus 001
2NPS-SWG002	Normal Switchgear Bldg. Elev. 261'	13.8KV Bus 002
2NPS-SWG003	Normal Switchgear Bldg. Blev. 261'	13.8KV Bus 003
2NNS-SWG011	Normal Switchgear Bldg. Blev. 261'	4.16KV Bus 011
2NNS-SWG012	Normal Switchgear Bldg. Elev. 261'	4.16KV Bus 012
2NNS-SWG013	Normal Switchgear Bldg. Blev. 261'	4.16KV Bus 013
2NNS-SWG014	Normal Switchgear Bldg. Elev. 261'	4.16KV Bus 014
2NNS-SWG015	Normal Switchgear Bldg. Blev. 261" 💠	4.16KV Bus 015
2NNS-SWG016	Normal Switchgear Bldg. Elev. 261*	- "ALLER ABUS OLO
2NNS-SWG017	Normal Switchgear Bldg. Blev. 261* . 2014	"4116KV Bus 017
2NNS-SWG018	Normal Switchgear Bldg. Blev. 261* 🤫	4.16KV Bus 018
2NJS-US1	Turbine Bldg. Northeast Elev. 277* 33	600V Bus US1
2NJS-US2	Reactor Bldg. East Elev. 289'	600V Bus US2
2NJS-US3	Turbine Bldg. Southwest Blev. 277*	600V Bus US3
2NJS-US4	Normal Switchgear Bldg. Blev. 261' 4	600V Bus US4
2NJS-US5	Normal Switchgear Bldg. Elev. 261'	600V Bus USS
2NJS-US6	Normal Switchgear Bldg. Blev. 261'	600V Bus US6
2NJS-US7	Turbine Bldg. Northeast Blev. 277*	600V Bus US7
2NJS-US8	Turbine Bldg. North Blev. 306'	600V Bus US8
2NJS-US9	Radwaste Bldg. South Elev. 279'	600V Bus US9
2NJS-US10	Turbine Bldg. East Elev. 250*	600V Bus US10
2BJS*PNL 100A	Control Bldg. Elev. 261'	Panel 100A ·
2EJS*PNL 101A	Aux. Bldg. North Elev. 240'	Panel 101A
2EJS*PNL 102A	Control Bldg. Blev. 261'	Panel 102A
2EJS*PNL 103A	Aux. Bldg. North Blev. 240'	Panel 103A
2EJS*PNL 104A	Aux. Bldg. North Elev. 240'	Panel 104A
2BJS*PNL 300B	Control Bldg. Elev. 261'	Panel 300B
2EJS*PNL 301B	•	Panel 301B
2EJS*PNL 302B	Aux. Bldg. South Blev. 240'	Panel 302B
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2.0 (Cont'd)

- i. At 13.8KV bus 001 metering cubical 1-2/1-15, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.
- . j. For reserve transformer 2-RTX-XSR1A, check neutral switch 2RTX-SW001 "Open".
 - k. At 13.8KV Bus 001, Rack In Reserve Transformer "A" supply breaker 1-1, as required.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 812 13.8KV Bus NPS-001 Protection Lockout Relay
- 2. Panel 805 Reserve Station Service XFMR 1A Primary · Protection Lockout Relay
- 3. Panel 806 Reserve Station Service XFMR 1A Backup Protection Lockout Relay
- 4. Panel 867 Generator Backup Protection Lockout Relay 2
- 5. Check all relay flags are reset on NPS-SWG-001, inform SSS of all flags.
- 1. At Panel 852, turn on synchronize reserve "A" switch.
- m. At Panel 852, close reserve transformer "A" supply breaker 1-1. Check voltage on 13.8KV bus 001 as nominally 13.8KV.
- n. At panel 852, turn off synchronize reserve "A" switch.

To place 13.8KV bus 2NPS-SWG-003 in service:

3.0

- a. At Panel 852, verify the control switch for the normal station service feed 13.8KV bus 003, Breaker 3-14 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the reserve transformer "A" feed to 13.8KV bus 003, Breaker 3-16 is in the "pull to lock" position. (Cubicle Only)
- c. At Panel 852, verify the control switch for the reserve transformer "B" feed to 13.8KV bus 003, Breaker 3-1 is in the "pull to lock" position.
- d. At Panel 852, verify the control switch for the feed to Aux. Transformer 2ATX-XS3, Breaker 3-6 is in the "pull to lock" position (4160V feed to bus 2NNS-SWG013 and 2NNS-SWG015)
- e. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US1 and US2, Breaker 3-3 is in the "pull to lock" position.

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- E. STARTUP PROCEDURE (Cont'd)
 - 3.0 (Cont'd)

4.0

- f. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US3, US4 and US7 Breaker 3-13 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 13.8KV Normal Bus Feed to 600V Bus US8, US9, US10, Breaker 3-1A is in the "pull to lock" position.
- h. At panel 851 verify the control switch for the the following motor breakers are in the "pull to lock" position:

Panel 851Condensate Booster Pump B
Reactor Feed Pump BCondensate Booster Pump C (Bus 003)
Reactor Feed Pump C (Bus 003)
Circulating Water Pump B
Circulating Water Pump D
Circulating Water Pump FPanel 602Reactor Recirc. Pump B (Breaker 2B)

- i. At 13.8KV bus 003 at metering cubical 3-2/3-15, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.
- j. At 13.8KV Bus 003, Rack In Reserve Transformer "B" Supply Breaker 3-1.
- k. Check the following lockout relays are reset to assure closing permissive satisfied:
 - 1. Panel 813 13.8 KV Bus NPS-003 Protection Lockout Relay
 - 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay
 - 3. Panel 809 Reserve Station Service XFMR 1B Backup Protection Lockout Relay
 - 4. Panel 867 Generator Backup Protection Lockout Relay 2
 - 5. Check all relay flags are reset on NPS-SWG 003, inform SSS of all flags.

At Panel 852, turn on synchronize reserve "B" switch.

 At Panel 852, close reserve transformer "B" supply Breaker 3-1 Check voltage on 13.8KV bus 003 as nominally 13.8KV.

m. At panel 852, turn off synchronize reserve "B" switch.

- To place 13.8KV bus 2NPS-SWG 002 in Service
 - a. At Panel 852, verify the control switch for the auxiliary boiler transformer to 13.8KV bus 002 Breaker 2-5 is in the "pull to lock" position.

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E. <u>STARTUP PROCEDURE</u> (Cont'd)

Fauismont TD	Location	Alternate 1D
Equipment ID	Localion .	Alceluate 1D
2EJS*PNL 303B	Aux. Bldg. South Elev. 240'	Panel 303B
2EJS*PNL 304B	Aux. Bldg. South Elev. 240'	Panel 304B
2EJS*US1	Control Bldg. Elev. 261'	600V Bus US1
2EJS*US3	Control Bldg. Elev. 261'	600V Bus US3
2CEC*PNL601	Control Bldg. Elev. 306'	Panel 601
2CEC*PNL602	Control Bldg. Elev. 306'	Panel 602
2CEC*PNL603	Control Bldg. Elev. 306'	Panel 603;
2CEC-PNL802	Control Bldg. Elev. 288'	Panel 802
2CEC-PNL803	Control Bldg. Elev. 288'	Panel 803
2CEC-PNL804	Control Bldg. Elev. 288'	Panel 804
2CEC-PNL805	Control Bldg. Elev. 288'	Panel 805
2CEC-PNL806	Control Bldg. Elev. 288'	Panel 806
2CEC-PNL807	Control Bldg. Elev. 288'	Panel 807
2CEC-PNL808	Control Bldg. Elev. 288'	Panel 808
2CEC-PNL809	Control Bldg. Elev. 288'	Panel 809
2CEC-PNL810	Control Bldg. Elev. 288'	Panel 810
2CEC-PNL811	Control Bldg. Elev. 288*	Panel 811
2CEC-PNL812	Control Bldg. Elev. 288'	Panel 812
2CEC-PNL813	Control Bldg. Elev. 288'	Panel 813
2CEC-PNL814	Control Bldg. Elev. 288'	Panel 814
2CEC-PNL815	Control Bldg. Elev. 288'	Panel 815 /
2CEC-PNL849	Control Bldg. Elev. 306'	Panel 849
2CEC-PNL851	Control Bldg. Elev. 306'	Panel 851
2CEC-PNL852	Control Bldg. Elev. 306'	Panel 852
2CEC-PNL867	Control Bldg. Elev. 288'	Panel 867
2CES-IPNL506	Auxiliary Boiler Bldg. Elev. 261'	Panel 506
2CES-IPNL507	Auxiliary Boiler Bldg. Elev. 261'	Panel 507
2FPW-PNL233	Screenwell Bldg., Hotor Fire Pump	
<u></u>	Room Elev. 261'	Panel 233
2NPS-SWG004	Normal Switchgear Bldg EL. 293'	3.8KV BUS 4.
2NPS-SWG005	Normal Switchgear Bldg EL. 293'	13.8KV BUS 5
2NHS-MCC001	Radwaste Bldg South EL. 279'	600V.MCC001
2NHS-MCC002	Screenwell Bldg EL. 261'	600V. MCC002
2NHS-MCC003	Turbine Bldg Northeast EL. 277'	600V.MCC003
2NHS-MCC004 2NHS-MCC005	Turbine Bldg Northeast EL. 277 Reactor Bldg West EL 215	600V. MCC004
2NHS-MCC006	Turbine Bldg Southwest EL 277	600V.MCC005 600V.MCC006
2NHS-HCC007	Normal Switchgear Bldg EL 261	600V.HCC008
2NHS-MCC008	Normal Switchgear Bldg EL 261	600V.HCC008
2NHS-HCC009	Normal Switchgear Bldg EL 201	600V.HCC009
2NHS-MCC010	Turbine Bldg East BL 250	600V.MCC101
2NHS-MCC011	Reactor Bldg Northwest EL. 261	600V.MCC011
2NHS-MCC012	Reactor Bldg Southwest EL 261	600V.MCC012
2NHS-MCC013 : -	Screenhouse (Cooling Tower)	600V.HCC013
2NHS-MCC014	Reactor Bldg West EL215	600V.MCC014
2NHS-MCC015	Turbine Bldg North EL 306	600V.MCC015
2NHS-MCC016	Radwaste Bldg South EL 279	600V.MCC016
2NHS-MCC017	Screenwell Bldg EL 261	600V.HCC017
2VBB-UPS1A	Normal Switchgear Bldg EL237	UPSIA
2VBB-UPS1B	Normal Switchgear Bldg EL 237	UPS1B
2VBB-UPS1C	Normal Switchgear Bldg EL 237	UPS1C
2VBB-UPS1D	Normal Switchgear Bldg EL 237	UPS1D
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Equipment ID	Location	<u>Alternate 1D</u>
2VBB-UPS1G	Control Bldg EL 214'	UPS1G
2VBB-UPS3A	Normal Switchgear Bldg EL 237'	UPS3A
2VBB-UPS3B	Normal Switchgear Bldg EL 237'	UPS3B

1.0 To ensure reserve station service transformers 2RTX-XSR1A, 2RTX-XSR1B, and 2ABS-X1 are energized:

a. The 115KV System should be energized in accordance with OP-70.

2.0 To place 13.8KV bus 2NPS-SWG-001 in Service

- a. At Panel 852, verify the control switch for the normal station service feed to 13.8 'KV bus '001' breaker 1-3 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the reserve transformer "B" feed to 13.8 KV bus 001 breaker .1-16 is in the "pull to lock" position. (Cubicle only)
- c. At Panel 852, verify the control switch for the reserve transformer "A" feed to 13.8KV bus 001 Breaker 1-1 is in the "pull to lock" position.
- d. At Panel 852, verify the control switch for the feed to Aux. Transformer 2ATX-XS1, Breaker 1-4 is in the "pull to lock" position (4160V feed to bus 2NNS-SWG011 and 2NNS-SWG-014)
- e. At Panel 852, verify the control switch for the 13.8KV
 normal bus feed to 600V bus US1 and US2, Breaker 1-5 is in the "pull to lock" position.
- f. At Panel 852, verify the control switch for the 13.8KV normal bus feed to 600V bus US3, US4 and US7 Breaker 1-14 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 13.8KV Normal Bus Feed to 600V Bus US8, US9, US10, Breaker 1-1A is in the "pull to lock" position.
- h. At panel 851 verify the control switch for the the following motor breakers are in the "pull to lock" position:

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Panel 851 Condensate Booster Pump A Reactor Feed Pump A Condensate Booster Pump C (Bus 001) Circulating Water Pump A Circulating Water Pump C Circulating Water Pump B Reactor Feed Pump C (Bus 001)

Panel 602 Reactor Recirc. Pump A (Breaker 2A) N2-OP-71 -6- May 1987

(Cont'd) 4.0

- b. At Panel 852, verify the control switch for the reserve transformer "A" emergency feed to 13.8KV bus 002 Breaker 2-1 is in the "pull to lock" position. (Cubicle Only)
- c. At Panel 506 verify the control switch for the 13.8KV feed to "A" auxiliary boiler is in the "pull to lock" position.
- d. At Panel 507 verify the control switch for the 13.8KV feed to "B auxiliary boiler "is in the "pull to lock" position.
- e. At 13.8KV bus 002 at metering cubical 2-4, check closed potential transformer compartment doors and ensure the primary and secondary fuses are installed for PT's.
- f. At 13.8KV Bus 002, rack in auxiliary boiler transformer. feed to 13.8KV Bus 002 supply breaker 2-5, as required.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 811 Aux Boiler XFMR ABS-X1 Primary Protection Lockout Relay
- 2. Panel 802 Aux Boiler Service XFMR Backup Protection Lockout Relay
- 3. Panel 815 13.8KV Bus NPS-002 Protection Lockout Relay
- 4. Check all relay flags are reset on NPS-SWG 002, inform SSS of all flags.
- g. At Panel 852, close auxiliary boiler transformer to 13.8KV bus 002 supply breaker 2-5. Check voltage on 13.8KV Bus 002 as nominally 13.8KV.

5.0

To energize 13.8KV/4.16KV auxiliary Transformer 2ATX-XS1

- a. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS1 to bus 2NNS-SWG011, Breaker 11-3 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS1 to bus 2NNS-SWG014, Breaker 14-2 is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 13.8KV feed to transformer 2ATX-XS1, Breaker 1-4 is in the "pull to lock" position.
- d. At Panel 852, check voltage on 13.8KV Bus 001 as nominally 13.8KV.
- e. At 13.8KV bus 001, rack in 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.

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5.0 (Cont'd)

Check the following lockout relay reset to assure closing permissive satisfied:

 Panel 807 - Aux. XFMR ATX-XS1 Protection Lockout Relay
 Check all relay flags are reset, inform SSS of all flags.

f. At Panel 852, close 13.8KV feed to auxiliary transformer 2ATX-XS1 supply breaker 1-4.

6.0

To place 4.16KV bus 2NNS-SWG011 in service.

- a. At Panel 852, verify control switch for the 4.16KV normal bus feed to 4.16KV bus 011, Breaker 11-3 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.
- c. At Panel 852, verify control switch for the tie breaker from 4.16KV Bus 011 to 4.16KV Bus 012, Breaker 11-1 is in the "pull to lock" position.
- d. At Panel 601, verify control switch for the TBCLC pump "A" (2CCS-P1A) is in the "pull to lock" position.
- e. At Panel 851, verify control switch for the Heater Drain pump "A" (2HDL-PIA) is in the "pull to lock" position.
- f. At Panel 851, verify control switch for the Condensate pump "A" (2CNM-PIA) is in the "pull to lock" position.
- g. At Panel 851, verify control switch for the Condensate pump "C" (2CNM-P1C) (Bus 011) is in the "pull to lock" position.
- h. At Panel 602, verify the control switch for Reactor Recirc. Motor Generator Set "A" (2RCS-MGIA) (Breaker 1A) is in the "pull to lock" position.
- i. At 4.16KV bus Oll rack in 4.16KV Normal Bus feed to 4.16KV Bus Oll Breaker 11-3.

Check the following lockout relays reset to assure closing permissives satisfied:

- 1. Panel 815 4.16KV Bus NNS-012 Backup Protection & Lockout Relay
- 2. Panel 812 4.16KV Bus NNS-011 Protection Lockout Relay
- 3. Panel 807 Aux. XFMR ATX-XS1 Protection Lockout Relay
- 4. Check all relay flags are reset, inform SSS of all flags.

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6.0 (Cont'd)

j. At Panel 852, close 4.16KV bus feed to 4.16KV bus 011, Breaker 11-3 and Check voltage on 4.16KV bus 011 as nominally 4.16KV.

7.0 To place 4.16KV bus 2NNS-SWG014 In Service

- a. At Panel 852, verify the control switch for the 4.16KV normal bus feed to 4.16KV bus 014, Breaker 14-2 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS1, Breaker 1-4.
- c. At Panel 852, verify the control switch for the 4.16KV bus 014 tie breaker to emergency bus 2ENS*SWG101(G), Breaker 14-1 is in the "pull to lock" position.
- d. At Panel 603, verify the control switch for Control Rod Drive pump "A" (2RDS-P1A) breaker 14-7 is in the "pull to lock" position.
- e. At Panel 601, verify the control switch for RBCLC pump "C" (2CCP-P1C) and RBCLC booster pump (2CCP-P3C) breakers 14-6 and 14-9 are in the "pull to lock" position.
- f. At Panel 852, verify the control switch for the 4.16KV bus Ol4 feed to 600V bus US5 (auxiliary transformer 2NJS-X1F), Breaker 14-4 is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 4.16KV bus Ol4 feed to 600V bus US5 (auxiliary transformer 2NJS-X1E), Breaker 14-8 is in the "pull to lock" position.
- h. At 4.16KV bus 014, rack in 4.16KV Normal Bus feed to 4.16KV Bus 014, Breaker 14-2.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 807 Aux. XFMR ATX-XS1 Protection Lockout Relay
- 2. Panel 803 4.16 Bus NNS-014 Protection Lockout Relay
- 3. Check all relay flags are reset, inform SSS of all

flags.

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At Panel 852, close 4.16KV bus feed to 4.16KV bus 014, Breaker 14-2 Check voltage on 4.16KV bus 014 as nominally 4.16KV.

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8.0 <u>To energize 13.8KV/4.16KV auxiliary transformer 2ATX-XS3</u>

- a. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS3 to bus 2NNS-SWG013, Breaker 13-6 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV feed from transformer 2ATX-XS3 to bus 2NNS-SWG015, Breaker 15-3 is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 13.8KV feed to transformer 2ATX-XS3, Breaker 3-6 is in the "pull to lock" position.
- d. At Panel 851, check voltage on 13.8KV Bus 003 as nominally 13.8KV.
- e. At 13.8KV bus 003, rack in 13.8KV feed to auxiliary transformer 2ATX-XS3, Breaker 3-6.
 - Check the following lockout relay reset to assure closing permissive satisfied:
 - 1. Panel 810 Aux. XFMR ATX-XS3 Protection Lockout Relay
 - 2. Check all relay flags, reset. Inform SSS of all flags.
- f. At Panel 852, close 13.8KV feed to auxiliary transformer 2ATX-XS3 supply breaker, 3-6.

To place 4.16KV bus 2NNS-SWG013 In Service

- a. At Panel 852, verify the control switch for the 4.16KV Normal Bus feed to 4.16KV bus 013, Breaker 13-6 is in the "pull to lock" position.
- b. At Panel. 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS3, Breaker 3-6.
- c. At Panel 852, verify the control switch for the tie breaker from bus 013 to bus 012, Breaker 13-10 is in the "pull to lock" position.
- d. At Panel 851, verify the control switch for Condensate pump "C" (2CNM-P1C) (Bus 013) breaker 13-2 is in the "pull to lock" position.
- e. At Panel 851, verify the control switch for Condensate pump "B" (2CNM-P1B) breaker 13-3 is in the "pull to lock" position.

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9.0

9.0 (Cont'd)

10.0

- f. At Panel 851, verify the control switch for Heater Drain pump "B" (2HDL-P1B) breaker 13-4 is in the "pull to lock" position.
- g. At Panel 601, verify the control switch for TBCLC pump "B" (2CCS-P1B) and RBCLC booster pump (2CCP-P3A) breaker 13-8 and 13-9 are in the "pull to lock" position.
- h. At Panel 602, verify the control switch for Reactor Recirc. Motor Generator Set "B" (2RCS-MG1B) (Breaker 1B) is in the "pull to lock" position.
- i. At 4.16KV bus 013, rack in 4.16KV Normal Bus feed to 4.16KV Bus 013, Breaker 13-6.

Check the following lockout relays reset to assure closing permissives satisfied:

- 1. Panel 810 Aux. XFMR ATX-XS3 Protection Lockout Relay
- 2. Panel 813 4.16KV Bus NNS-013 Protection Lockout Relay
- 3. Panel 815 4.16KV Bus NNS-012 Backup Protection Lockout Relay
- 4. Check all relay flags are reset, inform SSS of all flags.
- j. At Panel 852, close 4.16KV bus feed to 4.16KV bus 013, Breaker 13-6. Check voltage on 4.16KV bus 013 as nominally 4.16KV.

To place 4.16KV bus 2NNS-SWG015 in Service

- a. At Panel 852, verify the control switch for the 4.16KV normal bus feed to 4.16KV bus 015, Breaker 15-3 is in the "pull to lock" position.
- b. At Panel 852, check closed 13.8KV feed to auxiliary transformer 2ATX-XS3, Breaker 3-6.
- """C. "At Panel 852, verify the control switch for the 4.16KV bus 015 tie breaker to emergency bus 2ENS*SWG103, Breaker 15-8 is in the "pull to lock" position.
 - d. At Panel 603, verify the control switch for Control Rod Drive pump "B" (2RDS-P1B) breaker 15-2 is in the "pull to lock" position.
 - e. At Panel 601, verify the control switch for RBCLC pump "B" (2CCP-P1B) and RBCLC booster pump (2CCP-P3B) breakers 15-4 and 15-6 are in the "pull to lock" position.

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10.0 (Cont'd)

- f. At Panel 852, verify the control switch for the 4.16KV bus O15 feed to 600V bus US6 (auxiliary transformer 2NJS-X3E) (Breaker 15-7) is in the "pull to lock" position.
- g. At Panel 852, verify the control switch for the 4.16KV bus 015 feed to 600V bus US6 (auxiliary transformer 2NJS-X3F) (Breaker 15-1) is in the "pull to lock" position.
- h. At 4.16KV bus 015, rack in 4.16KV Normal Bus feed to 4.16KV bus 015, Breaker 15-3.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 810 Aux XFMR ATX-XS3 Protection Lockout Relay
- 2. Panel 804 4.16KV Bus NNS-015 Protection Lockout Relay
- 3. Check that all relay flags are reset, inform SSS of all flags.
- i. At Panel 852, close 4.16KV bus feed to 4.16KV bus 015, Breaker 15-3. Check voltage on 4.16KV bus 015 as nominally 4.16KV.
- To place 4.16KV bus 2NNS-SWG012 in Service from 4.16KV bus 2NNS-SWG011:
 - At Panel 852, verify the control switch for the 4.16KV bus 011 tie breaker to 4.16KV bus 012, Breaker 11-1 is in the "pull to lock" position.
 - b. At Panel 852, verify the control switch for the 4.16KV bus 013 tie breaker to bus 4.16KV bus 012, Breaker 13-10 is in the "pull to lock" position.'
 - c. At Panel 851, verify the control switch for Heater Drain pump "C" (2HDL-P1C) breaker 12-2 is in the "pull to lock" position.
 - d. At Panel 849, and Panel 233, verify the control switches for Motor Driven Fire pump (2FPW-P2), breaker 12-3 is in the "pull to lock" position.
 - e. At Panel 601, verify the control switch for TBCLC pump "C" (2CCS-P1C), breaker 12-4 is in the "pull to lock" position.
 - f. At Panel 601, verify the control switch for RBCLC pump "A" (2CCP-P1A), breaker 12-5 is in the "pull to lock" position.
 - g. At Panel 852, Check voltage on 4.16KV Bus Oll as nominally 4.16KV.

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11.0

11.0 (Cont'd)

h. At 4.16KV bus 011, rack in 4.16KV Bus 011 tie breaker to 4.16KV Bus 012, breaker 11-1.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 812 4.16KV Bus NNS-011 Protection Lockout Relay
- 2. Panel 814 4.16KV Bus NNS-012 Protection Lockout Relay
- 3. Check that all relay flags are reset, inform SSS of all flags.
- i. At Panel 852, close 4.16KV bus 011 tie breaker to 4.16KV bus 012, breaker 11-1. Check voltage on bus 012 as nominally 4.16KV.
- 12.0 To place 4.16KV Bus 2NNS-SWG012 in service from 4.16KV Bus 2NNS-SWG013:
 - a. Refer to Section E, Step #11 a. thru f.
 - b. At Panel 852, check voltage on 4.16KV Bus 013 as nominally 4.16KV.
 - c. At 4.16KV Bus 013, rack in 4.16KV Bus 013 Tie Breaker to 4.16KV Bus 012, Breaker 13-10.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 813 4.16KV Bus NNS-013 Protection Lockout Relay
- 2. Panel 814 4.16KV Bus NNS-012 Protection Lockout Relay
- 3. Check that all relay flags are reset, inform SSS of all flags.
- d. At Panel 852, close 4.16KV Bus 013 Tie Breaker to 4.16KV Bus 012, Breaker 13-10. Check voltage on 4.16KV Bus 012 as nominally 4.16KV.

To place 4.16KV bus 2NNS-SWG016 in Service

- a. At Panel 852, verify the control switch for the 4.16KV bus Ol6 feed from Reserve Station Transformer 2RTX-XSRIA 4.16KV tertiary winding, Breaker 16-2 is in the "pull to lock" position.
 - b. At Panel 852, verify the control switch for the 4.16KV bus 016 feed to 4.16KV emergency bus 2ENS*SWG101 (G), Breaker 101-13 is in the "pull to lock" position.
 - c. At Panel 852, verify the control switch for the bus 016 feed to 4.16KV emergency bus 2ENS*SWG102 (P), Breaker 102-4 is in the "pull to lock" position. N2-0P-71 -15- May 1987

13.0

13.0 (Cont'd)

14.0

- d. At Panel 852, check voltage from Reserve Station Service Transformer 2RTX-XSRIA. to .4.16KV bus 016 as nominally 4.16KV.
- e. At 4.16KV bus 016, rack in Supply Breaker from Reserve Station Transformer 2RTX-XSR1A, Breaker 16-2.

Check the following lockout relays reset to assure closing permissive satisfied:

- 1. Panel 852 Lockout Relay 86 Trip & Lockout Breaker 16-2
- 2. Panel 805 Reserve Station Service XFMR 1A Primary Protection Lockout
- 3. Panel 806 Reserve Station Service XFMR 1A Backup Protection Lockout Relay
- 4. Check that all relay flags are reset, inform.SSS of all flags.
- f. At Panel 852, close 4.16KV bus 016 supply breaker from Reserve Station Transformer 2RTX-XSR1A, Breaker 16-2.

To place 4.16KV bus 2NNS-SWG017 in Service

- a. At Panel 852, verify the control switch for the 4.16KV bus Ol7 feed from Reserve Station Transformer 2RTX-XSR1B 4.16KV tertiary winding, Breaker 17-2 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV bus 017 feed to 4.16KV emergency bus 2ENS*SWG102 (P), Breaker 102-5 (Cubicle Only) is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 4.16KV bus 017 feed to 4.16KV emergency bus 2ENS*SWG 103 (Y), Breaker 103-4 is in the "pull to lock" position.
- d. At Panel 852, check voltage from Reserve Station Transformer 2RTX-XSR1B to 4.16KV bus 017 as nominally 4.16KV.
- e. At 4.16KV bus 017 rack in Supply Breaker from Reserve Station Transformer 2RTX-XSR1B, Breaker 17-2.

Check the following lockout relays are reset to assure closing permissives satisfied:

- 1. Panel 852 Lockout Relay 86 Trip & Lockout Breaker 17-2
- 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay

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14.0 (Cont'd)

- 3. Panel 809 Reserve Station Service XFMR 1B Backup Protection Lockout Relay
- Check that all relay flags are reset, inform SSS of all flags.
- f. At Panel 852, close 4.16KV bus 017 supply breaker from reserve Station Transformer 2RTX-XSR1B, Breaker 17-2.

15.0 To place 4.16KV bus 2NNS-SWG018 in service

- a. At Panel 852, verify the control switch for the 4.16KV bus Ol8 feed from Auxiliary Boiler Transformer 2ABS-X1 4.16KV tertiary winding, Breaker 18-2 is in the "pull to lock" position.
- b. At Panel 852, verify the control switch for the 4.16KV bus 018 feed to emergency bus 2ENS*SWG101 (G), Breaker 101-10 (Cubicle Only) is in the "pull to lock" position.
- c. At Panel 852, verify the control switch for the 4.16KV bus Ol8 feed to emergency bus 2ENS*SWG103 (Y), Breaker 103-2 (Cubicle Only) is in the "pull to lock" position.
- d. At Panel 852, check voltage from Aux. Boiler Transformer 2ABS-X1 to 4.16KV bus 018 as nominally 4.16KV.
- e. At 4.16KV bus 018, rack in Supply Breaker from Auxiliary Boiler Transformer 2ABS-X1, Breaker 18-2.

Check the following Lockout Relays are reset to assure closing permissives satisfied:

- 1. Panel 852 Lockout Relay 86 Trip & Lockout Breaker 18-2
- 2. Panel 811 Aux. Boiler XFMR ABS-X1 Primary Protection Lockout Relay
- 3. Panel 802 Aux. Boiler Service XFMR Backup Protection Lockout Relay
- 4. Verify all relay flags are reset.
- f. At Panel 852, close 4.16KV bus 018 supply breaker from Auxiliary Boiler Transformer 2ABS-X1, Breaker 18-2.

16.0

- The following will energize 13.8 KV/600 V auxiliary transformers and place 600V 2NJS-US1 through 4 and 7 through 10 load centers in service..
- a. At load center check open bus A supply breaker from aux. transformer.
- b. At load center check open bus B supply breaker from aux. transformer.

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- E. STARTUP PROCEDURE (Cont'd)
 - 16.0 (Cont'd)
 - c. At load center check open one bus tie breaker to bus C. Normally A to bus C tie breaker will be closed and B bus tie to C will be open.
 - ZNPS d. At panel 852, check voltage on 2NNS-SWG 001 & 003 bus normal.
 - e. Check that non-essential loads are removed from load center.
 - f. At 2NPS-SWG001 rack in supply breaker to 600V aux. transformers. Check lockout relay 86 reset, and all flags cleared.

Breaker 1-1A for 2NJS-US8,9,10 Breaker 1-5 for 2NJS-US1,2 Breaker 1-14 for 2NJS-US3,4,7

- g. At panel 852, close the respective 13.8 KV supply breaker to 600V aux. transformers, as noted above.
- h. At 13.8 KV bus 003 rack in supply breaker to aux. transformers. Check lockout relay 86 reset and all flags cleared.

Breaker 3-1A for 2NJS-US8,9,10 Breaker 3-3 for 2NJS-US1,2 Breaker 3-13 for 2NJS-US3,4,7

- i. At panel 852, close the respective 13.8 KV supply breaker to 600V aux. transformers, as noted above.
- j. At load center bus A, close supply breaker from aux. transformer. Check bus A voltage as nominally 600 V.
- k. At load center bus B, close supply breaker from aux. transformer. Check bus B voltage as nominally 600V.
- To energize 4160V/600V Auxiliary Transformers and place load center 2NJS-US5 in Service:
- a. At Panel 852, Lockout 4.16KV Bus 014 feed to Aux. Transformer 2NJS-X1E, Breaker 14-8.
- b. At Panel 852, Lockout 4.16KV Bus 014 feed to Aux. Transformer 2NJS-X1F, Breaker 14-4.

c. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer ZNJS-X1E, Breaker 5-3B.

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17.0

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- 17.0 (Cont'd)
 - d. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer 2NJS-X1F, Breaker 5-8B.
 - e. At Panel 852, Check voltage on 4.16KV Bus 014 as nominally 4.16KV.
 - f. At 4.16KV Bus Ol4, rack in Supply Breaker to Aux. Transformer 2NJS-X1E, Breaker 14-8. Check Lockout Relay 86-2NJSX31 Reset.
 - g. At 4.16KV Bus 014, Rack in Supply Breaker to Aux. Transformer 2NJS-X1F, Breaker 14-4, as required. Check Lockout Relay 86-2NJSX21 Reset.
 - h. At Panel 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X1E, Breaker 14-8.
 - i. At Panel 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X1F, Breaker 14-4.

(5-88)

9/8/90.

(5-8B)

CAUTION

Before racking in 2NJS-US5 supply breaker 5-3B^V verify supply breaker 5-8B_A is open and racked out. (5-3B)

j. At Load Center 2NJS-US5, rack in 600V Supply Breaker from Aux. Transformer 2NJS-X1E, Breaker 5-3B, as required.

-<u>CAUTION</u>- (XIF)

-Before-recking-in-2NJS-USS-supply-breaker-5-8B-reverify--breaker-5-3B-is-open-and-recked-out.

k. At-Load-Conter 2NJS-USS, rack-in-600V-Supply-Breaker-From -Aux.-Transformer 2NJS-X1F, Breaker-5-8B.

X. <u>At Panel 852, close 600V</u> Supply Breaker from Aux. (XIF) Transformer 2NJS-XIE, Breaker 5-3B. Check voltage on Load Center 2NJS-US5 as nominally 600V. (5.8B)

- ·ж.
 - •• At panel 852, take the control switch for breaker 5-8B(5-3B) out of pull-to-lock, DO NOT close the breaker.

- NOTE:

- NOTE:

Aux. Transformer 2NJS-XIF 600V Supply Breaker to 600V Load Center 2NJS-USS, Breaker 5-8B, will be the alternate feed. The alternate feed can be used if the normal feed (2NJS-XIE) is not available.

E. <u>STARTUP PROCEDURE</u> (Cont'd)

18.0

To energize 4160V/600V Auxiliary Transformers and place load center 2NJS-US6 in Service:

- a. At Panel 852, Lockout 4.16KV Bus 015 feed to Aux. Transformer 2NJS-X3E, Breaker 15-7.
- b. At Panel 852, Lockout 4.16KV Bus 015 feed to Aux. Transformer 2NJS-X3F, Breaker 15-1.
- c. At Panel 852, Lockout 600V Supply Breaker from Aux. Transformer 3NJS-X3E, Breaker 6-3B.
- d. At Panel .852, Lockout 600V Supply Breaker from Aux. Transformer 2NJS-X3F, Breaker 6-7B.
- e. At Panel 852, Check voltage on 4.16KV Bus 015 as nominally 4.16KV.
- f. At 4.16KV Bus 015, rack in Supply Breaker to Aux. Transformer 2NJS-X3E, Breaker 15-7. Check Lockout Relay 86-2NJSY31 Reset.
- g. At 4.16KV Bus 015, Rack in Supply Breaker to Aux.
 Transformer 2NJS-X3F, Breaker 15-1. Check Lockout Relay 86-2NJSY21 Reset.
- h. At Panel 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X3E, Breaker 15-7.

i. At Panel 852, close 4.16KV Supply Breaker to Aux. Transformer 2NJS-X3F, Breaker 15-1. NOTE: Aux. Transformer 2NJS-X3F 600v supply Breaker to 600v load center 2NJS-US6, breaker 6-78, will be the alternate feed. The alternate feed can be used if the normal feed (2NJS-X3E) is not available. CAUTION ia ... (6-78) Before racking in 2NJS-US6 supply breaker $6-3B^V$ verify 2NJS-US6 supply breaker 6-7B, is open and-racked-out. (6-38) At Load Center 2NJS-US6, rack in 600V Supply Breaker from j٠ Aux. Transformer 2NJS-X3E, Breaker 6-3B, as required. (X3F) (6-78) CAUTION-Before-reacking-in-2NJS-US6-supply-breaker-6-7B-verify 2NJS-US6-supply-breaker-6-38-is-opon/racked-out-At-Load-Center-2NJ5-US6,-rack-in-600V-Supply-Breaker-from--Aux.-Transformer-2NJS-X3F, Broaker-6-78, as-required. X.K close 600V Supply Breaker from Aux. At 852, Panel Transformer 2NJS-X3E, Breaker 6-3B, Check voltage on Load (X3F) Cénter 2NJS-US6 as nominally 600V. (678) (6-3B) m.1 At Panel 852, take the control switch for breaker 6-78^N out of pull-to-lock, DO NOT close the breaker.

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(Cont'd) 18.0

STARTUP F	ROCED	URE (Cont'd)
18.0	(Con	t'd)
NOTE:	Aux. Cent	-Transformer-2NJS-X3F-600V-Supply_Breaker_to-600V-Load- er-2NJS-US6, Breaker-6-7B, will be the alternate-feed.
19.0		following will energize 600V 2NHS motor control centers , 3, 5, 6, 7, 10, 13 through 17.
	а.	At load center, check open bus A supply breaker to 2NHS MCC bus A.
	b .	At load center, check open bus B supply breaker to 2NHS MCC bus B.
	c.	At 2NHS MCC bus A, check open supply breaker from load center bus A.
	d.	At 2NHS MCC bus B, check open supply breaker from load ,center bus B.
	e.	At 2NHS MCC, check open tie breaker between bus A and C, bus B and C. Normally bus tie A to C will be closed and bus tie B to C will be open.
• .	f.	At load center, check voltage normal for bus A and B.
	g٠	Check that large non-essential loads are removed from MCC.
•.	h.	At load center bus A, rack in and close supply breaker to 2NHS-MCC bus A.
• ,	i.	At load center bus B, rack in and close supply breaker to 2NHS-MCC bus B.
	j.	At 2NHS-MCC bus A, close supply breaker from load center bus A. Check voltage.
• .	k.	At 2NHS-MCC bus B, close supply breaker from load center bus B check voltage.

CAUTION

Verify bus tie B to C is open before closing bus tie A to C.

1. At 2NHS-MCC close bus tie A to C. Check voltage as normal.

- 20.0 To energize 600 V motor control center 2NHS-MCC 004
 - At load center 2NJS-US4, check open supply breaker to a. 2NJS-PNL401, breaker 4B bus A.

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20.0 (Cont'd)

. . .

- b. At load center 2NJS-US4, check open supply breaker to 2NJS-PNL402 breaker 14A bus B.
- c. At 2NJS-PNL401 check open supply breaker to 2NHS-MCC 004, breaker 31.
- d. At 2NJS-PNL402 check open supply breaker to 2NHS-MCC 004, breaker 31.
- e. At 2NJS-PNL401 check closed main supply breaker.
- f. At 2NJS-PNL402 check closed main supply breaker.
- g. At load center 2NJS-US4, close supply breaker to 2NJS-PNL401, breaker 4B bus A.
- h. AT load center 2NJS-US4, close supply breaker to 2NJS-PNL402, breaker 14A bus B.
- i. At 2NJS-PNL401 close supply breaker to 2NHS-MCC 004, breaker 31.
- j. At 2NJS-PNL 402 close supply breaker to 2NHS-MCC 004, breaker 31.
- k. At 2NHS-MCC 004 verify white indicating light is lit.
- 21.0 . To energize 600V Motor Control Center 2NHS-MCC008
 - a. At Load Center 2NJS-US5, Check open supply breaker to 2NHS-MCC008, Breaker 3D.
 - b. At Load Center 2NJS-US5, Check open Supply Breaker to 2NHS-MCC008, Breaker 5A.
 - c. At 2NHS-MCC008, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 3D).
 - d. At 2NHS-MCC008, Check open Breaker 9A, 600V Supply from Load Center 2NJS-US5 (Breaker 5A).
 - e. At Load Center 2NJS-US5, Check Voltage as nominally 600V.
 - f. At Load Center 2NJS-USS, rack in Supply Breaker to . 2NHS-MCC008, Breaker 3D.
 - g. At Load Center 2NJS-US5, rack in supply breaker to 2NHS-MCC008, Breaker 5A.
 - h. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC008, Breaker 3D.

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21.0 (Cont'd)

- i. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC008, Breaker 5A.
- j. At 2NHS-MCC008, close Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 3D). Check voltage as nominally 600V.
- <u>NOTE</u>: At 2NHS-MCC008, Breaker 9A, the 600V Supply from Load Center 2NJS-US5 (Breaker 5A), will be the alternate source.
- <u>NOTE</u>: The Hotor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.
- 22.0 To energize 600V Motor Control Center 2NHS-MCC009
 - a. At Load Center 2NJS-US6, Check open supply breaker to 2NHS-MCC009, Breaker 3C.
 - b. At Load Center 2NJS-US6, Check open Supply Breaker to 2NHS-HCC009, Breaker 5D.
 - c. At 2NHS-MCC009, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 3C).
 - d. At 2NHS-MCC009, Check open Breaker 7A, 600V Supply from Load Center 2NJS-US6 (Breaker 5D).
 - e. At Load Center 2NJS-US6, Check Voltage as nominally 600V.
 - f. At Load Center 2NJS-US6, rack in Supply Breaker to 2NHS-MCC009, Breaker 3C.
 - g. At Load Center 2NJS-US6, rack in supply breaker to 2NHS-HCC009, Breaker 5D.
 - h. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC009, Breaker 3C.
 - i. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC009, Breaker 5D.
 - j. At 2NHS-MCC009, close Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 3C). Check voltage as nominally 600V.
- NOTE: At 2NHS-MCC009, breaker 7A, the 600V supply from load center 2NJS-US6 (Breaker 5D) will be the alternate source.

<u>NOTE</u>: The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.

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- E. STARTUP PROCEDURE (Cont'd)
 - 23.0 <u>To energize 600V Motor Control Center 2NHS-MCC011</u>
 - a. At Load Center 2NJS-US5, Check open supply breaker to 2NHS-MCC0011, Breaker 4A.
 - b. At Load Center 2NJS-US5, Check open Supply Breaker to 2NHS-MCC011, Breaker 5C.
 - c. At 2NHS-MCCOll, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 4A).
 - d. At 2NHS-MCCO11, Check open Breaker 10A, 600V Supply from Load Center 2NJS-US5 (Breaker 5C).
 - e. At Load Center 2NJS-US5, Check Voltage as nominally 600V.
 - f. At Load Center 2NJS-US5, rack in Supply Breaker to . 2NHS-MCCO11, Breaker 4A.
 - g. At Load Center 2NJS-US5, rack in supply breaker to 2NHS-MCCO11, Breaker 5C.
 - h. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC011; Breaker 4A.
 - i. At Load Center 2NJS-US5, close Supply Breaker to 2NHS-MCC011, Breaker 5C.
 - j. At 2NHS-MCCOll, close Breaker 1A, 600V Supply from Load Center 2NJS-US5 (Breaker 4A). Check voltage as nominally 600V.
 - <u>NOTE</u>: At 2NHS-MCCO11, Breaker 10A, the 600V Supply from Load Center 2NJS-USS (Breaker SC), will be the alternate source.
 - <u>NOTE:</u> The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Control Interlock System.
 - 24.0 <u>To energize 600V Motor Control Center 2NHS-MCC012</u>
 - a. At Load Center 2NJS-US6, Check open supply breaker to 2NHS-MCC012, Breaker 4D.
 - b. At Load Center 2NJS-US6, Check open Supply Breaker to 2NHS-MCC012, Breaker 5A.

- c. At ZNHS-HCCO12, Check open Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 4D).

- d. At 2NHS-MCC012, Check open Breaker 10A, 600V Supply from Load Center 2NJS-US6 (Breaker 5A).
- e. At Load Center 2NJS-US6, Check Voltage as nominally 600V.

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24.0 (Cont'd)

- f. At Load Center 2NJS-US6, rack in Supply Breaker to . 2NHS-MCC012, Breaker 4D.
- g. At Load Center 2NJS-US6, rack in supply breaker to 2NHS-MCC012, Breaker 5A.
- h. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC012, Breaker 4D.
- i. At Load Center 2NJS-US6, close Supply Breaker to 2NHS-MCC012, Breaker 5A.
- 'j. At 2NHS-HCCO12, close Breaker 1A, 600V Supply from Load Center 2NJS-US6 (Breaker 4D). Check voltage as nominally 600V.
- <u>NOTE</u>: At 2NHS-MCCO12, Breaker 10A, the 600V Supply from Load • Center 2NJS-US6 (Breaker SA), will be the alternate source.
- <u>NOTE</u>: The Motor Control Center Supply Breakers will be lined up utilizing the Kirk-Key Interlock Control System.
- 25.0 To energize the normal, welding and lighting 600V Distribution Panels, refer to the main one line diagrams and perform the following steps for each Distribution Panel:
 - a. Check open all Distribution Panel Load Breakers.
 - b. Check open 600V Incoming Supply Breaker (Main Breaker), located on Distribution Panel.
 - c. Close 600V Feed Breaker to Distribution Panel located on respective Load Center.
 - d. Close 600V Incoming Supply Breaker (Main Breaker), located on Distribution Panel.
 - e. Sequentially close Load Breakers on Distribution Panel.

Distribution Panel	Location	Power Supply
2NJS-PNL 100	Turb Build. East El 277'	2NJS-US1
2NJS-PNL 200	Reactor Build. West El 289'	2NJS-US2
2NJS-PNL 300	Turb. Build. West El 277'	NJS-US3
2NJS-PNL 301	Turb. Build. West El 288'.	2NJS-US3
2NJS-PNL 400	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 401	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 402	Normal Swgr. Build. El 261'	2NJS-US4
2NJS-PNL 500	Normal Swgr. Build. El 237'	2NJS-USS
2NJS-PNL 600	Normal Swgr. Build. El 237'	2NJS-US6
2NJS-PNL 700	Turb. Build. East El 277'	2NJS-US7

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25.0 (Cont'd)

<u>Distribution Panel</u>	Location	Power Supply
2NJS-PNL 701	Turb. Build. East El 277'	2NJS-US7
2NJS-PNL 702	Reactor Build. North El 289'	2NJS-US7
2NJS-PNL 703	Reactor Build. North El 289'	2NJS-US7
2NJS-PNL 704	Turb. Build. West El 277'	2NJS-US7
2NJS-PNL 705	Turb. Build. West El 277'	2NJS-US7
2NJS-PNL 706	Electrical Bay El 261'	2NJS-US7
2NJS-PNL 707	Normal Switchgear Bldg El 261	' 2NJS-US7
2LAT PNL 100	Turb. Build. East El 277'	2NJS-US1
2LAR PNL 200	Reactor Build. West El 289'	2NJS-US2
2LAT PNL 300	Turb. Build. West El 277'	2NJS-US3
2LAS PNL 400	Normal Switchgear Bldg EL 261	2NJS-US4
2LAN PNL 900	Radwaste Build. El 279'	2NJS-US9
2WPS PNL 100	Turb. Build. East El 277'	2NJS-US1
2WPS PNL 200	Reactor Build. West El 289' ·	2NJS-US2
2WPS PNL 300 ·	Turb. Build. West El 277'	2NJS-US3
2WPS PNL 400	Normal Switchgear Bldg El 261	' 2NJS-US4

- 26.0 This section includes procedures for placing the maintenance supply for UPSIA in service when UPSIA is de-energized.
 - a. Verify loads on Panel 2VBS-PNLA101 & A102 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - d. On 2VBB-XD500 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #8-D on 2NJS-US5
 - g. Close in loads on Panels 2VBS-PNLA101 & A102 as desired.

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This section includes procedures for placing the de-energized. UPSLA in service:

- a. Check the maintenance supply is in service $\frac{P \cdot T}{P \cdot T} = \frac{P \cdot T}{P \cdot T} =$
- b. Verify that all card cage printed circuit cards are fully seated. (CARD SLOT "5 is Empiry)

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c. Verify that all fuse cutouts within the UPS are properly seated.

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NOTE:

- d. Place the transfer control switch in the manual restart position.
- e. Place the switch for "CB-3" in the open position.
- f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
- g. Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4.
- <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h1 Verify that transfer switch 2VBB-TRS1 indicates normal or emergency condition.

Either condition is permissible to energize the UPS. h 2 Disconnuct the Power Court Plue, P6, To Motor Operator of CB-Y

i. In the UPS place control switches A27-CB1 & A27-S2 in the "ON" position.

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j. Reconnect the motor operator power cable to CB-4.

- k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
- 1. Close breaker #1 on 2VBB-PNL301.
- m. On the UPS, close CB-1.
- n. Push the module "ON" pushbutton.
- o. After a time delay verify that the UPS output volts are nominally 120 VAC.
- p. Verify that the module "ON" light is lit.
- q. Verify on 2BYS-SWG001A that voltage is 130V to 140V.
- r. Close breaker #2-C on 2BYS-SWG001A.
- s. Close breaker CB-2 on UPS1A.
- t. Verify that the "Util Sync OK" lamp is lit.
- u. Verify that the "No break transfer ready to UPS" lamp is lit.
- v. Place the "CB-3" switch in the closed position. The following events will occur:

1. Inverter output "CB-3" closed lamp is lit.

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- 2. The maintence supply breaker "CB-4" open lamp is 3 lit.
- The inverter will pick up load as will be indicated by increases on the: "AC source ammeter" on the UPS.
- 4. The "No break transfer ready, to bypace" Xmaintenance supply. lamp is lit.

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- w. Place the transfer control switch in the "Auto Restart" position.
- 28.0 This section includes procedures for placing the maintenance supply for UPS1B in service when UPS1B is de-energized.
 - a. Verify loads on Panel 2VBS-PNLB101 & B102 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - . d. On 2VBB-XD601 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #4-B on 2NJS-US6
 - g. Close in loads on Panels 2VBS-PNLB101 & B102 as desired.
 - This section includes procedures for placing the de-energized UPS1B in service: مرجيع جرم عليه جرم
 - a. Check the maintenance supply is in service as per Step 3 28.0, a-g above.
 - b. Verify that all card cage printed circuit cards are fully seated. (CARS SLOT #5 15 Fingery)
 - c. Verify that all fuse cutouts within the UPS are properly seated.
 - d. Place the transfer control switch in the manual restart position.
 - e. Place the switch for "CB-3" in the open position.
 - f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
 - g., Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4. N2-OP-71 -28- December 1987

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- E. STARTUP PROCEDURE (cont.)
 - <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h./ Verify that transfer switch 2VBB-TRS1 indicates normal or emergency condition.

NOTE: Either condition is permissible to energize the UPS. h.2 Disconness the Paren cord Plue, Pô, to motor uteration on CB-4.

i. In the UPS place control switches A27-CB1 & A27-S2 in the 2-"ON" position.

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- j. Reconnect the motor operator power cable to CB-4.
- k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
- 1. Close breaker #2 on 2VBB-PNL301.
- m. . On the UPS, close CB-1.
- n. Push the module "ON" pushbutton.
- o. After a time delay verify that the UPS output volts are nominally 120 VAC.
- p. Verify that the module "ON" light is lit.
- q. Verify on 2BYS-SWG001C that voltage is 130V to 140V.
- r. Close breaker #2-A on 2BYS-SWG001C.
- s. Close breaker #CB-2 on UPS1B.
- t. Verify that the "Util Sync OK" lamp is lit.
- u. Verify that the "No break transfer ready to UPS" lamp is lit.
- v. Place the "CB-3" switch in the closed position. The following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit. 3
 - 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
- w. Place the transfer control switch in the "Auto Transfer" position.

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- 30.0 This section includes procedures for placing the maintenance supply for UPS1C in service when UPS1C is de-energized.
 - a. Verify loads on Panel 2LAT-PNLO17 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - d. On 2VBB-XD501 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #4-B on 2NJS-US5
 - g. Close in loads on Panel 2LAT-PNL017 as desired.

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This section includes procedures for placing the de-energized UPS1C in service:

a. Check the maintenance supply is in service as per #30, a-g above.

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Verify that all card cage printed circuit cards are fully ь. seated. (CAAS SLOT AS IS EMPTY)

- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.

e.1) Place the switch for "CB-3" in the open position. e.2) 015- 4- 4- 10- 2-13-90 f. Place control switches A27-CB1 & A27-32 in the "ON"

- position. SI
 - g. Reconnect the motor operator power cable to CB-4.
 - h. Reset all alarms, test that all alarms lights will light, then reset alarms and silence horn.
 - i. On 2LAT-PNL300 close the sub-feed breaker #45 for 2VBB-UPS1C.
 - j. On the UPS close CB-1.
 - k. Push the module "ON" pushbutton.
 - 1. After a time delay verify that the UPS output volts are nominally 120 VAC.

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- m. Verify that the module "ON" light is lit.
- n. Verify on 2BYS-SWG001A that voltage is 130V to 140V.
- o. Close Breaker #2-D on 2BYS-SWG001A.
- p. Close Breaker #CB-2 on UPS1C.
- q. Verify that the "Util Sync OK" lamp is lit.
- r. Verify that the "No Break transfer ready to UPS" lamp is lit.
- s. Place the "CB-3" switch in the closed position. The following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit. [3

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- 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
- t. Place the transfer control switch in the "Auto Restart" position.
- 32.0 This section includes procedures for placing the maintenance supply for UPS1D in service when UPS1D is de-energized.
 - a. Verify loads on Panel 2LAS-PNL016 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - d. On 2VBB-XD600 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #6-C on 2NJS-US6
 - g. Close in loads on Panels 2LAS-PNL016 as desired.
- 33.0
- This section includes procedures for placing the de-energized UPS1D in service:

a. Check the maintenance supply is in service per #32, a-g above.

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STARTUP PROCEDURE (cont.)

- b. Verify that all card cage printed circuit cards are fully seated. (CAAS SHOT #5 15 AMPTY)
- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.

e.1) Place the switch for "CB-3" in the open position. e.2) plsco not and the Power Con plus, pl, to motor of erator to CS-4. f. Place control switches A27-CB1 & A27-32 in the "ON"

- position. 51
- g. Reconnect the motor operator power cable to CB-4.
- h. Reset all alarms, test that all alarm lights will light, then reset alarms and silence horn.
- i. On Panel (2NHS-MCC006) close the #8-A breaker that feed 2VBB-UPS1D.
- j. On the UPS, close CB-1.
- k. Push the module "ON" pushbutton.
- 1. After a time delay verify that the UPS output volts are nominally 120 VAC.
- m. Verify that the module "ON" light is lit.
- n. Verify on 2BYS-SWG001B that voltage is 130V to 140V.
- o. Close Breaker #2-D on 2BYS-SWG001B.
- p. Close Breaker #CB-2 on UPS1D.
- q. Verify that the "Util Sync OK" lamp is lit.
- r. Verify that the "No Break transfer ready to UPS" lamp is lit.
- s. Place the "CB-3" switch in the closed position. the following events will occur:
 - 1. Inverter output "CB-3" closed lamp is lit.
 - 2. The maintenance supply breaker "CB-4" open lamp is lit.
 - 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
 - 4. The "No break transfer ready, to bypass" (maintenance -supply) lamp is lit. N2-OP-71 -32- December 1987

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E. STARTUP_PROCEDURE (cont.)

- t. Place the transfer control switch in the "Auto Restart" position.
- 34.0 This section includes procedures for placing the maintenance supply for UPS1G in service when UPS1G is de-energized.
 - a. Verify loads on Panel 2VBS-PNLC100, C101, C102, and C103, and 2VBB-PNL 300 are in a safe condition for energizing these panels.
 - b. On the UPS verify open: CB-1, CB-2, CB-3.
 - c. On the UPS, verify closed: CB-4
 - d. On 2VBB-XD602 verify CB-1 is closed.
 - e. On UPS disconnect the power cord (unplug) for the motor operator on CB-4.
 - f. Close breaker #6-D on 2NJS-US6
 - g. Close in loads on Panels 2VBS-PNLC100, C101, C102, and C103 and 2VBB-PNL 300 as desired.

0 This section includes procedures for placing the de-energized UPSIG in service: of put in service

- a. Check the maintenance supply is in service per #34, a-g above.
- b. Verify that all card cage printed circuit cards are fully seated. (CARD SLOT #5 15 Frypry)
- c. Verify that all fuse cutouts within the UPS are properly seated.
- d. Place the transfer control switch in the manual restart position.
- e. Place the switch for "CB-3" in the open position.
- f. On 2NJS-US3 & US4 verify that voltage is nominally 600V.
- g. Close/verify closed breaker #13-A on 2NJS-US3 and/or breaker #6-C on 2NJS-US4.
- <u>NOTE</u>: Only close those breakers that have nominal 600V on their associated bus.
 - h./ Verify that transfer switch 2VBB-TRS1 indicates normal or emergency condition.

NOTE:

Either condition is permissible to energize the UPS.

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E. STARTUP PROCEDURE (cont.)

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- h.2) PISCONNET/UDENFT PISCON THE POLER COLOR PE, PG, TO METOR UPANTUR TO CIS-4 In the UPS place control switches A27-CB1 &A27-92 in the <u>i</u>. "ON" position. 51
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- j. Reconnect the motor operator power cable to CB-4.
- k. Reset all alarms, test that all alarm lights will light, reset alarms and silence horn.
- 1. Close breaker #7 on 2VBB-PNL301.
- On the UPS, close CB-1. **m** .
- Push the module "ON" pushbutton. n.
- After a time delay verify that the UPS output volts are 0. nominally 120 VAC.
- Verify that the module "ON" light is lit. p.
- Verify on 2BYS-SWG001C that voltage is 130V to 140V. q.
- Close breaker #2-C on 2BYS-SWG001C. r.
- Close Breaker #CB-2 on UPS1G. з.
- t. Verify that the "Util Sync OK" lamp is lit.
- Verify that the "No Break transfer ready to UPS" lamp is u. lit.
 - Place the "CB-3" switch in the closed position. The following events will occur:
 - Inverter output "CB-3" closed lamp is lit. 1.
 - The maintenance supply breaker "CB-4" open lamp is lit. 2.
 - 3. The inverter will pick up load as will be indicated by increases on the "AC source ammeter" on the UPS.
 - 4. The "No break transfer ready to bypass" (maintenance) -supply) lamp is lit.
- Place the transfer control switch in the "Auto Restart" w. position.
- 36.0 This section contains the startup procedure for energizing the UPS3A loads from maintenance supply when UPS3A its is de-energized.
 - off panels 2VBS*PNLA101, a. Verify that the loads 2VBS*PNLA103, 2VBS*PNLA104, 2VBS*PNLA105, and 2VBS*PNLA106, 2CEC*PNL709 are in a safe condition to allow energization of these panels.

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E. <u>STARTUP PROCEDURE</u> (cont.)

- b. Put the UPS3A manual transfer switch, S-1, in the S maintenance position.
- c. Close breaker #2 on 2NJS-PNLS00.
- d. On 2VBB-XRC503, close the input A.C breaker #CB-1. 2VBB-XRC503 will energize.
- e. Verify "Power in" light is lit on front of 2VBS*ACB1A.
- f. Manually close breaker 2VBS*ACB1A.
- g. Verify "Power in" light is lit on front of 2VBS*ACB2A.
- h. Manually close breaker 2VBS*ACB2A.
- ... Verify "Cower out" light is lit on front of 2VBS*ACB2A.
- j. . Close in loads on panel 2VBS*PNLA101 as desired.

37.0

This section contains the startup procedure for energizing 2VBB-UPS3A:

a. Check that the maintenance supply for UPS3A is in service محامل جمع جرم المراحي المراح

b. On UPS3A, check breaker #CB-1, #CB-2 open.

c. On 2LAT-PNL100, close breaker #26.

- d. On 2BYS-SWG001C, check that voltage is 130V to 140 VDC.
- e. Close breaker #2-C on 2BYS-SWG001C.
- f. On UPS3A, close A.C. input breaker #CB-1
- g. Set the D.C. input voltmeter switch to "rectifier" and 3 check that the voltmeter reads nominally 140 VDC.

NOTE:

As the UPS "Starts Up" an increase in noise will be noticed.

- h. When the UPS starts up, set the output A.C. voltmeter switch to "inverter" and check that it indicates nominal 124 VAC.
- i. Push the lamp test pushbutton, all lamps will light and then go out when button is released.
- j. Check the following indications:
 - 1. "Low Battery" lamp is lit (because CB-2 is open)
 - 2. "Reverse Transfer" lamp is lit.

k. Close battery input breaker, #CB-2. N2-OP-71 -35- December 1987

- 1. Set the D.C. input voltmeter switch to "Battery" and check 2 the battery voltage as 130V - 140 VDC.
- m. Check "Sync Loss" lamp is out.
- n. Place manual transfer switch, S-1, in the static switch | 3 position.

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- o. Push the "Forward Transfer" pushbutton.
- p. Load can be monitored on the "Load Current" ammeter.
- q. Check that all alarm lamps are out.
- 38.0 This section contains the startup procedure for energizing the UPS3B loads from its maintenance supply when UPS3B is de-energized.
 - a. . Verify that the loads on panels 2VBS*PNLB101, 2VBS*PNLB103, 2VBS*PNLB104, 2VBS*PNLB105, and 2VBS*PNLB106, 2CEC*PNL708 are in a safe condition to allow energization of these panels.
 - b. Put the UPS3B manual transfer switch, S-1, in the maintenance position.
 - c. Close breaker #2 on 2NJS-PNL600.
 - d. On 2VBB-XRC603, close the input A.C. breaker #CB-1. 2VBB-XRC603 will energize.
 - e. Verify "power in" light lit on front of 2VBS*ACB1B.
 - f. Manually close breaker 2VBS*ACB1B.
 - g. Verify "power in" light is lit on front of 2VBS*ACB2B.
 - h. Manually close breaker 2VBS*ACB2B.
 - i. Verify "power out" light is lit on front of 2VBS*ACB2B.
 - j. Close in loads off panel 2VBS*PNLB101 as desired.
- 39.0 This section contains the startup procedure for energizing 2VBB-UPS3B:
 - a. Check that the alternate supply for UPS3B is in service per Section D, #38 a-j.
 - b. On UPS3B, check breaker #CB-1, #CB-2 open.
 - c. On 2NJS-PNL402 close breaker #32.
 - d. On 2BYS-SWG001B check that voltage is 130V to 140 VDC. N2-OP-71 -36- December 1987

- e. Close breaker #3-D on 2BYS-SWG001B.
- f. On UPS3B, close A.C. input breaker #CB-1.
- g. Set the D.C. input voltmeter switch to "rectifier" and 3 check that the voltmeter reads nominally 140 VDC.
- NOTE: As the UPS "Starts Up" an increase in noise will be noticed.
 - h. When the UPS starts up, set the output A.C. voltmeter switch to "inverter" and check that it indicates nominal 124 VAC.
 - i. Push the lamp test pushbutton, all lamps will light and then go out when button is released.
 - j. Check the following indications:
 - "Low Battery" lamp is lit (because CB-2 is open).
 "Reverse Transfer" lamp is lit.
 - k. Close battery input breaker, #CB-2.
 - 1. Set the D.C. input voltmeter switch to "Battery" and check 3 the battery voltage is 130V to 140 VDC.
 - m. Check "Sync Loss" lamp is out.
 - n. Place manual transfer switch, S-1, in the static switch 3. position.

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- o. Push the "Forward Transfer" pushbutton.
- . p. Load can be monitored on the "Load Current" ammeter.
- q. Check that all alarm lamps are out.

F. NORMAL OPERATION

- 1.0 Before energizing normal station transformer 2STX-XNS1, ensure that:
 - a. At Panel 852, check open 13.8KV bus 001 supply breaker from normal station service transformer 2STX-XNS1, Breaker 1-3.
 - b. <u>At</u> Panel 852, check open 13.8KV bus 003-supply breaker from normal station service transformer 2STX-XNS1, breaker 3-14.
 - c. At 2STX-XNS1, place oil pumps and fans selector switches in auto.
 - d. At 2STX-XNS1, check closed potential power circuit breaker at load tap changer auto controller.
 - e. At 2STX-XNS1, place local-remote switch in remote position.

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NORMAL OPERATION (cont.)

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f. At 2STX-XNS1, check closed circuit breaker to cooling equipment and check closed circuit breaker to load tap changer.

- g. At 2STX-XNS1, check closed space heater circuit breaker.
- h. At 2STX-XNS1, check transfer tank and load tap changer oil levels as normal.
- i. At 2STX-XNS1, check that transformer tank pressure is between .30 and .55 psig.
- j. At 2STX-XNS1, check automatic gas control equipment in service and gas cylinder pressure as greater than 200 psig.
- k. Check liquid and winding temperatures as less than 80°C.
- 1. At Panel 852, place 2STX-XNS1 load tap changer auto-manual switch in manual.

To transfer station service from reserve to normal

- a. Verify that the main generator has been synchronized and tied to the grid in accordance with OF #68 and a stable load has been established.
- b. At 13.8 KV bus 001, rack in supply breaker from normal station service transformer 2STX-XNS1, breaker 1-3. Check the following lockout relays reset to assure closing permissives are satisfied:
 - 1. Panel 864 Unit Protection Lockout Relay 1
 - 2. Panel 865 Unit Protection Lockout Relay 1
 - 3. Panel 866 Unit Protection Lockout Relay 1
 - 4. Panel 867 Generator Backup Protection Lockout Relay 1
 - 5. Panel 812 13.8 KV Bus NPS-001 Protection Lockout Relay.
 - 6. Check that relay flags are reset.
- c. At 13.8 KV Bus 003, rack in supply breaker from normal station service transformer 2STX-XNS1, Breaker 3-14. Check the following lockout relays reset to assure closing permissives are satisfied:
 - 1. Panel 864 Unit Protection Lockout Relay 1
 - 2. Panel 865 Unit Protection Lockout Relay 1
 - 3. Panel 866 Unit Protection Lockout Relay 1
 - 4. Panel 867 Generator Backup Protection Lockout Relay 1
 5. Panel 813 13.8 KV Bus NPS-003 Protection Lockout Relay.
 - 6. Check that relay flags are reset.
- d. At Panel 852, turn on Synch Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 001, Breaker 1-3.

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F. NORMAL OPBRATION (Cont.)

- e. Check voltages equal and synchroscope in phase, approximately 12 O'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower Control switch (P-852).
- <u>NOTE</u>: Normal station service transformer 2STX-XNS1 load tap changer auto-manual switch will be left in "Manual" for normal operating conditions.
 - f. At Panel 852, close 13.8 KV Bus 001 supply breaker from 2STX-XNS1, breaker 1-3. Check normal station service transformer ammeters to verify load was picked up.
 - g. At Panel 852, turn off Sync. Switch across normal station service transformer 2STX-XNSLVand. 20. Bus 001, breaker 1-3.
 - h. At Panel 852, open 13.8 KV Bus 001 supply breaker from reserve station service transformer 2RTX-XS-R1A, Breaker 1-1, and leave control switch in normal after trip position. Check voltage on 13.8 KV Bus 001 as nominally 13.8 KV.
 - i. At Panel 852, turn on Synch. Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 003, Breaker 3-14.
 - j. Check voltages equal and synchroscope in phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower control switch.
 - k. At Panel 852, close 13.8 KV Bus 003 supply breaker from 2STX-XNS1, breaker 3-14. Check cornel station: service transformer anneters to verify load picked up.
 - At Panel 852, turn off Synch Switch across normal station service transformer 2STX-XNS1 and 13.8 KV Bus 001, breaker 3-14.
 - At Panel 852, open 13.8 KV Bus 003 supply breaker from reserve station service transformer 2RTX-XRS1B, breaker 3-1. Check voltage on 13.8 KV Bus 003 as nominally 13.8 KV.

3.0

After 13.8KV buses 001 and 003 are transferred to normal station service and periodically thereafter, transformer 2STX-XNS1 should be inspected and the following items should be checked as normal:

a. 'Liquid temperature (Less, than 80°c).

b. Winding temperature (Less than 80°c).

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NORMAL OPERATION (Cont.) F.

- Tank pressure (Between -8 and +10 PSIG) c.
- d. Liquid flow (If pump is running)
- Liquid level in transformer θ.
- f. Liquid level in load tap changer
- Fault gas g.
- 4.0
- Normal operation for UPS-1 series and 3-series, 75KVA and 10 KVA

The normal operation of UPS's require little operator action. However, the individual UPS should be checked periodically for the following:

- Ventilation filters clean ۹.
- Ъ. Doors and panel secured
- AC output voltage: For UPS 3A/3B 124V + 2% c.

(121.5 - 126.5)

UPS 1 Series- 120V ± 2%. (117.6 - 122.4 VAC)

5.0 Aux Service Transformers

5.1 The following parameters should be periodically monitored on each transformer, by the operator.

- Winding Temperature (less than 80°C) ۹.
- **b**. Oil Temperature (less than 80°C)
- c. ,Oil Level in Transformer
- Internal Gas Pressure (-5 to +7.5 psig) d.
- SHUTDOWN PROCEDURE G.

19.00

Once established, this system will not be shutdown as a unit. NOTE: Shutdown is considered to be the manual transfer from normal to reserve supply when the main generator is taken out of service.

1.0 To transfer station service from normal to reserve

- Manual transfer from normal to reserve for purposes of 9. shutting down the main generator should be done while the generator is still synchronized to the bus.
- Check the following lockout relays reset to assure closing ь. permissives satisfied, for 13.8KV bus 001.
 - Panel 812 13.8 KV Bug NPS-001 protection lockout 1. relay
 - 2. Panel 805 - Reserve Station Service XFMR 1A Primary Protection Lockout Relay
 - Panel 806 Reserve Station Service XFRM 1A Backup 3. Protection Lockout Relay
 - Panel 867 Generator backup protection lockout relay 2 4. Check that relay flags are reset N2-OP-71 -40- December 1987 5.

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SHUTDOWN (Cont.)

- c. Check the following lockout relays reset to assure closing permissives satisfied, for 13.8KV bus 003.
 - 1. Panel 813 13.8 KV Bus NPS-003 protection lockout
 - 2. Panel 808 Reserve Station Service XFMR 1B Primary Protection Lockout Relay
 - 3. Panel 809 Reserve Station Service XFRM 1B Backup Protection Lockout Relay
 - 4. Panel 867 Generator backup protection lockout relay 2
 - 5. Check that relay flags are reset
- d. At Panel 852, turn on Synch Switch across reserve station service transformer 2RTX-XSRIA and 13.8 KV Bus 001, breaker 1-1.
- e. Check voltages equal and synchroscope in phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower control switch (P852).
- f. At panel 852, close 13.8 KV Bus 001 supply breaker from 2RTX-XSR1A, breaker 1-1. Check reserve station service transformer 2RTX-XSR1A ammeters to verify load was picked up.
- g. At Panel 852 turn off Synch Switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
- h. At Panel 852, open 13.8 KV bus 001 supply breaker from normal station service transformer 2STX-XNS1, Breaker 1-3 and leave Control Switch in the normal after trip position. Check voltage on 13.8 KV Bus. 201. as mominally 13.8 KV.
- i. At Panel 852, turn on Synch Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 003, Breaker 3-1.
- j. Check voltages equal and synchroscope on phase, approximately 12 o'clock. If necessary, adjust the voltage by manual operation of the load tap changer raise-lower switch (P852).
- k. At Panel 852, close supply breaker from 2RTX-XSR1B, Breaker 3-1, check reserve station service transformer 2RTX-XSR1B ammeters to verify load was picked up.

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- G. SHUTDOWN (Cont.)
 - At Panel 852, turn off Synch Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 003, breaker 3-1.
 - m. At Panel 852, open 13.8 KV Bus 003 supply breaker from normal station service transformer 2STX-XNS1, breaker 3-14 and leave control switch in the normal after trip position. Check voltage on 13.8 KV bus 003 as nominally 13.8 KV.
 - n. Station service is now transferred from normal to reserve. Refer to OP #101 for plant shutdown.
 - 2.0 Once the UPS Systems are put into service they should not be shut down as a unit. This would de-energize all UPS loads. However, certain individual composestrate UPS systems may be taken out of service for maintenance, etc. These procedures will be given under section H - off-normal procedures.
- H. OFF NORMAL PROCEDURES
 - NOTE: 13.8 KV Bus 001 Breaker 1-16, 13.8 KV bus 002 Breaker 2-1, and 13.8 KV bus 003 Breaker 3-16. No Breaker is supplied for cubicle.
 - <u>NOTE:</u> For extended outages of reserve station service transformers 2RTX-XSRLA and XSRLB, refer to Sections of this procedure for transferring emergency switchgears to alternate feeds.
 - 1.0 To remove reserve station service transformer 2RTX-XSR1A from service with unit running and station being fed from normal station service:
 - a. At Panel 852, start emergency.dissel generator MEGS*861 and synchronize to emergency bus 2ENS*SWG101 % See "N2-OP-100A).

CAUTION

If a LOCA occurs while the bus is powered by the Diesel Generator alone, circuit #4 must be closed to separate category II service water and breaker 101-1 must be tripped. Note that the following step defeats load sequencing for Div. 1 SWP Pumps.

- b. Station an operator with a flashlight and radio at panel 2BYS*PNL201A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open Breaker 101-13, feed from Transformer 2RTX-XSR1A to bus 2ENS*SWG101.

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- <u>NOTE</u>: Step d and e is not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1B.
 - d. Place the 43LS switch on SWG102 to the ON position.
 - e. At P852, open breaker 102-4.
 - f. Move breaker from 102-4 to 102-5.
 - g. Place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - h. Close breaker 102-5.
 - i. Place the synch switch in the OFF position.
 - j. Place the 43LS switch on SWG102 to the OFF position.
 - k. At Panel 852, 4.16 KV bus 2NNS-SWG016, open Breaker 16-2,
 4.16KV feed from Reserve Station Service Transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102.
 - At Panel 852, 13.8KV bus 2NPS-SWG001 check open breaker 1-1, feed from Reserve Station Service Transformer 2RTX-XSR1A to 13.8 KV Bus.001.
 - m. At 13.8 KV Bus 003, check cubicle 3-16, alternate feed from reserve station service transformer 2RTX-XSR1A, is empty.
 - n. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS3, feed to Reserve Station Service Transformer 2RTX-XSR1A.
 - o. At Panel 852, 13.8KV bus 001, verify that control switch for Breaker 1-16 is in the normal after: trip position.
 - p. At 13.8KV bus 001, rack out and remove Breaker 1-1 from cubicle 1-1 and rack breaker 1-1 into cubicle 1-16, feed to 13.8 KV Bus 001 from reserve station service transformer 2RTX-XSR1B.
- NOTE: Transfer of Station Service from normal to reserve station service will now be from Reserve B Transformer.
- 2.0 To return reserve station service transformer 2RTX-XSR1A to service with unit running and station being fed from normal station service:
 - a. To energize transformer 2RTX-XSR1A, refer to OP-70 Section D.
 - b. At Panel 852, 13.8KV bus 2NPS-SWG*001, verify that control switch for Breaker 1-1 is in the normal after trip position.
 - c. At 13.8KV bus 001, rack out and remove Breaker 1-16 from cubicle 1-16 and rack Breaker 1-16 into cubicle 1-1.

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- d. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1A to 4.16 KV bus 016 as nominally 4.16 KV.
- e. At Panel 852, check breakers 101-13 and 102-4, feed from 4.16 KV Bus 016 to emergency switchgear are open.
- f. At Panel 852, 4.16KV bus 2NNS-SWG016 close Breaker 16-2, 4.16KV feed from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16KV.
- g. At Panel 852, turn on Synch Switch across 4.16 KV Bus 016 and 2ENS*SWG101, Breaker 101-13.
- h. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across Breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- i. Close circuit #4 in panel 2BYS*PNL201A.
- j. At Panel 852, turn off Synch Switch across 4.16KV Bus 016 and 2EHS*SLX-101, Breaker 101-13.
- k. At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- NOTE:

If it is desired to power 2ENS*SWG102 from RTX-XSR1A then perform steps 1, m, n, o, p, g.

- 1. Place the 43LS switch on SWG102 to the ON position.
- m. At P852, open breaker 102-5.
- n. Move the breaker from 102-5 to 102-4.
- o. Place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
- p. Close breaker 102-4.
- q. Place the synch switch in the OFF position.
- r. Place 43LS switch in the OFF position.
- 3.0

To remove reserve station service transformer 2RTX-XSR1B from service with unit running and station being fed from normal station service:

a. At Panel 852, start emergency diesel generator 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

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CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER AND BREAKER 103-14 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP ALSO DEFEATS SWP PUMP LOAD SEQUENCING FOR DIV. 1.

- b. Station an operator with a flashlight and radio at panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an off-site feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open Breaker 103-4, feed from Transformer 2RTX-XSR1B to bus 2ENS*SWG103.
- <u>NOTE</u>: Steps d through j are not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1A.
 - d. Place the 43LS switch on SWG102 in the ON position.
 - e. At P852, open breaker 102-5.
 - f. Move the breaker from 102-5 to 102-4.
 - g. Place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
 - h. Close breaker 102-4.
 - i. Place the synch switch in the OFF position.
 - j. Place the 43LS switch in the OFF position.
 - k. At Panel 852, 4.16 KV bus 2NNS-SWG017, open Breaker 17-2, *
 4.16KV feed from Reserve Station Service Transformer
 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
 - At Panel 852, 13.8KV bus 2NPS-SWG003 check open breaker 3-1, feed from Reserve Station Service Transformer 2RTX-XSR1B to 13.8 KV Bus 003.
 - m. At 13.8 KV Bus 001, check cubicle 1-16, alternate feed from reserve station service transformer 2RTX-XSR1B, is empty.
 - n. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS4, feed to Reserve Station Service Transformer 2RTX-XSR1B.
 - o. At Panel 852, 13.8KV bus 003, verify that control switch for Breaker 3-16 is in the normal after trip position.
 - p. At 13.8KV bus 003, rack out and remove Breaker 3-1 from cubicle 3-1 and rack breaker 3-1 into cubicle 3-16, feed to 13.8 KV Bus 003 from reserve station service transformer 2RTX-XSR1A.
- <u>NOTE</u>: Transfer of Station Service from normal to reserve station service will now be from Reserve A Transformer.

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- H. OFF NORMAL PROCEDURES (Cont.)
 - 4.0 To return reserve station service transformer 2RTX-XSR1B to service with unit running and station being fed from normal station service:
 - a. To energize transformer 2RTX-XSR1B, refer to OP-70 Section D.
 - b. At Panel 852, 13.8KV bus 2NPS-SWG003, verify that control switch for Breaker 3-1 is in the normal after trip position.
 - c. At 13.8KV bus 003, rack out and remove Breaker 3-16 from cubicle 3-16 and rack Breaker 3-16 into cubicle 3-1.
 - d. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1B to 4.16 KV bus 017 as nominally 4.16 KV.
 - e. At Panel 852, check breakers 103-4 and 102-5, feed from 4.16 KV Bus 017 to emergency switchgear are open.
 - f. At Panel 852, 4.16KV bus 2NNS-SWG017 close Breaker 17-2, 4.16KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102. Clieck 4.16KV bus 017 voltage as nominally 4.16KV.
 - g. At Panel 852, turn on Synch Switch across 4.16 KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
 - h. At Panel 852, bus 2ENS*SWG103, check synchronization and voltage across Breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
 - i. Close circuit #4 in Panel 2BYS*201B.
 - j. At Panel 852, turn off Synch Switch across 4.16KV Bus 017 and 2ENS*SWG-103, Breaker 103-4.
 - k. At Panel 852, bus 2ENS*SWG103, open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.
 - NOTE: If it is desired to power 2ENS*SWG102 from RTX-XSR1B then perform steps 1 through r.
 - 1. Place the 43LS switch on SWG102 to the ON position.
 - m. At P852, open breaker 102-4.
 - n. Move the breaker from 102-4 to 102-5.
 - o. Place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - p. At P852, close breaker 102-5.
 - q. Place the synch switch in the OFF position. N2-OP-71 -46 May 1987

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r. Place the 43LS switch in the OFF position.

- 5.0 To remove reserve station service transformer 2RTX-XSR1A from service with unit shutdown and station being fed from Reserve Station Service Transformers 2RTX-XSR1A and 1B.
 - a. At Panel 852, start emergency diesel 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT SWP PUMP LOAD SEQUENCING FOR DIV. 1.

- b. Station an operator with a flashlight and radio at panel 2BYS*PNL2O1A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- c. At Panel 852, open breaker 101-13, feed from transformer 2RTX-XSR1A to bus 2ENS*SWG101 (See N2-OP-100A).
- Steps d through i are not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1B.
 - d. At SWG102 place the 43LS switch in the ON position.
 - e. At P852 open breaker 102-4.
 - f. Move the breaker from 102-4 to 102-5.
 - g. At P852, place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - h. At P852, close breaker 102-5.
 - i. Place the synch switch in the OFF position.
- j. Place the 43LS switch in the OFF position.
- k. At Panel 852, 4.16KV bus 2NNS-SWG016, open breaker 16-2,
 4.16KV feed from Reserve station service transformer
 2RTX-XSRIA to bus 2ENS*SWG101 and bus 2ENS*SWG102.
- 1. At 13.8KV bus 001, rack out and remove breaker 1-3 from cubicle 1-3 and rack breaker 1-3 into cubicle 1-16.
- m. At Panel 852, bus 2NPS-SWG001, turn on synch. switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 001, Breaker 1-16.
- n. At Panel 852, bus 2NPS-SWG001, place the control switch for breaker 1-16 to the close position. Breaker 1-1 will trip and breaker 1-16 will close. 13.8 KV Bus 001 is now fed from reserve 51 N2-0P-71 -47 December 1987 from reserve 51 N2-0P-71 -47 December 1987 from reserve 51 N2-0P-71 -47 December 1987 from reserve 51 N2-0P-71 -47 December 1987

NOTE:

- At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1B and 13.8 KV Bus 001, breaker 1-16.
- p. At Panel 852, bus 2NPS-SWG001, place control switch for breaker 1-1 in the pull to lock position.
- q. At 13.8 KV Bus 003, check cubicle 3-16, alternate feed from reserve station service transformer 2RTX-XSR1A is empty.
- r. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS3, feed to Reserve station service transformer 2-RTX-XSRIA.
- 6.0 To return reserve station service transformer 2RTX-XSR1A to service with unit shutdown and station being fed from Reserve station service transformer 2RTX-XSR1B:
 - a. To energize transformer 2RTX-XSR1A, refer to OP-70 Section E.
 - b. At 13.8KV bus 001 verify that breaker 1-1 is racked in.
 - c. At Panel 852, bus 2NPS-SWG001, turn on synch switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
 - d. At Panel 852, bus 2NPS-SWG001, place the control switch for breaker 1-1 to the close position. Breaker 1-16 will trip and breaker 1-1 will close. 13.8 KV Bus is now being fed from reserve station service transformer 2RTX-XSR1A.
 - e. At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1A and 13.8 KV Bus 001, Breaker 1-1.
 - f. At Panel 852, Bus 2NPS-SWG001, place control switch for breaker 1-16 in the pull to lock position.
 - g. At 13.8KV bus 001, rack out and remove breaker 1-16 from cubicle 1-16 and rack breaker 1-16 into cubicle 1-3.
 - h. At Panel 852, check 4.16 KV feed from reserve station service transformer 2RTX-XSR1A to 4.16 KV Bus 016 as nominally 4.16 KV.
 - i. At Panel 852, check breakers 101-13 & 102-4, feeds from 4.16 KV bus 016 to emergency switchgear are open.
 - j. At Panel 852, bus 2NNS-SWGO16, close breaker 16-2 4.16KV feed from Reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16 KV.

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- k. At Panel 852, turn on Synch. Switch across 4.16 KV Bus 016 and 2ENS*SWG 101, Breaker 101-13.
- 1. At Panel 852, bus 2ENS*SWG101 check synchronization and voltage across breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- m. Close circuit #4 in Panel 2BYS*PNL201A.
- n. At Panel 852, turn off synch. switch across 4.16 KV Bus 016 and 2ENS*SWG 101, Breaker 101-13.
- o. At Panel 852, bus 2ENS*SWG101, open emergency discel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- NOTE:

If it is desired to power 2ENS*SWG102 from RTX-XSR1A then perform steps p through v.

- p. Place the 43LS switch on SWG102 in the ON position.
- q. At P852, open breaker 102-5.
- r. At P852, place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
- s. Move the breaker from 102-5 to 102-4.
- t. At P852 close breaker 102-4.
- u. Place the synch switch in the OFF position.
- v. Place the 43LS switch in the OFF position.
- 7.0

To remove reserve station service transformer 2RTX-XSR1B from service with unit shutdown and station being fed from Reserve Station Service Transformers 2RTX-XSR1A and 1B.

a. At Panel 852, start emergency diesel 2EGS*EG3 and synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 103-14 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 2 SWP PUMPS.

b. Station an operator with a flashlight and radio at Panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed. N2-OP-71 -49- December 1987

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- c. At Panel 852, open breaker 103-4, feed from transformer 2RTX-XSR1B to bus 2ENS*SWG103 (See N2-OP-100A).
- <u>NOTE</u>: Step d through j is not necessary if bus 2ENS*SWG102 is being fed from Reserve Station Service Transformer 2RTX-XSR1A.
 - d. At SWG102, place the 43LS switch in the ON position.
 - e. At P852, open breaker 102-5.
 - f. At P852, place the synch switch for the primary feed to bus 102 from NNSO16 in the ON position.
 - g. Move the breaker from 102-5 to 102-4.
 - h. At P852, close breaker 102-4.
 - i. Place the synch switch in the OFF position.
 - j. Place the 43LS switch on SWG102 in the OFF position.
 - k. At Panel 852, 4.16KV bus 2NNS-SWG017, open breaker 17-2, 4.16 KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
 - 1. At 13.8KV bus 003, rack out and remove breaker 3-14 from cubicle 3-14 and rack breaker 3-14 into cubicle 3-16.
 - m. At Panel 852, bus 2NPS-SWG003, turn on synch. switch across reserve station service transformer 2RTX-XSR1A and 13.8KV Bus 003, Breaker 3-16.
 - n. At Panel 852, bus 2NPS-SWG003, place the control switch for breaker 3-16 to the close position. Breaker 3-1, will, trip and breaker 3-16 will close. 13.8KV Bus 003 is 'now being fed from reserve station service transformer 2BTX-XSB1A.
 - o. At Panel 852, turn off Synch. Switch across reserve station service transformer 2RTX-XSR1A and 13.8KV Bus 003 Breaker 3-16.
 - p. At panel 852, bus 2NPS-SWG003, place control switch for breaker 3-1 in the pull to lock position.
 - q. At 13.8 KV Bus 001 check cubicle 1-16, alternate feed from reserve station service transformer 2RTX-XSR1B is empty.
 - r. At Panel 852, 115KV bus, open circuit_switcher 2YUC-MDS4, feed to reserve station service transformer 2RTX-XSR1B.
- 8.0 To return reserve station service transformer 2RTX-XSR1B to service with unit shutdown and station being fed from Reserve Station Service transformer, 2RTX-XSR1A:

a. To energize transformer 2RTX-XSR1B refer to OP-70 Section E. N2-OP-71 -50- March 1988

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- b. At 13.8KV bus 003 verify that breaker 3-1 is racked in.
- c. At Panel 852, bus 2NPS-SWG003, turn on Synch. Switch across reserve station service transformer 2RTX-XSR1B and 13.8KV Bus 003, Breaker 3-1.
- d. At Panel 852, bus 2NPS-SWG003, place the control switch for breaker 3-1 to the close position. Breaker 3-16 will trip and breaker 3-1 will close. 13.8KV Bus 003 is now fed from reserve station service transformer 2RTX-XSR1B.
- e. At Panel 852, turn off synch switch across reserve station service transformer 2RTX-XSR1B and 13.8KV Bus 003, Breaker 3-1.
- f. At Panel 852, Bus 2NPS-SWG003, place control switch for Breaker 3-16 in the pull to lock position.
- g. At 13.8KV bus 003, rack out and remove breaker 3-16 from cubicle 3-16 and rack breaker 3-16 into cubicle 3-14.
- h. At Panel 852, check 4.16KV feed from reserve station service transformer 2RTX-XSR1B to 4.16KV Bus 017 as nominally 4.16KV.
- i. At Panel 852, check breakers 103-4 and 102-5 feeds from 4.16 KV Bus 017 to emergency switchgear are open.
- j. At Panel 852, bus 2NNS-SWG017, close breaker 17-2 4.16KV feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102. Check 4.16KV bus 017 voltage as nominally 4.16 KV.
- k. At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- At Panel 852, bus 2ENS*SWG103 check synchronization and voltage across breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
- m. Close circuit #4 in Panel 2BYS*PNL201B.
- n. At Panel 852, turn off Synch. switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- o. At Panel 852, bus 2ENS*SWG103, open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.

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- <u>NOTE:</u> Steps p through v are not necessary if Bus 2ENS*SWG102 is being TCN-6 fed from reserve station service transformer 2RTX-XSR1A.
 - p. Place the 43LS switch on SWG102 in the ON position.

q. At P852, open breaker 102-4. N2-OP-71 -51 May 1987

- H. OFF_NORMAL PROCEDURES (Cont.)
 - r. Move the breaker from 102-4 to 102-5.
 - s. At P852, place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
 - t. At P852, close breaker 102-5.
 - u. At P852, place the synch switch in the OFF position.
 - v. Place the 43LS switch on SWG102 in the OFF position.
 - 9.0 To remove auxiliary boiler service transformer 2ABS-X1 from service.
 - NOTE: No breakers are supplied for cubicles 18-2 bus 2NNS-SWG018 and 2-1 bus 2NPS-SWG002.
 - a. Refer to OP-48 for removing auxiliary boilers from service.
 - b. At Panel 852, bus 2NPS-SWG002, open breaker .2-5, 13.8KV feed to bus 2NPS-SWG002 and place control switch in the pull to lock position.
 - c. At Panel 852, bus 2NNS-SWG018, check open breaker 18-2, 4.16KV feed to emergency buses 2ENS*SWG101 and 2ENS*SWG103.
 - d. At Panel 852, 115KV bus, open circuit switcher 2YUC-MDS5, 115KV feed to transformer 2ABS-X1.
 - e. At Panel 852, check that bus 2NNS-SWG018 and bus 2NPS-SWG002 voltage reads zero.
 - 10.0 To return Auxiliary boiler service transformer 2ABS-X1 to service:
 - <u>NOTE</u>: No breakers are supplied for cubicles 18-2 bus 2NNS-SWG018 and 2-1 Bus 2NPS-SWG002.
 - a. 'To energize auxiliary boiler service transformer 2ABS-X1, refer to OP-70 Section E.
 - b. To energize 13.8KV Bus 002, refer to this procedure Section E, Step 4.
 - c. To energize 4.16KV Bus 018, refer to this procedure Section E, Step 15.
 - 11.0 To remove auxiliary boiler service transformer 2ABS-X1 from service and supply auxiliary boilers from reserve station service transformer 2RTX-XSR1A.
 - a. To remove auxiliary boiler service transformer 2ABS-X1 from service refer to Section H Step 9 this procedure.

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CAUTION

STEP C MUST BE DONE WHILE TRANSFORMER 2RTX-XSR1A LOAD BREAKERS; 1-1, 3-16, AND 2-1 ARE OPEN.

- b. To remove reserve station service transformer 2RTX-XSR1A from service refer to this procedure Section H Step 5.
- c. Close neutral disconnect switch 2RTX-SW001 in the grounding circuit for the 13.8KV windings of reserve station service transformer 2RTX-XSR1A.
- d. At Panel 852, 115KV bus, close circuit switcher 2YUC-MDS3, feed to Reserve A transformer. (See OP-70)
- e. At Panel 852, check 4.16KV feed from reserve station service transformer 2RTX-XSR1A to 4.16KV Bus 016 as nominally 4.16KV.
- f. At Panel 852, check breakers 101-13 and 102-4, feed from 4.16KV Bus 016 to emergency switchgear are open.
- g. At Panel 852, 4.16KV bus 2NNS-SWG016, close breaker 16-2, 4.16KV feed to emergency bus 2ENS*SWG101 and 2ENS*SWG102. Check 4.16KV bus 016 voltage as nominally 4.16KV.
- h. At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG101, breaker 101-13.
- i. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-13.
- j. Close circuit #4 in Panel 2BYS*PNL201A.
- k. At Panel 852, turn off Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG101, breaker 101-13.
- At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
- Steps m through s are not necessary if Bus 2ENS*SWG102 is being fed from reserve station service transformer 2RTX-XSR1B.
 - m. At SWG102, place the 43LS switch in the ON Position.

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n. At P852, open breaker 102-4.

NOTE:

o. Move the breaker from 102-4 to 102-5.

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- p. At P852, place the synch switch for the alternate feed bus 102 from NNSO17 in the ON position.
- q. At P852, close breaker 102-5.
- r. At P852, place the synch switch in the OFF position.
- s. At SWG102, place the 43LS switch in the OFF position.
- 12.0

To return auxiliary boiler service transformer 2ABS-X1 to service and return reserve station service transformer 2RTX-XSR1A to normal feed:

- a. Verify auxiliary boiler service transformer 2ABS-X1 is de-energized by checking open breaker 18-2 bus 2NNS-SWG018; breaker 2-5 bus 2NPS-SWG002 and circuit switcher 2YUC-MDS5.
- b. Remove auxiliary boilers from service in accordance with OP-48.
- c. At Panel 852, 13.8 KV bus 2NPS-SWG002, open breaker 2-1 feed from reserve station service transformer 2RTX-XSR1A and check that voltage reads zero on bus 2NPS-SWG002. Place control switch for breaker 2-1 in the pull to lock position.
- d. At 13.8KV bus 2NPS-SWG002, rack out and remove breaker 2-1 from cubicle 2-1 and rack breaker 2-1 into cubicle 2-5.
- e. At Panel 852, start emergency diesel 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100B).

CAUTION

IF. A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

- f. Station an operator with a flashlight and radio at Panel 2BYS*PNL201A. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- g. At Panel 852, open breaker 101-13, feed from reserve station service transformer 2RTX-XSR1A to emergency bus 2ENS*SWG101 (See OP-72).
- NOTE:

Steps h through m are not necessary if bus 2ENS*SWG102 is being fed from reserve station service transformer 2RTX-XSR1B.

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- h. At SWG102, place the 43LS switch in the ON position.
- i. At P852, open breaker 102-4.
- j. Move the beraker from 102-4 to 102-5.
- k. At P852, place the synch switch for the alternate feed to bus 102 from NNSO17 in the ON position.
- 1. At P852, close breaker 102-5.
- m. Place the synch switch in the OFF position.
- n. Place the 43LS switch in the OFF position.
- o. At Panel 852, bus 2NNS-SWG016, open breaker 16-2, 4.16KV feed from Reserve station service transformer 2RTS-XSR1A to emergency bus 2ENS*SWG101 and 2ENS*SWG102.
- p. At Panel 852, bus 2NPS-SWG001 verify breaker 101, Reserve A feed to bus 2NPS-SWG001 is open.
- q. At 13.8KV Bus 003, check cubicle 3-16 alternate feed from reserve station service transformer 2RTX-XSR1A is empty.
- r. At Panel 852, 115KV bus open circuit switcher 2YUC-MDS3, feed to reserve station service transformer 2RTX-XSR1A.

CAUTION

STEP S MUST BE DONE WHILE TRANSFORMER 2RTX-XSRIA LOAD BREAKERS: 1-1, 3-16, AND 2-1 ARE OPEN.

- s. Open neutral disconnect switch 2RTX-SW001 in the grounding circuit for the 13.8KV windings of reserve station service transformer 2RTX-XSR1A.
- t. Energize reserve station service transformer 2RTX-XSR1A and transfer 13.8KV bus 2NPS-SWG001 feed in accordance with Section H Step 6 this procedure.
- u. Energize auxiliary boiler transformer and 13.8KV bus 2NPS-SWG002 in accordance with Section H Step 10 this procedure.
- 13.0 To transfer emergency' bus 2ENS*SWG102 normal feed from Reserve station service transformer 2RTX-XSR1A to reserve station service transformer 2RTX-XSR1B.
 - a. At Panel 852, bus 2NNS-SWG017, verify that breaker 17-2 is closed. Check 4.16KV bus 017 voltage as nominally 4.16KV.

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b. At SWG102, place the 43LS switch in the ON position.

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- c. At Panel 852, bus 2ENS*SWG102, open breaker 102-4, feed from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG102.
- d. At bus 2ENS*SWG102 rack out and remove breaker 102-4 from cubicle 102-4 and rack breaker 102-4 into cubicle 102-5.

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- e. At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG102, breaker 102-5.
- f. At Panel 852, close breaker 102-5.
- g. At Panel 852, turn off Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG102, Breaker 102-5.
- h. Place the 43LS switch in the OFF position.
- 14.0 To transfer emergency bus 2ENS*SWG102 feed from Reserve station service transformer 2RTX-XSR1B to reserve station service transformer 2RTX-XSR1A.
 - a. At Panel 852, bus 2NNS-SWG016, verify that breaker 16-2 is closed, check 4.16KV bus 016 voltage as nominally 4.16KV.
 - b. At SWG102, place the 43LS switch in the ON position.
 - c. At Panel 852, bus 2ENS*SWG102, open breaker 102-5, feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG102.
 - d. At bus 2ENS*SWG102 rack out and remove breaker 102-5 from cubicle 102-5 and rack in breaker 102-5 into cubicle 102-4.
 - e. At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG102, breaker 102-4.
 - f. At Panel 852, close breaker 102-4.
 - g. At Panel 852, turn off Synch. Switch across 4.16KV Bus 016 and 2ENS*SWG102, Breaker 102-4.
 - h. Place the 43LS switch in the OFF position.

15.0

NOTE:

To transfer emergency bus 2ENS*SWG101 feed from reserve station service transformer 2RTX-XSR1A to Aux. boiler transformer 2ABS-X1:

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-----Step-a.-is-not-required-if-Bus-2ENS*SWG102-is-being-fed-from--reserve-station-service-transformer-2RTX-XSR1B.

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- Qbr. At Panel 852, 115KV bus, verify that Aux. boiler transformer 2ABS-X1 is energized.
- *b.z.* At Panel 852, start emergency diesel generator 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 HUST BE CLOSED TO SEPARATE CATEGORY ICN-12 II SERVICE WATER, AND BREAKER 101-1' MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

- C.C. Station an operator with a flashlight and radio at panel 2BYS*PNL2OIA. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At Panel 852, bus 2ENS*SWG101 open breaker 101-13 feed from 4.16KV bus 2NNS-SWG016 to bus 2ENS*SWG101. Place control switch for breaker 101-13 in the pull to lock position.
 - f....At Panol 852, bus 2NNS-SEC016, open breaker-16-2, feed from -Reserve station service transformer 2RTX-XSR1A to bus -2ENS*SEG101 and bus 2ENS*SEG102, Place control switch for -breaker-16-3 in the pull to lock position.
 - g----At-Panol-852, lock-out-aux.-boilor-transformer-2ABS-X1-foodto__emergency_buses_2ENS*SUGLO1_and_2ENS*SUG103, Breaker-18-2
 - e. At Aniel 852, VERIFY beenker 18-2 is closed And NWS-SWE 018 is ENERGIESD.
 - h.___At__416KV_bus__016_rack_out_and_romovo_broaker_16-2_from _cubiclo_16-2_and_rack_broaker_16-2_into_4.16_KV_bus_018-_cubiclo_18-2.
- fX. At bus 2ENS*SWG101 rack out and remove breaker 101-13 from cubicle 101-13 and rack breaker 101-13 into cubicle 101-10.
 - -j--At-Panol-852, buc-2NNS-SWCOl8, cloco-brockor-18-2, food -from-2ABS-X1-transformor-to-buc-2ENS*SWC101-and-buc--2ENS*SWC103.
- g.K. At Panel 852, turn on Synch. Switch across 4.16KV Bus 018 and 2ENS*SWG101, Breaker 101-10.
- h A. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across breaker 101-10. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage and frequency (See N2-OP-100A) and close breaker 101-10. N2-OP-71 -57- December 1987

- At Panel 852, turn off Synch. Switch across 4.16 KV Bus 018 and 2ENS*SWG101, Breaker 101-10.
- K ø. At Panel 852, bus 2ENS*SWG101, open emergency diesel generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.

16.0

- To transfer emergency bus 2ENS*SWG101 feed from Aux. boiler transformer 2ABS-X1 to reserve station service transformer 2RTX-XSR1A:.
 - a. At Panel 852, 115KV bus, verify that reserve station service transformer 2RTX-XSRLA is energized.
 - b. At Panel 852, start emergency diesel generator 2EGS*EG1 and synchronize to emergency bus 2ENS*SWG101 (See N2-OP-100A).

CAUTION

IF A LOCA OCCURS WHILE THE BUS IS POWERED BY THE DIESEL GENERATOR ALONE, CIRCUIT #4 MUST BE CLOSED TO SEPARATE CATEGORY II SERVICE WATER, AND BREAKER 101-1 MUST BE TRIPPED. NOTE THAT THE FOLLOWING STEP WILL ALSO DEFEAT LOAD SEQUENCING FOR DIV. 1 SWP PUMPS.

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- c. Station an operator with a flashlight and radio at panel 2BYS*PNL2OIA. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At panel 852 bus 2ENS*SWG101 open breaker 101-10, feed from 4.16KV bus 2NNS-SWG018 to bus 2ENS*SWG101. Place control switch for Breaker 101-10 in the pull to lock position.
- e. At Panel 852, bus 2NNS-SWG018, open breaker 18-2, feed from Aux. boiler transformer 2ABS-X1 to bus 2ENS*SWG101 and bus 2ENS*SWG103. Place control switch for breaker 18-2 in the pull to lock position.
- f. At Panel 852, lockout reserve station service transformer 2RTX-XSRLA feed to emergency buses 2ENS*SWG101 & 2ENS*SWG102, Breaker 16-2.
- g. At 4.16KV bus 018 rack out and remove breaker 18-2 from cubicle 18-2 and rack breaker 18-2 into 4.16KV bus cubicle 16-2.
- h. At bus 2ENS*SWG101 rack out and remove breaker 101-10 from cubicle 101-10 and rack breaker 101-10 into cubicle 101-13.

i. At Panel 852, bus 2NNS-SWG016, close breaker 16-2, feed from reserve station service transformer 2RTX-XSR1A to bus 2ENS*SWG101 and bus 2ENS*SWG102. N2-OP-71 -58- December 1987

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- H. OFF NORMAL PROCEDURES (Cont.)
 - At Panel 852, turn on Synch. Switch across 4.16KV Bus 016 j. and 2ENS*SWG101, Breaker 101-13.
 - k. At Panel 852, bus 2ENS*SWG101, check synchronization and voltage across breaker 101-13. Make necessary adjustments to emergency diesel generator 2EGS*EG1 voltage frequency (See N2-OP-100A) and close breaker 101-13.
 - 1. Close circuit #4 in panel 2BYS*PNL201A.
 - At Panel 852, turn off Synch. Switch across 4.16 KV Bus 016 m. and 2ENS*SWG 101, Breaker 101-13.
 - At Panel 852, bus 2ENS*SWG101 open emergency diesel л. generator 2EGS*EG1 output breaker 101-1 in accordance with N2-OP-100A and place diesel in standby.
 - Transfer emergency bus 2ENS*SWG102 from reserve station ο. service transformer 2RTX-XSR1B to reserve station service transformer 2RTX-XSR1A per Section H Step 14 of this procedure.

NOTE:

17.0

- Normal feed to Bus 2ENS*SWG102 is from reserve station transformer 2RTX-XSR1A with 2RTX-XSR1B as the alternate source.
- To transfer emergency bus 2ENS*SWG103 feed from reserve station service transformer 2RTX-XSR1B to aux. boiler transformer 2ABS-X1:

Verify that bus 2ENS*SWG102 is fed from it's normal source, **a** . 2RTX-XSRIA. IF IN mode 1, 2 of 3 And 2615+ SWE 103 is to be transferred to the Aux. bolke bus with ABS-XI pussed from 2RTX-XSRIA, consult with Tech. Spec. 3.9. 1. 1. b. At Panel 8525 115KV bus, verify that aux. boild NOTE :

boiler the same IISKV line is transformer 2ABS-X1 is energized ANd breaker 13-2 closed,

> At Panel 852, start emergency diesel generator 2EGS*EG3 and c. synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

CAUTION

If a LOCA occurs while the bus is powered by the Diesel Generator alone, circuit #4 must be closed to separate category II service water, and breaker 103-14 must be tripped. Note that the following step will also defeat load sequencing for Div. 2 SWP Pumps.

- Station an operator with a flashlight and radio at panel _**d** . Open circuit #4 and remain at the panel 2BYS*PNL201B. until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At Panel 852, bus 2ENS*SWG103 open breaker 103-4 feed from 4.16KV bus 2NNS-SWG017 to bus 2ENS*SWG103. Place control e. switch for breaker 103-4 in the pull to lock position. N2-OP-71 -59- December 1987

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18-2-

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At Panel 852, lock out aux boiler transformer 2ABS-X1-foed ---to--emergency--buses-2ENSXSWG101-and-2ENSXSWG103-Breaker-

breaker-17-2-in-the-pull-to-lock-position.

-At-Panel-852,-bus-2NNS-SWGO17,-open-breaker-17-2,-feed_from Reserve-station-service-transformer-2RTX-XSR18-to-bus

-2ENS*SWG102-and-bus-2ENS*SWG103-Place-control-switch-for

TCN-1

- f, K. Check control switch for breaker 103-2 is in pull-to-lock position.
- 9 X. At bus 2ENS*SWG103 rack out and remove breaker 103-4 from cubicle 103-4 and rack breaker 103-4 into cubicle 103-2.
 - At-Panol-852, bus-2NNS-SWG018, close-breaker-18-2, feed-<u>-from 2ABS-X1 transformer to bus 2ENS*SWG101 and bus</u> ZENS*SWG103-
- At Panel 852, turn on Synch. Switch across 4.16KV Bus 018 h X. and 2ENS*SWG103, Breaker 103-2.
- ix. At Panel 852, bus 2ENS*SWG103, check synchronization and voltage across breaker.-103-2. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-2.
- Close circuit #4 in Panel 2BYS*PNL201B. بکھر ز_
- К ж. At Panel 852, turn off Synch. Switch across 4.16 KV Bus 018 and 2ENS*SWG103, Breaker 103-2.
- At Panel 852, bus 2ENS*SWG103, open emergency diesel Lø. generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby.

CAUTION

time will both emergency bus 2ENS*SWG101 At no and 2ENS*SWG103 be paralleled on bus 2NNS-SWG018.

18.0

- To transfer emergency bus 2ENS*SWG103 feed from Aux. boiler transformer 2ABS-X1 to reserve station service transformer 2RTX-XSR1B:
 - At Panel 852, 115KV bus, verify that reserve station 8. service transformer 2RTX-XSR1B is energized.
 - At Panel 852, start emergency diesel generator 2EGS*EG3 and b. synchronize to emergency bus 2ENS*SWG103 (See N2-OP-100A).

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CAUTION

If a LOCA occurs while the bus is powered by the Diesel Generator alone, circuit #4 must be closed to separate category II service water, and breaker 103-14 must be tripped. Note that the following step will also defeat Div. 2 SWP Pump load Sequencing.

- c. Station an operator with a flashlight and radio at panel 2BYS*PNL201B. Open circuit #4 and remain at the panel until an offsite feeder breaker is closed on the bus, and circuit #4 is closed.
- At panel 852 bus 2ENS*SWG103 open breaker 103-2, feed from
 4.16KV bus 2NNS-SWG018 to bus 2ENS*SWG103. Place control switch for Breaker 103-2 in the pull to lock position.
- e. At Panel 852, bus 2NNS-SWG018, open breaker 18-2, feed from Aux. boiler transformer 2ABS-X1 to bus 2ENS*SWG101 and bus 2ENS*SWG103. Place control switch for breaker 18-2 in the pull to lock position.
- f. At Panel 852, verify the control switch for the reserve station service transformer 2RTX-XSR1B feed to emergency buses 2ENS*SWG103 & 2ENS*SWG102, Breaker 17-2 is in the "pull to lock" position.
- g. At 4.16KV bus 018 rack out and remove breaker 18-2 from cubicle 18-2 and rack breaker 18-2 into 4.16KV bus 017 cubicle 17-2.
- h. Check control switch for breaker 103-4 is in pull-to-lock position.
- i. At bus 2ENS*SWG103 rack out and remove breaker 20E-2 from cubicle 103-2 and rack breaker 103-2 into cubicle 103-4.
- j. At Panel 852, bus 2NNS-SWG017, close breaker 17-2, feed from reserve station service transformer 2RTX-XSR1B to bus 2ENS*SWG103 and bus 2ENS*SWG102.
- k. At Panel 852, turn on Synch. Switch across 4.16KV Bus 017 and 2ENS*SWG103, Breaker 103-4.
- At Panel 852, bus 2ENS*SWG103, check synchronization and voltage across breaker 103-4. Make necessary adjustments to emergency diesel generator 2EGS*EG3 voltage and frequency (See N2-OP-100A) and close breaker 103-4.
- m. Close circuit #4 in Panel 2BYS*PNL201B.
- n. At Panel 852, turn off Synch. Switch across 4.16 KV Bus 017 and 2RNS*SWG103, Breaker 103-4.
- At Panel 852, bus 2ENS*SWG103 open emergency diesel generator 2EGS*EG3 output breaker 103-14 in accordance with N2-OP-100A and place diesel in standby. N2-OP-71 -61- December 1987

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19.0 Loss of normal feed (2NJS-US3) to 2VBB-TRS1 - transfer switch feeding normal A.C. voltage supply to 2VBB-UPS1A, 1B, 1G:

Upon loss of feed 2NJS-US3 to transfer switch 2VBB-TRS1, the UPS and transfer switch will automatically transfer so that there is no loss of load, therefore, no operator action is required.

Description of transfer: Upon loss of power from 2NJS-US3 to 2VBB-TRS1 the "normal" green light on TRS1 will go out and TRS1 will automatically (after a time delay) transfer its input to 2NJS-US4 and the "emergency" red light will light. When normal power is lost to the UPS it will automatically begin drawing power from the batteries.

As soon as TRS 1 transfers to 2NJS-US4 normal power is restored to the UPS and the UPS will bias off (stop drawing from) the batteries and draw from its normal source again. When 2NJS-US3 is re-energized the transfer switch, 2VBB-TRS1, will automatically retransfer back to 2NJS-US3 (after a delay). There is no loss of power to the UPS load and all equipment will restore automatically so no operator action is necessary.

20.0 Loss of normal A.C. power to all series 1 and series 3 UPS

No operator action required. Upon loss of normal A.C. supply to any series 1 or series 3 UPS the UPS will automatically begin accepting power from the batteries. As long as the battery voltage does not fall to an undervoltage condition (due to an off normal condition in the 125VDC system), the UPS can continue to operate off the battery indefinitely. When the normal A.C. source is re-energized, the UPS will automatically bias off (stop drawing from) the batteries and draw power again from its normal source.

21.0 Loss of normal A.C. power with added loss of D.C. backup power to all series 1 and series 3 UPS:

> If there is loss of normal A.C. power to any UPS combined with a loss of (battery) D.C. power, the UPS will automatically transfer its load to its maintenance A.C. source. Once the UPS is on the maintenance source it can operate indefinitely on maintenance power until normal power is available. Once normal power is available the load is automatically retransferred back to the UPS.

22.0 Energized UPS (Series 1 or 3)' with loss of D.C. power without [2] loss of normal A.C. power:

An energized UPS operating on normal A.C. power can experience the loss of D.C. power with no effect on the UPS or its loads. 3 Therefore this requires no operator action.

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NOTE : THIS PROCEDURE WILL RESALT IN THE UPS CRITICAL WADS BEING SUPPLIES FROM THE MAINTENANCE SOURCE , THE UPS INVERTER AND UPS LOGIC POWER WILL BE DE-ENERGIZED . WITH THE UPS LOGIC 6-16-91 POWER DE-ENERGIZED CONTROL ROOM ANNUNCIATION FOR THE ASSOCIATIES UPS WILL BE INHIBITES. OFF NORMAL PROCEDURES (Cont.) Н. 23.0 Transfer of load from UPS 1 series (75 KVA) to the maintenance) ŝ source and shutdown of the UPS. Initial Condition: 1. UPS module supplying critical load. 2. The maintenance source is energized. 3 3. The UPS A.C. input breaker is closed. UPS transfer and shutdown: b. Check that "util sync ok" lamp is lit. 1. MARIANTERNANCE 2. "No - break transfer, to bypass" lamp is lit. rnsp 3. Place the transfer control switch іл the -bypac 15. XmaintenanceX position. This initiates the transfer to maintenance. CB-3 NOTE: ŝ and CB-4 will change position. Release switch and allow it to spring back to the 4. "manual restart" position. 5. Verify breaker CB-4 is closed. 6. Open "switch" CB-3" on panel and verify CB-3 opens. 7. Push "module off" switch. 8. Open battery breaker, CB-2. 9. Manually open A.C. input breaker, CB-1. Using portable D.C. voltmeter on UPS internal D.C. 10. Bus, check that voltmeter indicates less than 30 VDC. NOTE: Allow approx. one minute for DC bus to decay below 30 volts. 12 N. Open control circuit breakers, A27-CB1 and control switch, A27-S1. The UPS is now de-energized except for the load current transformer loops. Refer further isolation and/or repairs to maintenance. 716 11 The DISCONNECT THE POVER CURD PLUE, PG, TO MOTOR OPERATOR TO 2-28.90 CE-4-Removing the altornate supply to any 1-series UPS with the UPS supplying the critical load: 24.0 jr. 2/10/10 Verify UPS "module-on" lamp is lit. а. Check D.C. volts at 130-140 VDC. Ъ. Check output frequency at nominal 60 Hz. c. N2-OP-71 -63- December 1987

F ⁴ tearies ⊐annie spany, wei et sonrasni anterna i p²a p⁻¹a [−]. Li

- d. Check A.C. output volts at nominal 120 volts.
- e. Check breaker toggle switch "CB-3" is in closed position.
- f. Check that breaker CB-4 is open.
- g. Disconnect the power jack for the cable to the motor operator of CB-4.
- h. Place transfer control switch to "manual restart" position.

CAUTION:

BE CAREFUL THAT SWITCH DOES NOT GO TO "BYPASS" ACCIDENTLY.

1. In order to de-energize each maintenance supply open the associated input breaker, CB-1, on the associated transformer.

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- j. To de-energize the feed to each associated transformer, open up the A.C. feed breaker as follows:
- k. For 2VBB-XD500 (UPS1A) open breaker # 8-D on 2NJS-US5 2VBB-XD601 (UPS1B) open breaker # 4-B on 2NJS-US5 2VBB-XD501 (UPS1C) open breaker # 4-B on 2NJS-US5 2VBB-XD600 (UPS1D) open breaker # 6-C on 2NJS-US6 2VBB-XD602 (UPS1G) open breaker # 6-D on 2NJS-US6
- 1. Refer cable removal, etc. to electrical maintenance.
- NOTE:

With UPS in this configuration, a UPS trip will cause a loss of critical load.

- 25.0 Transfer of load from UPS 3A and 3B (10 KVA) to the maintenance source and shutdown of the UPS.
 - 1. Initial Conditions:
 - a. UPS module supplying the critical load.
 - b. The maintenance source is energized.
 - 2. UPS transfer and shutdown
 - a. Check the maintenance supply voltage and frequency to be 3 nominally 124 volts and 60 Hz, respectively.
 - b. Check "Sync. Loss" lamp is out.
 - c. Push reverse transfer (to maintenance) pushbutton.
 - d. Switch manual transfer switch S-1 to the "Maintenance" 3 position.
 - e. Turn off battery circuit breaker CB-2.
 - f. Turn off A.C. input breaker, CB-1.
 - g. Check D.C. rectifier and inverter output volts drop to zerc
 - h. Set output AC voltmeter and frequency meter switch, S-2, t. the "maintenance" position. N2-0P-71 -64- December 1987

- H. OFF NORMAL PROCEDURES (Cont.)
 - 26.0 Removing the maintenance supply to UPS3A or UPS3B with the UPS supplying the critical loads.
 - a. Verify on UPS CB-1 closed.
 - b. Verify on UPS CB-2 closed.
 - c. Verify UPS D.C. volts is 130-140 VDC.
 - d. Verify UPS A.C. output volts to be nominal 124 VAC.
 - e. Verify UPS frequency at nominal 60 Hz.
 - f. Check all alarms clear.
 - g. Move switch S-1, "manual transfer switch" to the "maintenance" switch position.
 - h. On the maintenance supply transformer/regulator open CB-1. WAC INPUT TO MAINTENANCE SUPPLY REGULATOR BREMKER
 - i. Any further isolation and/or repair should be referred to pluid electrical maintenance.
 - NOTE: With UPS and maintenance supply in this position, any UPS fault condition will result in loss of load.
 - 27.0 UPS 1-series restart after a UPS failure trip/transfer to maintenance supply:
 - a. Check the critical load is being powered by the maintenance supply.
 - b. Record all UPS alarm and switch positions, and then push reset buttons A13A34 and A13A21.
 - c. Close/verify closed CB-1, normal AC input.
 - d. Place the transfer control switch in the "manual restart" position.
 - e.1 Place CB-3 toggle switch in the OPEN position.
 - e.2 Push ON pushbutton. After unit stabilizes (running), close CB-2.
 - e.3 Push OFF pushbutton. Place transfer control switch to "AUTO RESTART." Place CB-3 toggle switch in CLOSE position.
 - f. The UPS will automatically restart (after a time relay of approximately 40 sec.) and retransfer back to the UPS.

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TCN-

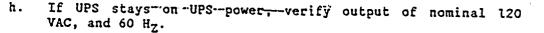
, TCN-1

TCN-1

INVERTER

MANTENANCE If the UPS transfers back to bypace, then move the transfer g٠ control switch to "Manual Restart" and investigate cause. JK. If UPS shutdown is warranted do so per Section H.23.b.5-14. 2/2/00

PIC



- Check transfer Control Switch is in "Auto Restart" position. i.
- 28.0

UPS 1-series shutdown after failure, maintenance source feeding load: 🔨 🔍 🔮

Record all alarms and switch positions on the UPS. a.

Ъ. Place transfer control switch to "manual restart" position.

Follow Section H.23.b.5-14 /3. c.

UPS 3A/3B restart after a UPS failure trip/transfer to maintenance supply:

Check that the critical ,load is being powered by the а. maintenance supply.

Ъ. Record all alarms and switch positions.

Clear all alarms as necessary. c.

- d. Verify A.C. input breaker i£ CB-1 closed, close open/tripped.
- Check D.C. input breaker CB-2 closed. (If tripped, do not e. reset until UPS is up and running.)
- Check UPS D.C. volts 130-140 VDC. ٤.

Check inverter output volts nominally 124 VAC and 60 HZ. g.

Check manual transfer switch, S-1, is in the "static h. switch" position.

i. Check "Sync. Loss" lamp is out.

- j. Push the "forward transfer" (to inverter) pushbutton.
- If the load transfers back to the maintenance supply, then k. investigate the cause. If UPS shutdown is warranted, do so per Section H. 25.
- UPS 3A/3B shutdown after failure, with maintenance source 30.0 feeding load.

Record all alarms and switch positions. a.

Follow Section H. 25. Ъ.

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29.0

31.0 RESTORING THE MAINTENANCE SUPPLY TO UPS 3A OR UPS 3B WITH THE UPS 2-10 SUPPLYING THE CRITICAL LOADS. 90 JL, tyha/92 a. Verify on UPS CB-1 closed, b. Verify on UPS CB-2 Closed, Verify UPS D.C. volts 130-140 VDC С, d. Verify UPS A.C. output volts to be nominal 124 VAC. e. Verify UPS frequency at nominal 60 HZ. f. Check all alarms 'cleargexcept sync loss. g. On the maintenance supply transformer regulator, close the "AC INPUT TO MAINTENANCE SUPPLY REGULATOR " BREAKER ... h. Move switch S-1 "Manual transfer Switch to the "STATIC Switch Auto TRANSFERS POSSIBLE" POSITION.

N2-0P-71 Pg 662

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72.0 Inadvertent Loss of Buss

NOTE:

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Loss of Buss may be indicated by any of the following:

• Trip of Feeder Breaker due to electrical malfunction (typically from electrical fault or undervoltage condition).

- Zero voltage indicated at the affected buss.
- Annunciators in alarm for the associated buss.
- · Loss of loads supplied by the affected buss.
- 32.1.0 OPERATOR ACTIONS

32.1.1 ' Take the necessary actions to place the Plant in a Safe condition.

- JZ.1.2 Refer to Operating Procedures as required.
- 32.1.3 Place all loads on affected Switchgear, Unit sub or Motor Control Center in the Pull-to-Lock position.
- 32.1.4 Place affected Feeder Breakers in the Pull-to-Lock position. 32.1.5 Determine the cause of the inadvertent loss of buss by performing the following steps as appropriate: /
 - performing the following steps as appropriate:Contact Electrical Maint. for assistance.
 - Scan all Control Room panels for abnormal indications which may aid in identifying the cause.
 - Request assistance from I&C and Meter&Test as necessary.
 - Refer to electrical diagrams and load lists as necessary to identify affected loads.
- 32.1.6 Refer to Technical Specifications for possible entry into LCO's.

32.1.7 Attempt to correct or isolate the cause of loss of buss.

<u>CAUTION</u> Trips or Lockout's should not be reset until the cause of the loss of buss has been determined and corrected.

32.2.0 <u>RESTORATION</u>

3.2.1 When the cause of the loss of buss has been determined and corrected then restore power to the buss using the following steps as a guideline.

- a. Verify all load breakers on the affected buss are in Pull-to-Lock.
- b. Reclose Feeder Breaker to re-energize the buss.
- c. Verify proper voltage on the buss.

CAUTION

The following step may involve re-starting of equipment in the plant, Operating Procedures for re-start of those systems must be used.

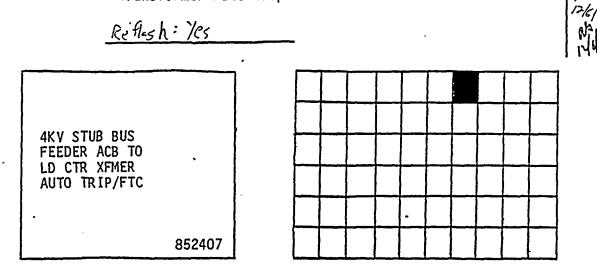
d. Sequentially re-energize loads on the buss by placing the breakers from Pull-to-Lock to the Normal-after-Start position for only those loads which are required to support normal plant operation or as directed by the SSS.
e. Control Room panels should again be scanned to verify that all abnormal indications and alarms caused by the loss of buss have been corrected.

N2-0P-71 - 666.

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PROCEDURE FOR CORRECTING ALARM CONDITIONS Ι.

4KV Stub Bus Feeder Air Circuit Breaker to Load Center 852407 1.0 Transformer Auto Trip Failure to Close



852407

ВLR

1.1	Comp	outer Point	Computer Printout	Source				
	·a. NJSUC13		XIE ACB 14-4 AT/FTC	2NJS-X1E ACB 14-4 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSX21				
	b.	NJSUC14	X1E ACB 14-8 AT/FTC	2NJS-X1E ACB 14-8 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSX31				
<i>.</i> .	c.	NJSUC15	X3E ACB 15-1 AT/FTC	2NJS-X3E ACB 15-1 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSY21				
•	d.	Njsuci 6	X3E ACB 15-7 AT/FTC	2NJS-X3F ACB 15-7 Auto Trip/Failure to Close as sensed by 1 & 52 2NJSY31				

1.2 Automatic Response

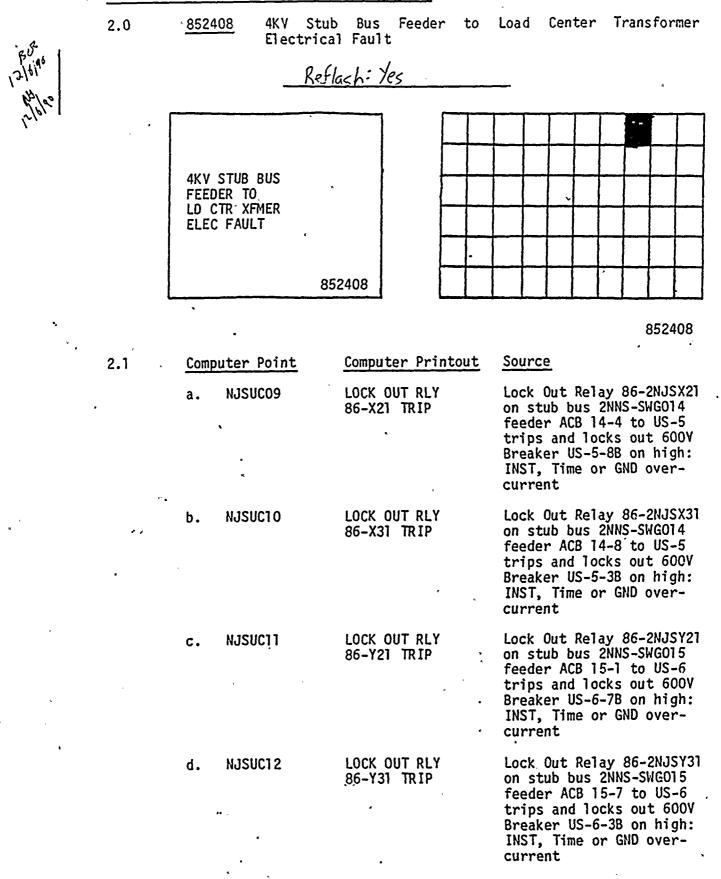
Trip 4160 stub bus feeders to 600V load centers US5 or US6. a.

Corrective Action 1.3

Verify auto station response. a.

- Investigate and determine reason for trip. b.
- When the couse for the trip is corrected, re-emergize Return system to normal. the system per N2-2P-71 sect. E.T.J (E. 10.0), E.17.J (E.18.0) or N2-0P-72 sect. H.Z.O as appropriate. с.

PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I.



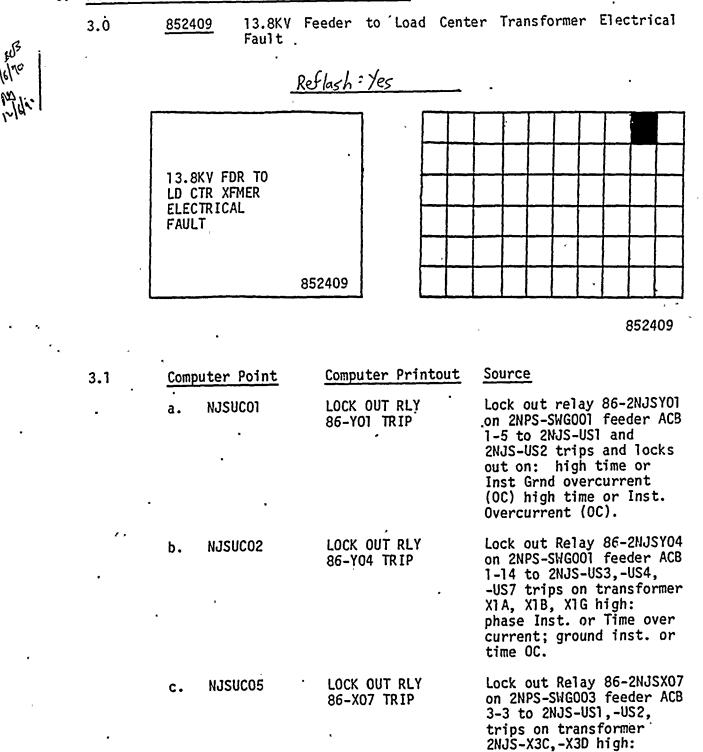
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2.2 Automatic Response

- Trip stub bus feeder 5-8B (86-2NJS-X21) to US-5, bus loads a. trip on sustained under voltage.
- b. Trip stub bus feeder 5-3B (86-2NJS-X31) to US-5, bus loads trip on sustained under voltage.
- c. Trip stub bus feeder 6-7B (86-2NJS-Y21) to US-6, bus loads trip on sustained under voltage.
- Trip stub bus feeder 6-3B (86-2NJS-Y31) to US-6, bus loads d. trip on sustained under voltage.
- 2.3 **Corrective** Action
 - Verify auto matic response. a.
 - Check computer and panel 852 to determine which breaker ь. tripped.
 - Investigate and determine reason for trip. c. When the cause for the trip is corrected, re-energize the Return system to normal system por N2-0P-71 Sect. E.2.0 (E.10,0), E.17.0 (E.18.0) or N2-0P-72 Sect. A.2.0 as appropriate d.

N2-0P-71 -69 · May 1987: I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



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phase Inst. or Time over current; ground inst. or

time OC.

LOCK OUT RLY 86-X10 TRIP

Lock out Relay 86-2NJSX10 on 2NPS-SWG003 feeder ACB 3-13 to 2NJS-US3,-US4, -U57, trips on transformer 2NJS-X3A, -X3B or -X3G high: phase Inst. or Time over current; ground inst. or time OC.

3.2 Automatic Response

- a. Trips and locks out bus breakers: 2NPS-SWG001, ACB1-5; 2NJS-US1, ACB 1-3B; 2NJS-US2, ACB 2-3B. Removes power to the Alternate Access Bldg. Transformer 2JKB-X1.
- b. Trips and Locks out bus breakers: 2NPS-SWG001, ACB 1-14; 2NJS-US3, ACB 3-3B, 2NJS-US4, ACB 4-3B, 2NJS-US7, ACB 7-3B.
- c. Trips and Locks out bus breakers: 2NPS-SWG003, ACB 3-3; 2NJS-US1, ACB 1-14B; 2NJS-US2, ACB 2-12B.
- d. Trips and Locks out bus breakers: 2NPS-SWG003, ACB 3-13; 2NJS-US3, ACB 3-14B; 2NJS-US4, ACB 4-15B; 2NJS-US7, ACB 7-7B.
- 3.3 <u>Corrective Action</u>
 - a. Verify automatic response.
 - b. Check computer and panel, 2CES-PNL852 to determine which breaker tripped.
 - c. Investigate and determine reason for trip.
 - d. Return system to normal.

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I	PROCEDUR	E FOR CORRECTING ALA	RM CONDITIONS (cont.)
alt	4.0		Feeder to Load lure to Close	Center Transformer Auto
2013 13/6/90 13/6/90		Refl	ash: Tes	
Υ "		13.8KV FDR TO LD CTR XFMER AUTO TRIP/ FAIL TO CLOSE 85	52410	
,		•		852410
	4.1	Computer Point	Computer Printout	Source
· ,		a. NJSUCO3	NPSOO1 ACB 1-5 AT/F-T-C	2SWG-NPSOO1 Air Circuit Breaker 1-5 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSYO1
:	• ••	b. · NJSUCO4	NPSOO1 ACB 1-14 AT/F-T-C	2SWG-NPSOOl Air Circuit Breaker 1-14 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSYO4
,	•	c. NJSUCO7	NPSOO3 ACB 3-3 AT/F-T-C	2SWG-NPS003 Air Circuit Breaker 3-3 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSX07
		d. NJSUCO8	NPSOO3 ACB 3-13 AT/F-T-C	2SWG-NPSOO3 Air Circuit Breaker 3-13 Auto Trip/ Failure to Close as sensed by 1 & 52 2NJSX10
,	4.2	Automatic Résponse		
		a. 13.8KV breaker	1-5 open and Ctrl	Sw in Normal after close.
•		b. 13.8KV breaker	1-14 open and Ctrl	Sw in Normal after close.
				C. in Normal affects alors

c. 13.8KV breaker 3-3 open and Ctrl Sw in Normal after close.

d. 13.8KV breaker 3-13 open and Ctr1 Sw in Normal after close.

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4.3 Corrective Action

a. Investigate and determine reason for trip or failure to close.

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b. Return system to normal.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Loss of 115KV From Scriba Alternate 1B Primary Relay 852412 5.0 BCP Reflach : No 12/6/40 LOSS OF 115KV FROM SCRIBA ALTERNATE 1B PRIMARY RELAY 852412 852412 5.1 Computer Printout Source Computer Point Scriba Station (B) 115KV PWR SCRIBA YUCBC08 115KV Line #6 protection (alternate 1) operated ALT 1(B) as sensed by 94-2YUCB01 Automatic Response 5.2 NONE (unless 2YUL-MDS2, MDS20, MDS10 are closed then alarm window 852441 would also be lit. 5.3 Corrective Action Determine the cause of the protection circuit actuation. a. Restore to normal. b.

I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)

6.0 <u>852413</u> Loss of 115KV From Scriba Alternate 28 Backup Relay <u>Reflech :- Nc...</u> LOSS OF 115KV FROM SCRIBA ALTERNATE 28 BACKUP RELAY 852413 6.1 Computer Point Computer Printout Source

5.1	Computer Point	computer Printout	Source
•	YUCBC10	115KV PWR SCRIBA ALT 2 (B)	Scriba Station (B) 115KV Line #6 protection (alternate 2) operated as sensed by 94-2YUCB02

6.2 Automatic Response

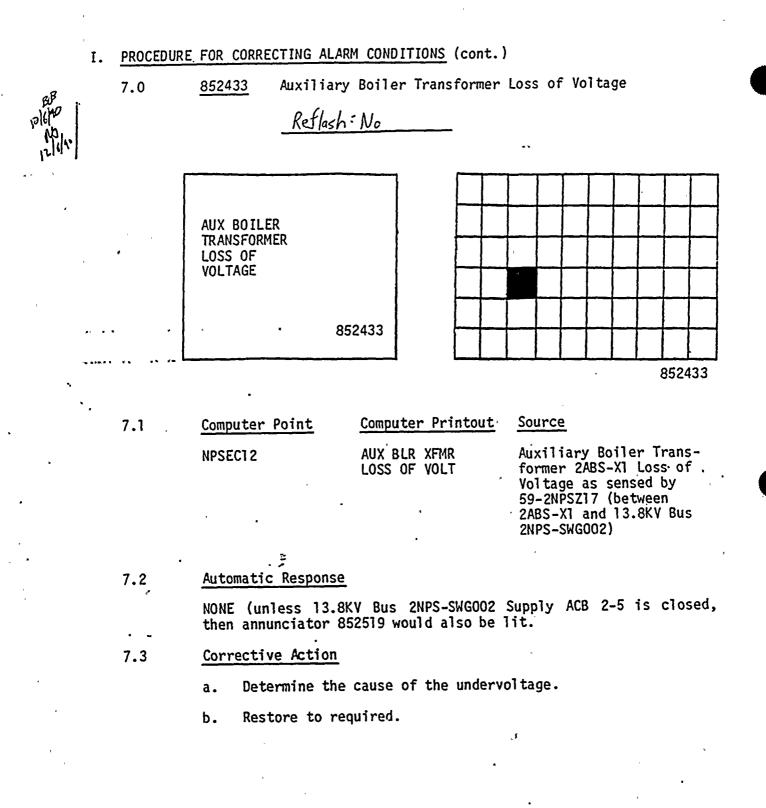
NONE (unless 2YUL-MDS2,-MDS20, MDS10 are closed then alarm window 852441 would also be lit.

6.3 Corrective Action

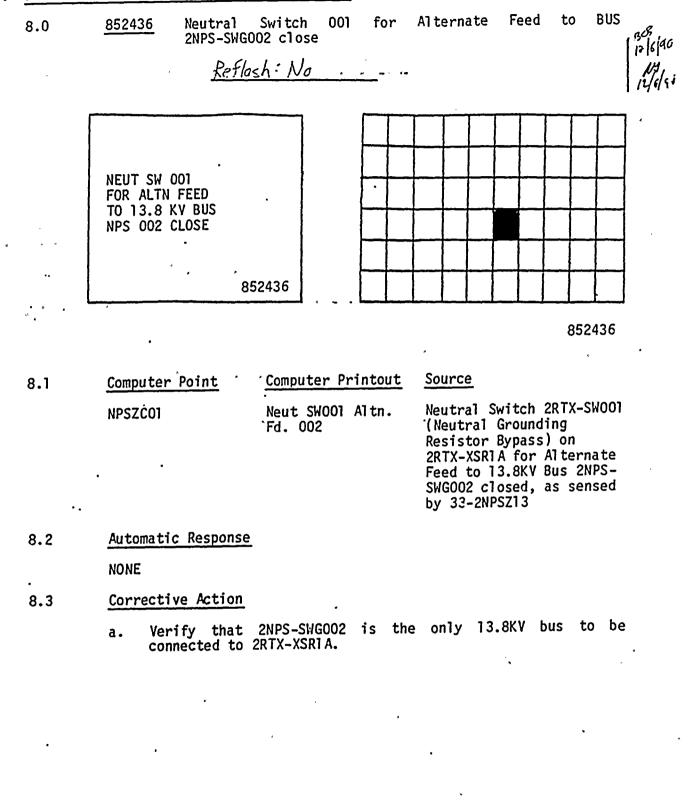
a. Determine the cause of the protection circuit actuation.

b. Restore to normal.

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I. PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.)



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	Ι.	<u>PROCEDUR</u>	E FOR	CORRECTING A	LARI	M CONDIT	IONS	(cor	nt.)								
al .		9.0	8524	137 NJS US	a, 8	8, 9,10,	Elec	ctric	al	Fault	t				¥		(
00/16/61		-		_ <u>Reflash</u>	:	les	4								I		È
10100		. [·····	-	<u></u>	1		[]				.					
			ELEC	8,9,10 CTRICAL													
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		9.1	a.	NJSUC21		USIA AC Elec. F	ж В 1-3	3B		2NJ: Brea Fau	S-USI aker It as C-2NJ	1-38 ; sei	3 Elo 1sed	ectr		÷	
	. •		b.	NJSUC22		USIB AC Elec. F				Bre Fau	S-UST aker 1t as C-2NJ	1-14 s sei	1B E nsed	lect		1	u
		•	С.	NJSUC27		USIA & Elec. F			3B	Cir Ele as	S-USI cuit ctric sense C-2No	Brea al l ed by	aker Faul V	ACB	1 –88	}	
•			d.	NJSUC29		US1B&C Elec. F			B ,	Cir Ele as	S-USI cuit ctric sense C-2No	Brea al l ed by	aker Faul 1	ACB		B	
		•	e.	NJSUC45		US8A Sr ACB 8-3	oly B 3B	rkr		Cir Ele as	S-US cuit ctric sense C-2No	Brea al ad by	aker Faul Y		8-3	38	

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				•					
9.1	<u>Comp</u>	uter Point	Computer Printout	Source (cont.)					
	f.	NJSUC46	US8B Sply Brkr ACB 8-13B	2NJS-US8B Air Circuit Breaker ACB 8-13B Electrical Fault as sensed by 520C-2NJSB08					
	g.	NJSUC44	US8 A & C Sply Brkr ACB 8-7B	2NJS-US8A & US8C Air Circuit Breaker ACB 8-7B Electrical Fault as sensed by 520C-2NJSN41					
• .	h.	NJSUC47	US8B & C Sply Brkr ACB 8-9B	2NJS-US8B & US8C Air Circuit Breaker ACB 8-9B Electrical Fault as sensed by 520C-2NJSN42					
	i.	NJSUC49	US9A Sply Brkr ACB 9-3B	2NJS-US9A Air circuit Breaker ACB 9-3B Electrical Fault as sensed by 520C-2NJSA09					
	j .	NJSUC50	US9B Sply Brkr´ ACB 9-13B	2NJS-US9B Air circuit Breaker ACB 9-13B Electrical Fault as sensed by 520C-2NJSB09					
•	k.	NJSUC48	US9A & US9C Sply Bkr ACB 9-7B	2NJS-US9A & US9C Air Circuit Breaker ACB 9-7B Electrical Fault as sensed by 520C-2NJSN43					
	1.	NJSUC51	US9B & US9C Sply Bkr ACB 9-9B	2NJS-US9B & US9C Air Circuit Breaker ACB 9-9B Electrical Fault as sensed by 520C-2NJSN44					
	m.	NJSUC52	USIOA & C Tie Bkr ACB 10-6B	2NJS-USIOA & USIOC Air Circuit Breaker ACB 10-6B Electrical Fault as sensed by 52OC-2NJSN45					
·	n.	NJSUC53	USIOA Sply Brkr ACB 10-3B	2NJS-US10A Air Circuit Breaker ACB 10-3B Electrical Fault as sensed by 520C-2NJSA10					

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9.1	Compu	iter Point	Computer Printout	Source (cont.)			
	0.	NJSUC54	US10B Sply Brkr _ACB10-12B	2NJS-US10B Air Circuit Breaker ACB 10-12B Electrical Fault as sensed by 520C-2NJSB10			
	p.	NJSUC55	US10B &C Bs Tbkr ACB 10-9B	2NJS-US10B &US10C Bus Tie Breaker Air Circuit Breaker ACB 10-9B Elec. Fault as sensed by 520C-2NJSN46			

- 9.2 Automatic Response
 - a. Trip 600V supply or tie breaker on 2NJSUS1, US8, US9, or US10 (whichever breaker fault occurred on).

9.3 Corrective Action

- a. Check computer to determine which breaker is in alarm.
- b. Dispatch operator to load center US1, US8, US9, US10.

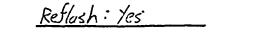
c. Investigate and determine reason for trip.

d. Return system to normal.

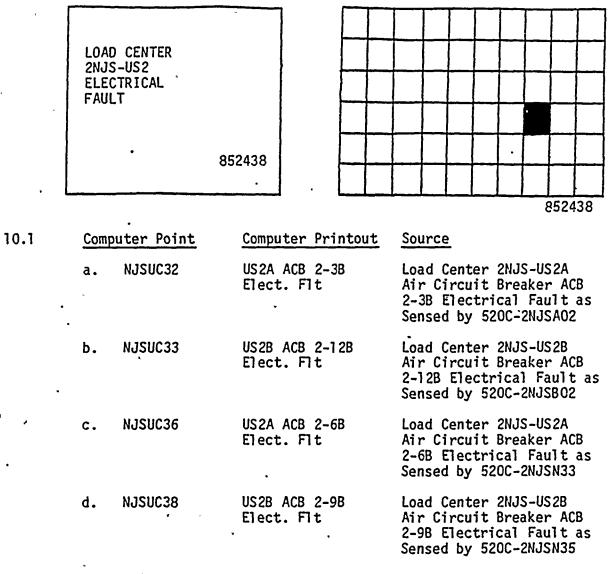
e 2

10.0

852438 Load Center 2NJS-US2 Electrical Fault



12/6/90



10.2 Automatic Response

a. Trip 600V supply or tie breaker, load center 2NJS-US2.

10.3 Corrective Action

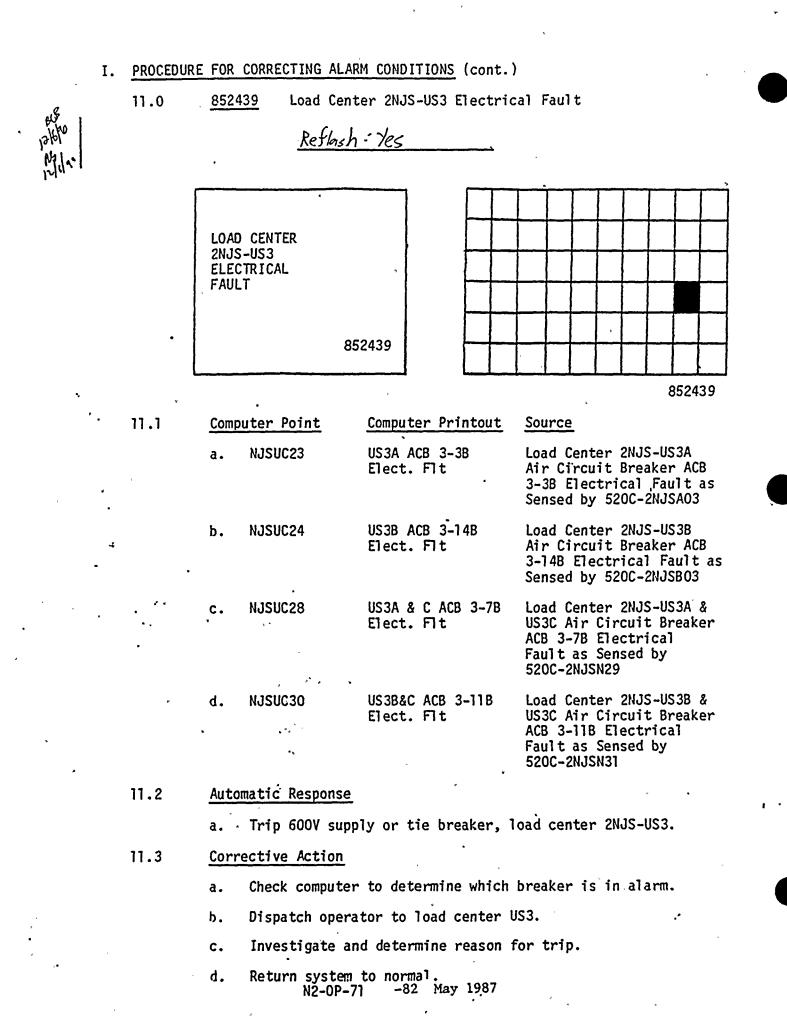
a. Check computer to determine which breaker is in alarm.

b. Dispatch operator to load center US2.

c. Investigate and determine reason for trip.

d. Return system to normal.

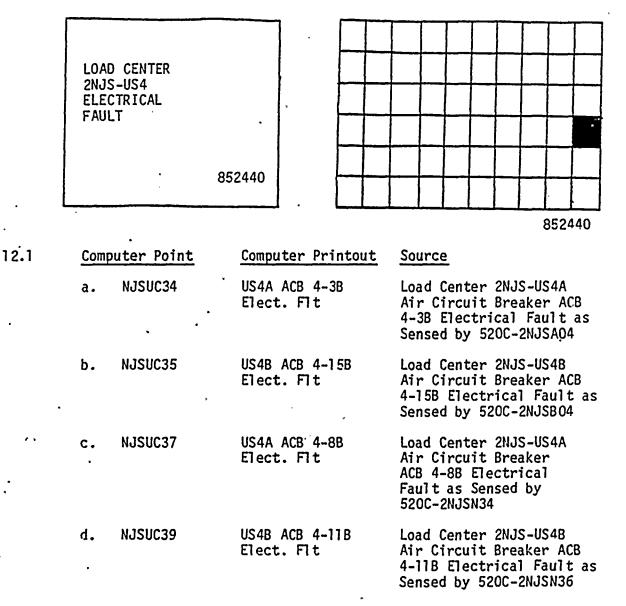
N2-OP-71 -81 May 1987



12.0

852440 Load Center 2NJS-US4 Electrical Fault

Reflash: Yes



12.2 Automatic Response

a. Trip 600V supply or tie breaker, load center 2NJS-US4.

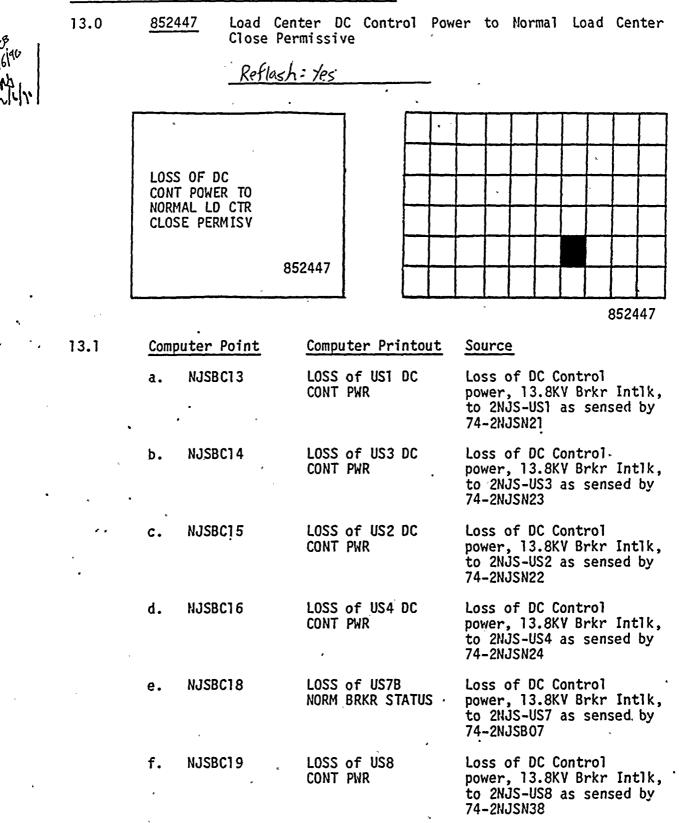
12.3 Corrective Action

a. Check computer to determine which breaker is in alarm.

b. Dispatch operator to load center US4.

c. Investigate and determine reason for trip.

d. Return system to normal. N2-OP-71 -83 May 1987

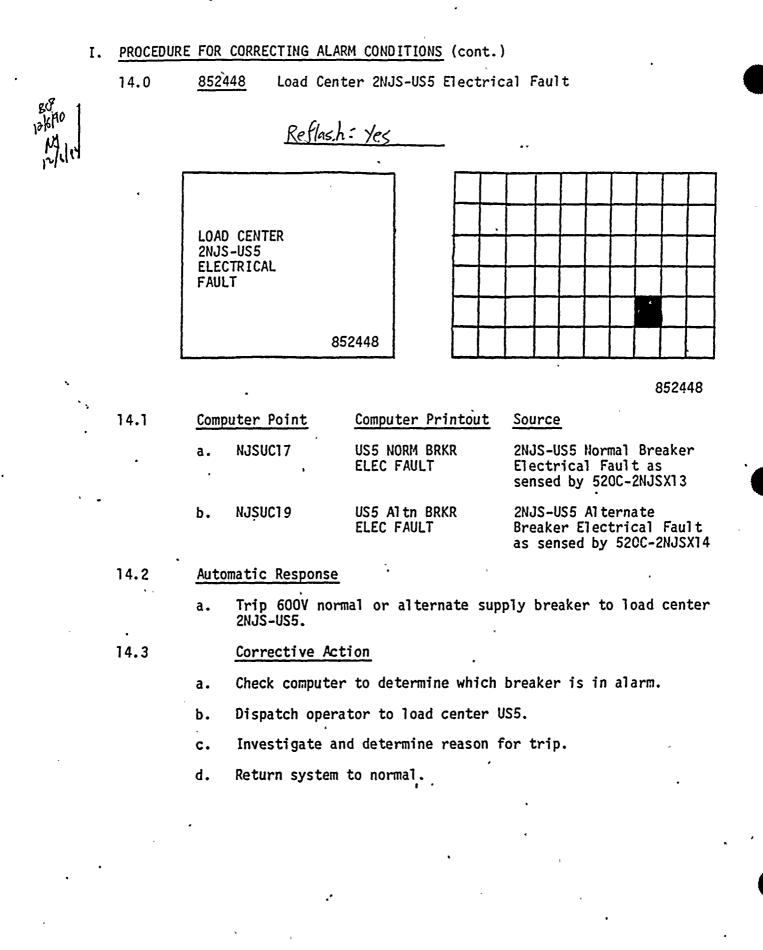


13.1	Computer Point	Computer Printout	Source (cont.)
	g. NJŠBC20 '	LOSS of US9 CONT PWR	Loss of DC Control power, 13.8KV Brkr Intlk, to 2NJS-US9 as sensed by - 74-2NJSN39
	h. NJSBC21	LOSS of US10 CONT PWR	Loss of DC Control power, 13.8KV Brkr Intlk, to 2NJS-US10 as sensed by 74-2NJSN40
13.2	Automatic Respon	se	

NONE

- 13.3 Corrective Action
 - a. Check computer to determine which load center is in alarm.
 - b. Move fuses to Alternate Feed position (see Section H of N2-OP-73A).

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15.0

15.1

15.2

852449 Load Center 2NJS-US6 Electrical Fault

Reflach: Yes LOAD CENTER 2NJS-US6 ELECTRICAL FAULT 852449 . 852449 Computer Printout Computer Point Source US6 NORM BRKR 2JNS-US6 Normal Breaker NJSUC18 a. Electrical Fault as ELEC FAULT sensed by 520C-2NJSY13 **US6 ALTN BRKR** 2NJS-US6 Alternate NJSUC20 b. ELEC FAULT Breaker Electrical Fault as sensed by 520C-2NJSY14 Automatic Response Trip 600V normal or alternate supply breaker to load center a. 2NJS-US6.

12/6/90

15.3 <u>Corrective Action</u>

- a. Check computer and panel 852 to determine which breaker tripped.
- b. Dispatch operator to load center US6.
- c. Investigate and determine reason for trip.

d. Return system to normal.

I. PROCEDURE	FOR CORRECTING ALAR	M CONDITIONS (cont.)	
16.0	852450 Load Cent	er 2NJS-US7 Electric	al Fault
12/6/20 12/6/20 12/11/11	Reflach:	<u>Yes</u>	२ च
	LOAD CENTER 2NJS-US7 ELECTRICAL FAULT 85:	2450	
-	•		852450
16.1	Computer Point	Computer Printout	Source
	a. NJSUC25	US7A ACB7-3B ELEC FAULT	2JNS-US7A Brkr ACB7-3B Electrical Fault as sensed by 520C-2NJSA07
	b. NJSUC26	US7B ACB7-7B ELEC FAULT	2NJS-US7B Brkr ACB7-7B Breaker Electrical Fault as sensed by 520C-2NJSB07
	c. NJSUC31	US7A & 7B ACB7-5B EL FLT	2NJS-US7A & B, Bkr ACB7-5B Brkr Electrical Fault as sensed by
	t have ble Dearers	-	520C-2NJSN32
•	Automatic Response a. Trip 600V norm 2NJS-US7.	al or alternate supp	oly breaker to load center
16.3	Corrective Act	ion	
~	a. Check computer	to determine which	breaker is in alarm.
	b. Dispatch operat	tor to load center U	\$7.
•	c. Investigate and	d determine reason f	or trip.
	d. Return system	to normal.	
`			

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17.0 Load Center 2NJS-US1, US8, US9, US10, Undervoltage 852454 BUS 12/6/90 Reflash : tes NJS US1, 8, 9, 10 **UNDERVOLTAGE** 852454 852454 17.1 Computer Point Computer Printout Source 2NJS-USIA Normal Sply NJSEC01 USIA Norm Sply a. Brkr Volt Brkr Phase Undervolt, as sensed by 27A & B 2NJSX15 NJSEC02 USIB Norm Sply 2NJS-USIB, Normal Sply Ъ. Brkr Volt Brkr Phase Undervolt, as sensed by 27A & B 2NJSY15 2NJS-USIC, Normal Sply NJSEC03 USIC Norm Sply c. Brkr Volt Brkr Phase Undervolt, as sensed by 27A & B 2NJSZ15 Bus 2NJS-US8A 2NJS-US8A, Normal Sply d. NJSEC17 Undv Prot Brkr Phase Undervolt, as sensed by 27A & B 2NJSX37 NJSEC18 Bus 2NJS-US8B 2NJS-US8B, Normal Sply e. Brkr Phase Undervolt, as Undv Prot sensed by 27A & B 2NJSY40 NJSEC19 2NJS-US8C, Normal Sply f. Bus 2NJS-US8C Brkr Phase Undervolt, as Undv Prot sensed by 27A & B

2NJSZ20

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17.1	Comp	uter Point	Computer Printout	Source
	g.	NJSEC20	Bus 2NJS-US9A Undv Prot	2NJS-US9A, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSX38
	h	NJSEC21	Bus 2NJS-US9B Undv Prot	2NJS-US9B, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSY41
ч	i.	NJSEC22	Bus 2NJS-US9C Undv Prot	2NJS-US9C, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSZ21
•	j.	NJSEC23	Bus 2NJS-US10A Undv Prot	2NJS-US1OA, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSX39
•	k.	NJSEC24	Bus 2NJS-US10B Undv Prot	2NJS-US10B, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSY42
	1.	NJSEC25	Bus 2NJS-USIOC Undv Prot	2NJS-USIOC, Normal Sply Brkr Phase Undervolt, as sensed by 27A & B 2NJSZ22

17.2 Automatic Response

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- a. The motor feeders on the respective sub bus are tripped after a .05 sec. time delay.
- 17.3 <u>Corrective Action</u>
 - a. Check computer to determine which section is de-energized.

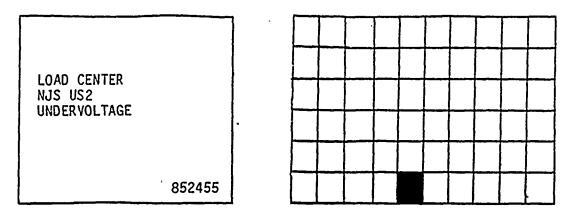
b. Investigate and determine reason for trip.

c. Return system to normal.

18.0

852455 Load Center 2NJS-US2 Undervoltage

Reflash: Yes



852455

18.1	Com	puter Point	Computer Printout	<u>Source</u>
·	a.	NJSECO4	US2A NORM SPLY BRKR VOLT	2NJS-US2A Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSX16
••	b.	NJSEC05	US2B NORM SPLY BRKR VOLT	2NJS-US2B Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSY16
•	с.	NJSECO6	US2C NORM SPLY BRKR VOLT	2NJS-US2C Norm Sply Brkr phase under volt, as sensed by 27A & B 2NJSZ16

18.2 Automatic Response

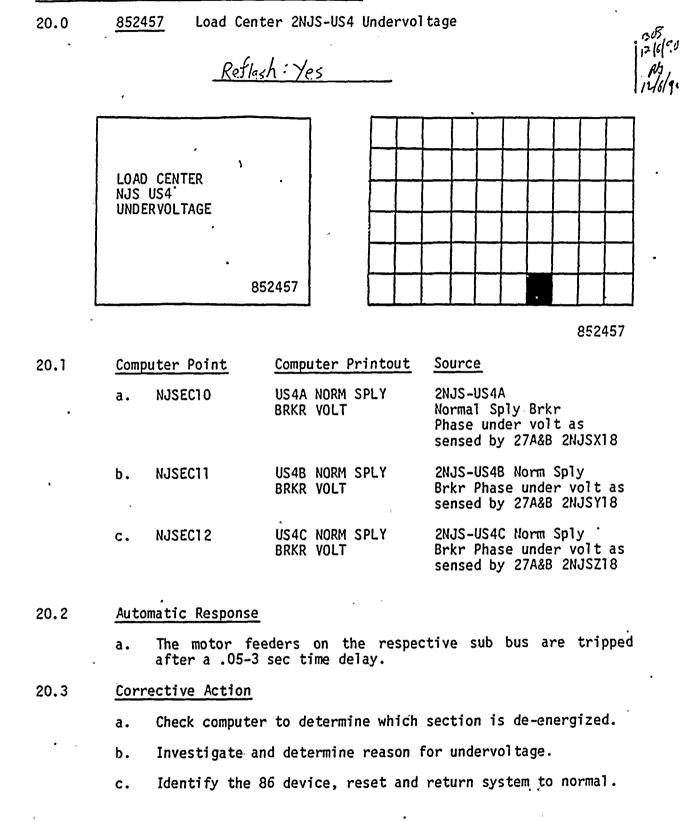
a. The motor feeders on the respective sub bus are tripped after a .05-3 second time delay.

18.3 Corrective Action

- a. Check computer to determine which section is de-energized.
- b. Investigate and determine reason for undervoltage.
- c. Identify the 86 devices, reset and return to normal.

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PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Ι. 19.0 852456 Load Center 2NJS-US3 Undervoltage Reflash: Yes LOAD CENTER NJS US3 UNDERVOLTAGE 852456 852456 Computer Printout 19.1 ·Computer Point Source NJSEC07 2NJS-US3A US3A NORM SPLY a. BRKR VOLT Normal Sply Brkr Phase under volt as sensed by 27A&B 2NJSX17 2NJS-US3B Norm Sply NJSEC08 US3B NORM SPLY b. BRKR VOLT Brkr Phase under volt as sensed by 27A&B 2NJSY17 US3C NORM SPLY 2NJS-US3C Norm Sply NJSEC09 c. BRKR VOLT Brkr Phase under volt as sensed by 27A&B 2NJSZ17 19.2 Automatic Response The motor feeders on the respective sub bus are tripped a. after a .05-3 sec time delay. 19.3 Corrective Action Check computer to determine which section is de-energized. a. Investigate and determine reason for undervoltage. b. Identify the 86 device, reset and return system to normal. c.

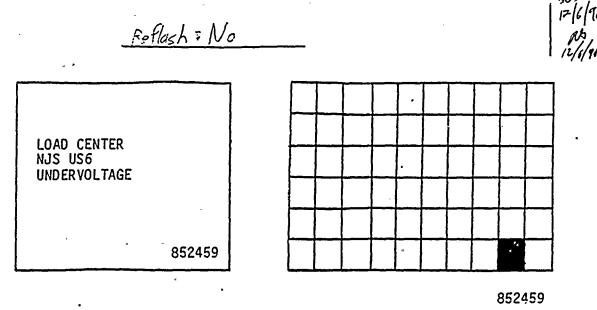


PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Ι. 21.0 852458 Load Center 2NJS-US5 Undervoltage £18 Reflach = No 12/6/90 LOAD CENTER NJS US5 UNDERVOLTAGE 852458 852458 21.1 Computer Printout Computer Point Source US5 NORM SPLY 2NJS-US5 Norm Sply NJSEC13 Brkr Phase Undervolt as BRKR VOLT sensed by 27A&B 2NJSX19 Automatic Response 21.2 the motor feeders on 2NJS-USG are tripped after a .05-3 a. sec. time delay. 21.3 Corrective Action Check normal or Alt. feed to bus at panel 852. a. Investigate and determine reason for undervoltage. b. Identify the 86 device, reset and return system to normal. c.

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22.0

852459 Load Center 2NJS-US6 Undervoltage



22.1	Computer Point	Computer Printout	Source
	NJSEC14	US6 NORM SPLY BRKR VOLT	2NJS-US6 Norm Sply Brkr Phase Undervolt as sensed by 27A&B 2NJSY19

22.2 Automatic Response

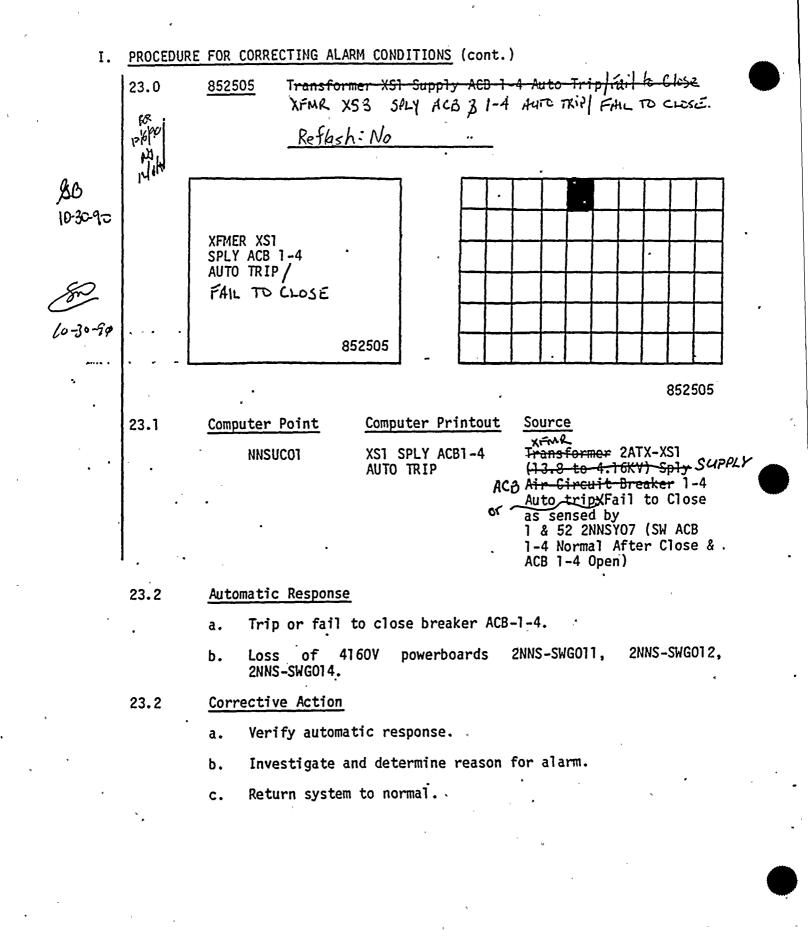
a. The motor feeders on 2NJS-US6 are tripped, after a .05-3 second time delay.

22.3 Corrective Action

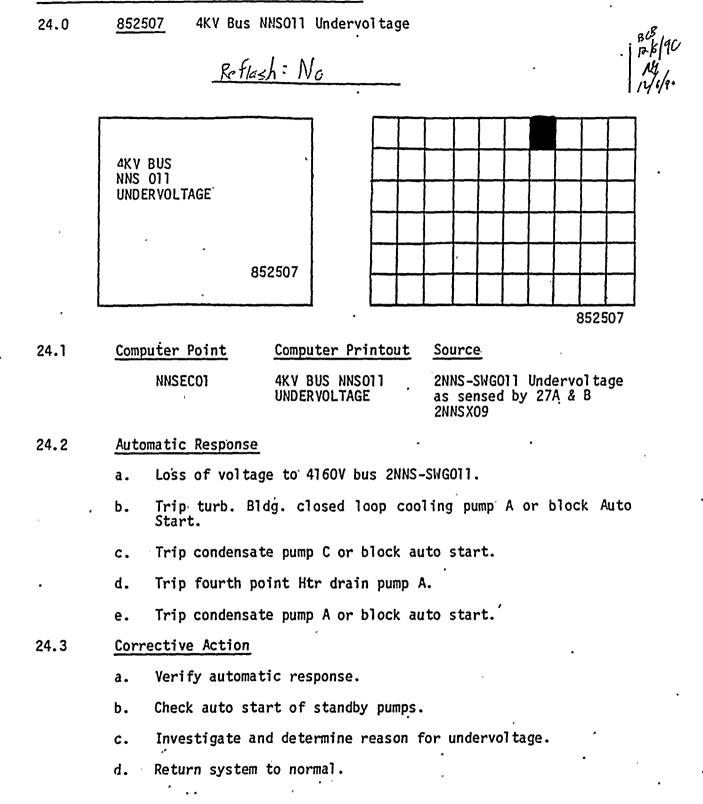
a. Check normal or Alt. feed to bus at panel 852.

b. Investigate and determine reason for undervoltage.

c. Identify the 86 device, reset and return system to normal.



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Ĭ.	PROCEDU	RE FOR CORRECTING AL	ARM CONDITIONS (cont.)
	25.0	<u>852508</u> 4KV Bus	NNS 11/12/13 Electric	cal Fault
12/6/90 12/6/90		<u>Ref</u>	lash: Yes	· · ·
	•	4KV BUS NNS 11/12/13 ELECTRICAL FAULT		
	·		852508	
•				852508
,	25.1	Computer Point	Computer Printout	Source
×		a. NNSUC14	4KV BUS E12 LO RLY TRIP	2NNS-SWG012 Lock Out Relay Trip as sensed by 86-2NNSZO1 on bus 11/12/13 phase time OC or grnd OC.
. •	· · · ·	b. NNSUC15	4KV BUS E11 LO RLY TRIP	2NNS-SWGOII Lock Out Relay Trip as sensed by 86-2NNSXOI on bus II phase time OC or grnd OC.
		c. NNSUC16	4KV BUS E13 LO RLY TRIP	2NNS-SWGO13 Lock Out Relay Trip as sensed by 86-2NNSYO4
	. •	d. NNSUC17	4KV BUS E12 LO RLY TRIP	2NNS-SWGO12 Lock Out Relay Trip as sensed by 86-2NNSX05 (Backup protection when SWGO12 is being fed from SWGO13).
	•	e. NNSUCT8	4KV BUS E12 LO RLY TRIP	2NNS-SWGO12 Lock Out Relay Trip as sensed by 86-2NNSYO1 (Backup protection when SWGO12 is being fed from SWGO11).

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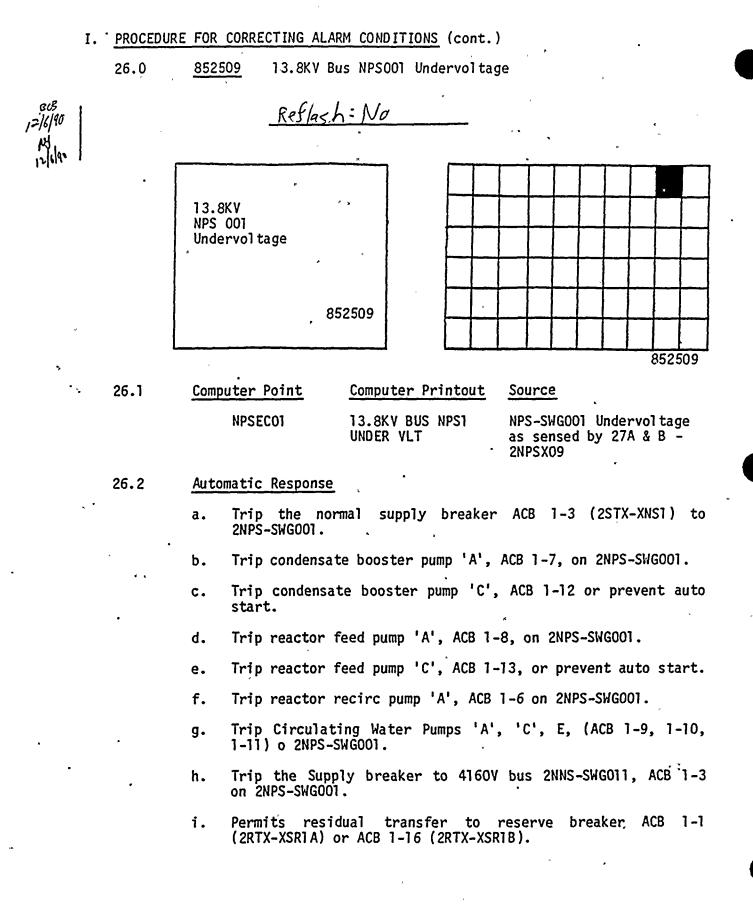
25.2 Automatic Response

- a. Trip and lockout (cross ties from 2NNS-SWG011 and SWG-13) ACB 11-1 and ACB 13-10; Trip or block auto start of: 2CCP-P1A, 2CCS-P1C; Fire Pump 2FPW-P2 undervoltage; trip 2HDL-P1C.
- b. Trip and lockout ACB 11-1 and ACB 11-3 on 2NNS-SWGO11; prevent the auto transfer of 2CNM-P1C on to 2NNS-SWGO11; trip or block the auto start of: 2CCS-P1A, 2CNM-P1A and 2CNM-P1C on the 2NNS-SWGO11; trip 2HDL-P1A.
- c. Trip and lockout ACB 13-6 and ACB 13-10 on 2NMS-SWGC13; trip or block the auto start of: 2CCS-P1B, 2CNM-P1B, 2CCP-P3A, 2CNM-P1C on to 2NNS-SWGC13; trip 2HDL-P1B.
- d. Trip and lockout ACB 13-6 which in this circumstance would trip the loads on busses 2NNS-SWG012 and 2NNS-SWG013 (a combination of the loads on a and c above).
- e. Trip and lockout ACB 11-3 which in this circumstance would trip the loads on busses 2NNS-SWGO11 and 2NNS-SWGO12 (a combination of the loads on a and b above).

25.3 Corrective Action

- a. Check the computer to determine which bus tripped.
- b. Verify automatic response.
- c. Investigate and determine the reason for the trip.
- d. Return the system to normal.

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26.2 Automatic Response

j. Loss of loads on 2NPS-SWG001; 2NNS-SWG011, 12, 14; 2NJS-US1A, C & US2A, C, and US3A, C and US4A, C and US5 & US7A and US8A, C and US9A and C; US10A and C; Alternate Access substation.

26.3 Corrective Action

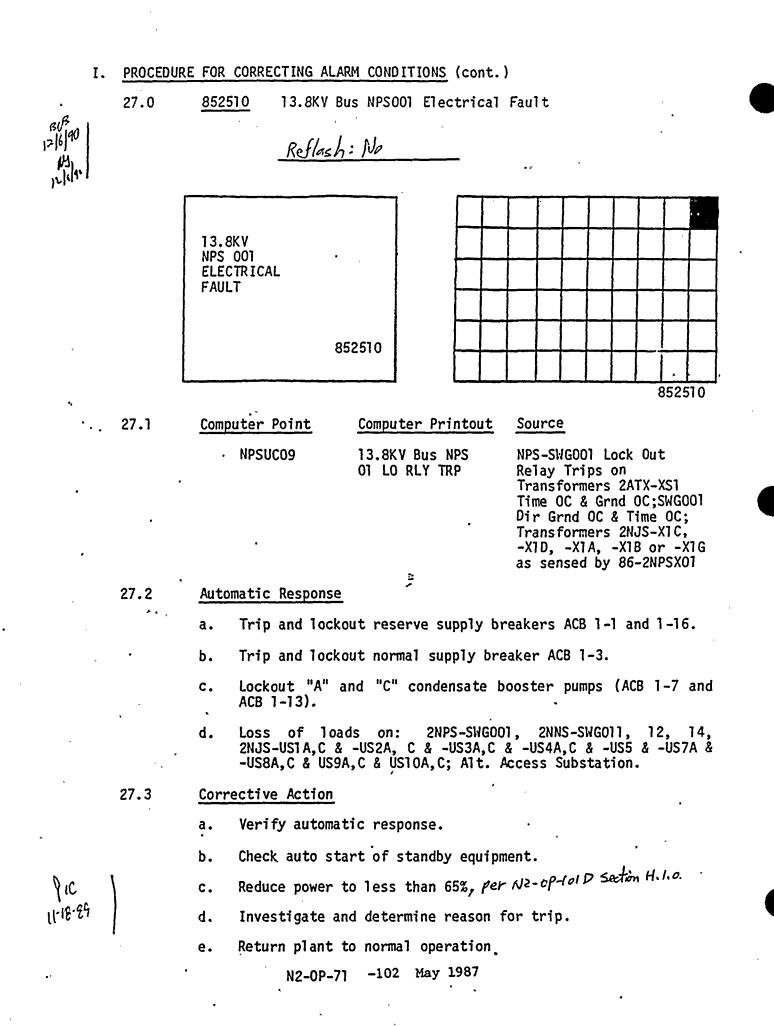
f.

- a. Verify automatic response.
- b. Check auto start of standby equipment.
- c. Reduce power to less than 65%, per N2-op-101D Section +1.1.0.

Investigate and determine the reason for the undervoltage.

11-18-29

g. Return the plant to normal operation.



PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Ι. XFMR XS3 SPLY ACB3-6 AUTO TRIP FAIL TO CLOSE Transformers XS3 Supply Air Circuit Breaker 3 Auto 28.0 852515 Trip-12/6/10. 12/1/20 Rethsh: No AB 10:32-10 XFMER XS3 63 SPLY ACB 3-6 AUTO TRIP / FAIL TO CLOSE 10-30-9 .852515 852515 Computer Point 28.1 Computer Printout Source XFMR 2 HTX - X53 Transformer-XS2 Supply NNSUCO2 XS3 Supply ACB -3-6 AUTO TRIP Air_Circuit_Breaker (ACB)-3-6 Auto Trip as sensed by 1 & 52 2NNSX06 (ACB or fail to close 3-6 open & SW ACB' 3-6 Normal After Close) 28.2 Automatic Response Trip or fail to close of ACB 3-6. a. ь. Loss of power to busses NNS-SWG013 & 015. 28.3 Corrective Action Verify automatic response. a. Investigate and determine reason for alarm. ь. Return system to normal. c.

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	I.	PROCEDUR	E FOR	CORR	ECTING	ALAR	1 CONE	ITIONS	<u>5</u> (co	nt.)								
1		29.0	8525	<u>517</u>	4KV E	Bus Ni	NS012	Underv	vol ta	ge									
p-16100					<u>_Refla</u>	<u>ish</u> :	No			*			٠						
l∿l.			4K V NNS UNDE		TAGE														
	·	-	,			852	2517			 									
		L L	······································						L								852	517	
*		29.1	Comr	outer	Point		Compu	iter Pr	into	ut	So	urce	5						
	- •	· · ·			EC03			ous NNS			2N as	NS-S	- SWGC nsed	12 1 Бу	und / 27	erv A&B	olta	age	-
••		29.2	Auto	mati	c Respo	onse							4						(
-			a.	Los	s of vo	oltage	e to 4	160V b	ous N	NS-S	Shed	12.					1		
•	•		b.	Tri	p or bl	ock a	auto s	tart o	of 2C	cs-I	P1C.			a)					
4			c.		p 2HDL-			10											
			d.	Tri	p or bl	lock a	auto s	tart o	of 2C	CP-I	P1 A.							۴	
			e.	Fir	e pump	2FPW-	-P2 un	idervo]	tage	•									
		29.3	Corr	ecti	ve Acti	ion	9		,										
			a.	Ver	ify aut	comati	ic res	ponse.			ъ								
			Ь.	Che	ck auto	o star	•t of	standb	y pu	mps.	•								\$
			c.	Inv	estigat	te and	dete	rmine	reas	on i	for a	unde	ervo	olta	age.				
			d.	Ret	urn sys	stem 1	to nor	mal.				•							
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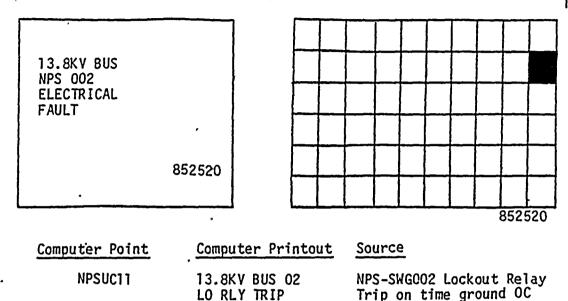
- 4KV Stub Bus NNS 014 Electrical Fault 30.0 852518 10/3 m 13/6/40 Reflash: No 4KV STUB BUS NNS 014 ELECTRICAL FAULT 852518 852518 30.1 Computer Point Computer Printout Source NNSUC19 4KV BUS ET4 LO NNS-SWG014 Lockout Relay RLY TRIP Tripped on High time or Ground Overcurrent assensed by 86-2NNSX15 30.2 Automatic Response Trips and lockout breakers 14-1 and 14-2. a. ž Loss of voltage to 4160V stub bus 014. b. c. Loss of voltage to 600V load center 2NJS-US5. Trip or block auto start of Rx bldg. closed loop cooling d. pump "C", 2CCP-P1C (ACB 14-9). Trip control rod drive pump "A", 2RDS-PIA (ACB 14-7). e. Trip or block auto start of Rx bldg. closed loop cooling booster pump "C", 2CCP-P3C (ACB 14-6). f. 30.3 Corrective Action a. Verify automatic response. b. Check auto start of standby pumps. Investigate and determine reason for trip. c. If necessary, supply bus 014 from emergency bus ENS*SWG101. d.
 - e. Return system to normal.

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	I.	PROCEDUR	RE FOR CORRECTING ALARM CONDITIONS (cont.)	
	_	31.0	852519 13.8KV Bus NPSOO2 Undervoltage	
264			Reflech: No	
			13.8KV BUS NPS 002 UNDERVOLTAGE	-
			852519	
	_			
•	•	*	852519	
	•	31.1	Computer Point Computer Printout Source	
	f re	•	NPSEC13 13.8KV BUS NPS 2NPS-SWG002 sustained bus 2 UNDR VLT undervoltage as sensed by 27A&B-2NPSZ18	
		31.2	Automatic Response	
			a. 2NPS-SWG002 supply air circuit breaker, ACB 2-5, Trip.	
21 /	•		b. 2NPS-SWG002 supply air circuit breaker, ACB 2-1, Trip.	
			c. The loads on 2NPS-SWG002, Auxiliary Boiler A&B will trip.	
		<i>.</i> .	d. If either 2NPS-SWG001 or SWG003 is connected to 2NPS-SWG002, they will trip their loads (unusual lineup).	
			e. If either emergency bus 2ENS*SWG101 or *SWG103 is being powered from 2NPS-SWG002 via 2NNS-SWG018, their emergency diesels will start (unusual line up).	
		31.3	Corrective Actions	
			a. Determine the cause of the undervoltage (loss of 115KV from Scriba or Auxiliary Boiler electrical fault).	
			b. Restore power to 2NPS-SWG002 as required using Mds-20 (or Mds-10).	

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32.0 <u>852520</u> 13.8KV Bus NPS002 Electrical Fault . <u>Reflach: No</u>



32.2 Automatic Response

32.1

a.,

a. Trip and lockout normal and alternate supply breakers to 13.8KV bus 002 (ACB 2-5, & ACB 2-1).

or Phase OC as sensed by

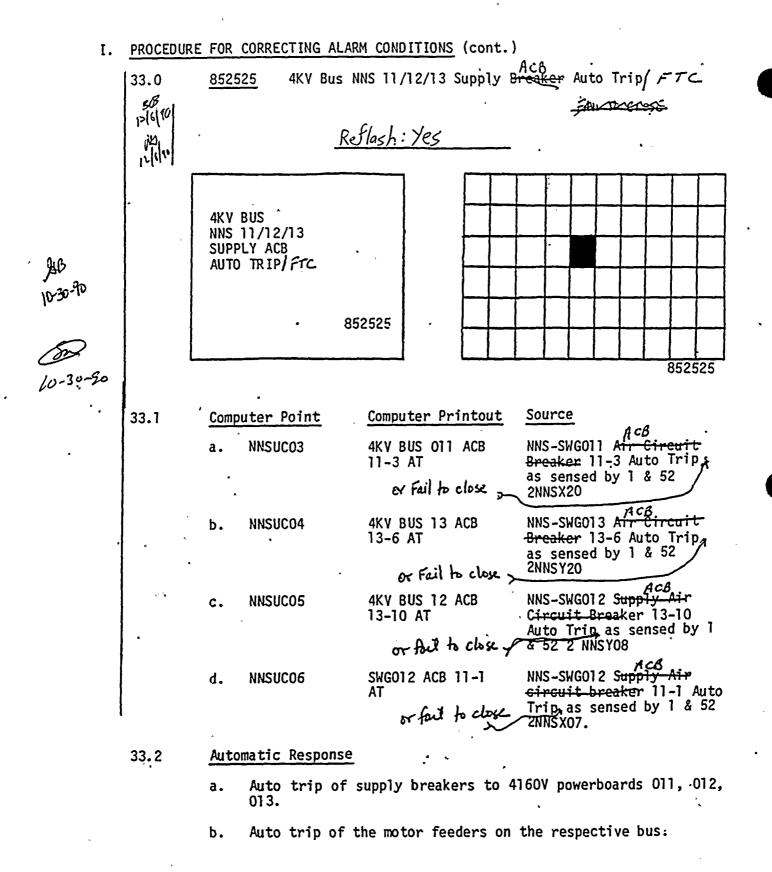
86-2NPSZ01.

- b. Loss of voltage to the bus.
 - c. Auxiliary boilers will trip if operating.
 - d. If either 2NPS-SWG001 or SWG003 is connected to 2NPS-SWG002 (unusual lineup), their loads will trip.

32.3 Corrective Action

- a. Verify automatic response.
- b. Dispatch operator to aux. boilers (if operating)
- c. Investigate and determine reason for trip.
- d. Return system to normal.

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33.3 Corrective Action

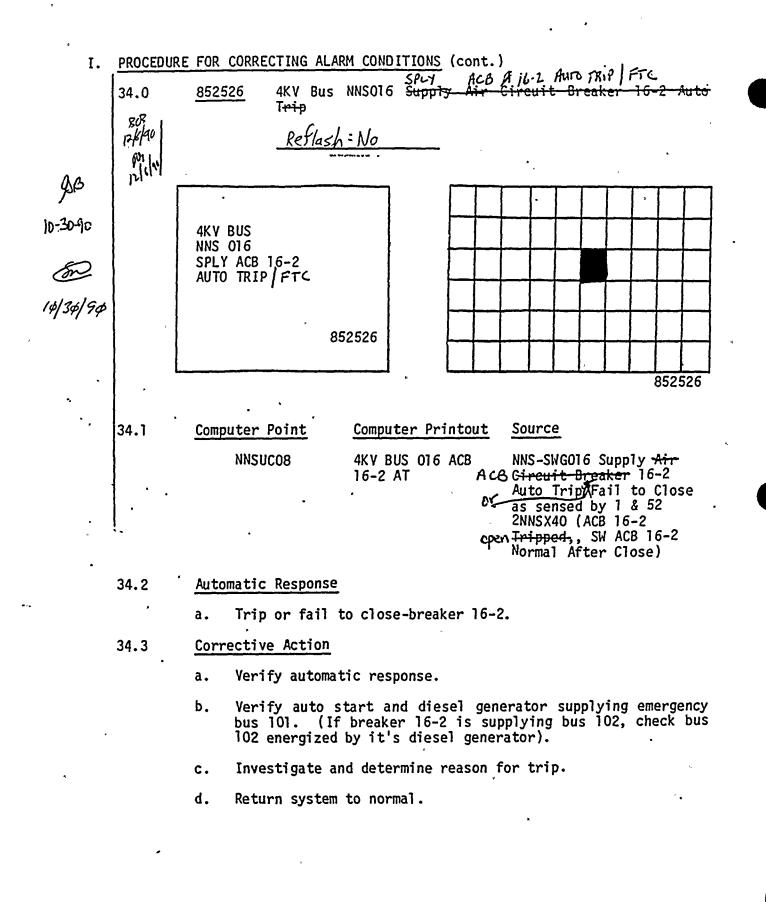
a. Verify automatic response.

b. Check computer point to determine which breaker tripped.

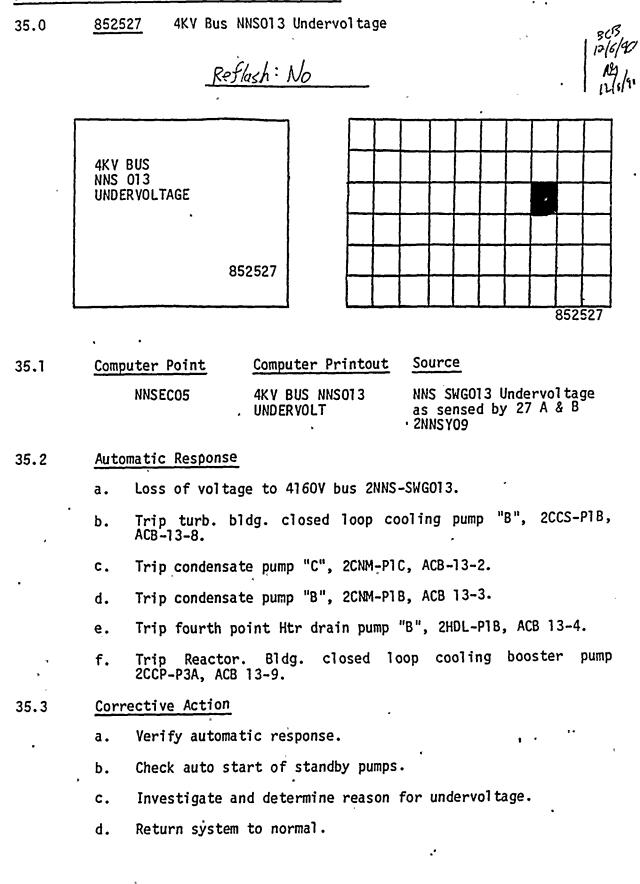
c. Investigate and determine reason for trip.

d. Return system to normal.

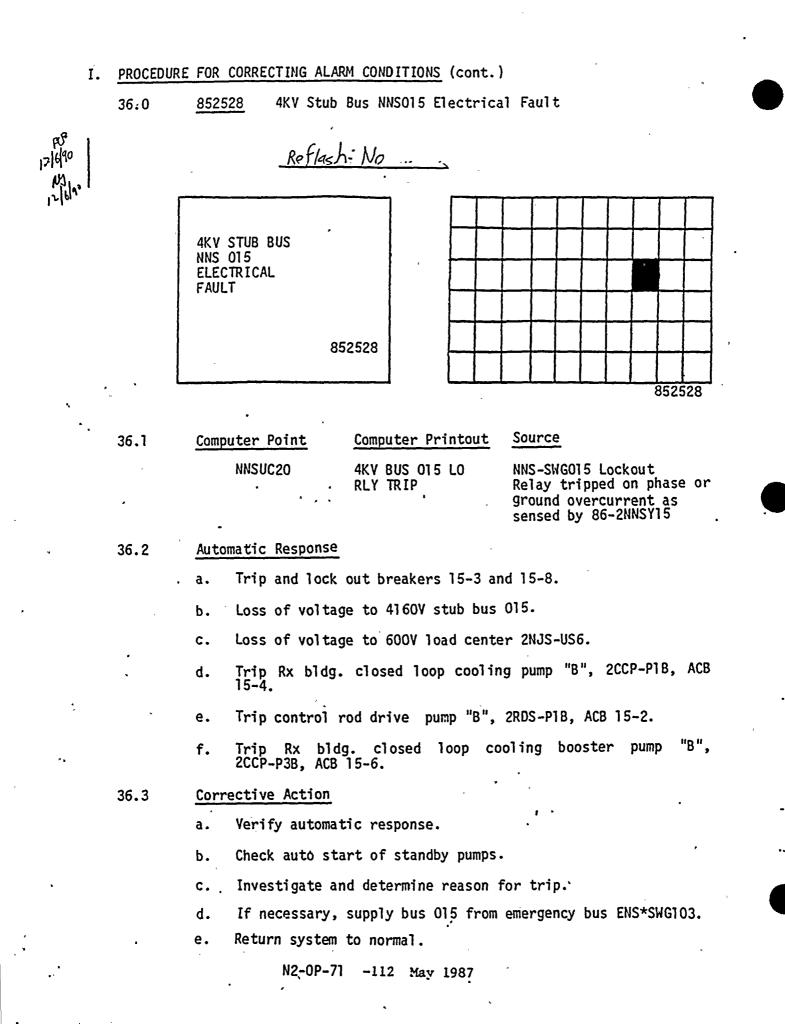
N2-OP-71 -109 May 1987



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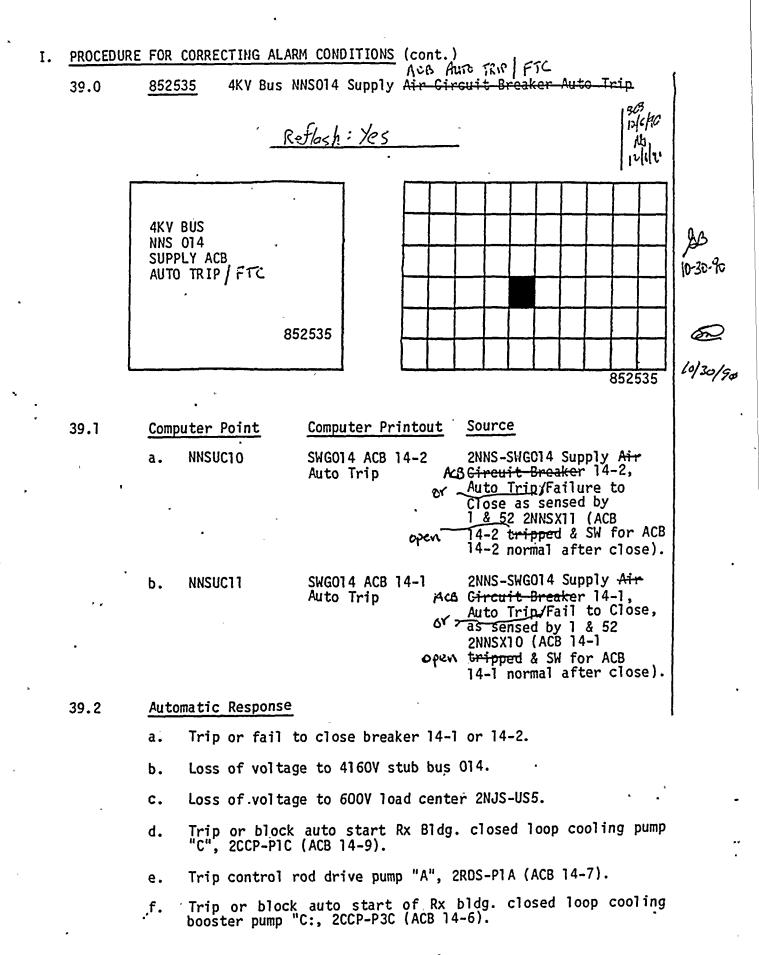
PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. BU 13.8KV Bus NPS003 Undervoltage 852529 37.0 Reflosh = NO 13.8KV BUS NPS 003 UNDERVOLTAGE 852529 852529 Source Computer Printout 37.1 Computer Point 13.8KV BUS NPS003 NPS-SWG003 Undervolt NPSEC05 UNDR VLT as sensed by 27 A & B-2NPSY09 37.2 Automatic Response Trip normal supply breaker ACB 3-14. a. Trip condensate booster pumps "B" & "C" (ACB 3-5, 3-11) b. prevent auto closure. Trip reactor feed pumps "B" & "C" (ACB 3-7, 3-12). c. Trip reactor recirc pump "B", ACB 3-4. d. Trip circ. water pumps "B", "D", & "F" (ACB3-10, 3-9, 3-8). e. Trip supply breaker to 4160V bus 013, ACB 3-6. f. Permit residual transfer to reserve breaker ACB3-1 or g. ACB3-16. Loss of loads on: 2NPS-SWG003; 2NNS-SWG013, 15; 2NJS-US1B h. & US-2B & US-3B & US-4B & US6 & US7B & US8B & US9B & US10B. 37.3 Corrective Action Verify automatic response. a. Check auto start of standby equipment. b. Reduce power to less than 65%, per No-op-101D Saction H.1.O. 1-18-9 c. Investigate and determine reason for undervoltage. d.

> e. Return plant to normal operation. N2-OP-71 -113 May 1987

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Ι.	PROCEDUR	E FOR CORRECTING ALARM CONDITIONS (cont.)
	38.0	852530 13.8KV Bus NPS003 Electrical Fault
1246/90 1246/90		Reflash: No
		13.8KV BUS NPS 003 ELECTRICAL FAULT 852530
• 4		
		852530
	38.1	Computer PointComputer PrintoutSourceNPSUC1013.8KV BUS 03 LO RLY TRPNPS-SWG003 Lockout Relay Trip as sensed by 86- 2NPSY01.
-	38.2	Automatic Response
		a. Trip and lockout reserve supply breakers 3-1 and 3-16.
		b. Trip and lockout normal supply breaker 3-14.
		c. Lockout "B" and "C" condensate booster pumps (ACB 3-5, 3-11).
	•	d. Loss of loads on: 2NPS-SWG003; 2NNS-SWG013, 015, 2NJS-US1B & US2B & US3B & US4B & US6 & US7B & US8B & US9B & US10B.
	38.3	Corrective Action
1	,	a. Verify automatic response.
N	,	b. Check auto start of standby equipment.
Pic 11.10.99		c. Reduce power to less 65%, per N2-0p-101D section Hillo.
יט מיזן		d. Investigate and determine reason for trip.
		e. Return system to normal operation.

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39.3 <u>Corrective Action</u>

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a. Verify automatic response.

b. Check auto start of standby_pumps.

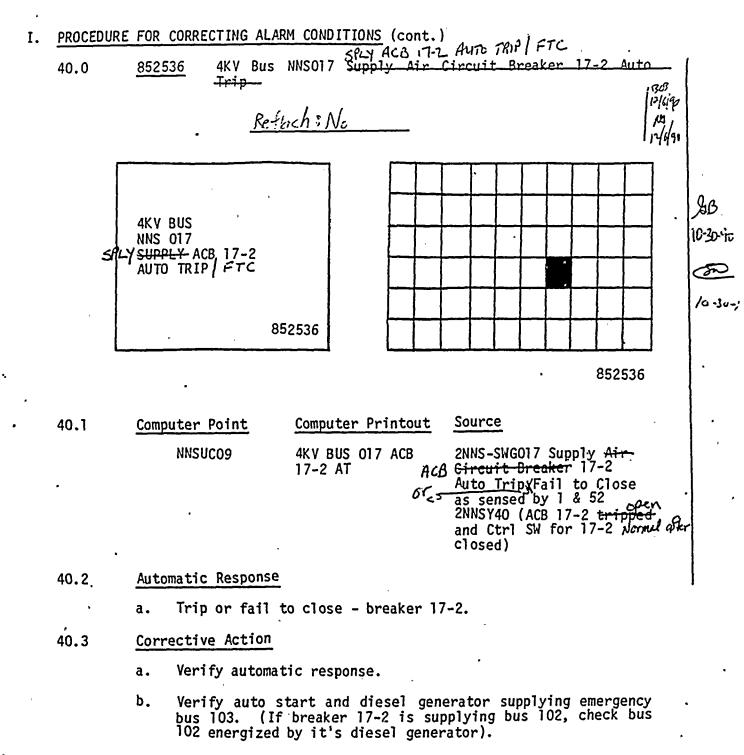
c. Investigate and determine reason for trip.

d. If necessary, supply bus 014 from emergency bus.

e. Return system to normal.

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c. Investigate and determine reason for trip.

d. Return system to normal.

- PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I.
 - 41.0

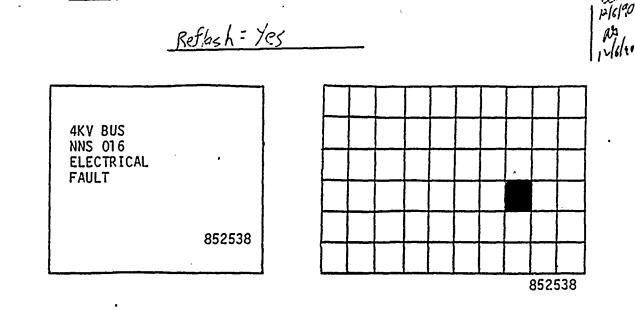
4KV Bus NNS014 Undervoltage 852537

Reflash: No 4KV BUS NNS 014 **UNDER VOL TAGE** 852537 852537 Source 41.1 Computer Point Computer Printout NNSEC07 4KV BUS NNS014 NNS-SWG014 Norm Sply Brkr Undervolt, as UNDERVOLT sensed by 27 A & B. 2NNSX29 Automatic Response . . 41.2

- - Loss of voltage to 4160V stub bus NNS014. a.
 - Loss of voltage to 600V load center 2NJS-US5. b.
 - Trip or block auto start of Rx bldg. closed loop cooling с. pump "C:, 2CCP-P1C (ACB 14-9).
 - d. Trip control rod drive pump "A", 2RDS-P1A (ACB 14-7).
 - Trip or block auto start of Rx bldg. closed loop cooling booster pump "C", 2CCP-P3C (ACB 14-6). e.
- Corrective Action 41.3
 - Verify automatic response. a.
 - Check auto start of standby pumps. b.
 - c. Investigate and determine reason for trip.
 - d. Return system to normal.

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42.0 852538 4KV Bus NNS016 Electrical Fault



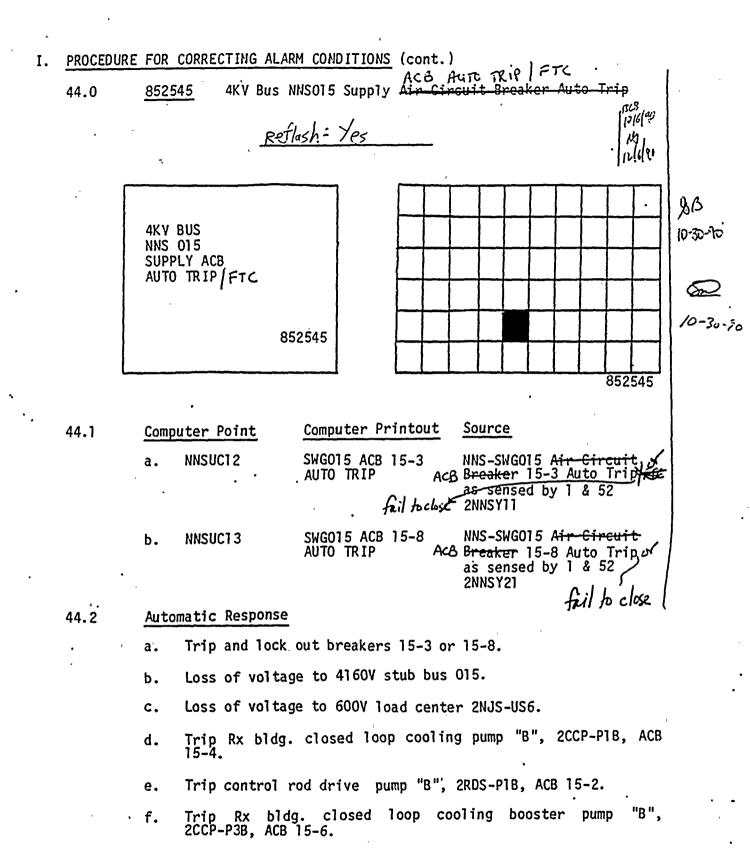
BCB

42.1	Com	outer Point :	Computer Printout	Source	
	a.	NNSUC21	4KV BUS 016 LO RLY 1 TRIP .	2NNS-SWG016 Lockout Relay Tripped as sensed by 86-1-2NNSX28	
	b.	NNSUC22	4KV BUS 016 LO RLY 2 TRIP	2NNS-SWG016 Lockout Relay Tripped as sensed by 86-2-2NNSX28	
	с.	NNSUC23	4KV BUS 016 LO RLY 3 TRIP.	2NNS-SWG016 Lockout Relay Tripped as sensed by 86-3-2NNSX28	

- 42.2 Automatic Response
 - a. Trip and lockout breaker 16-2.
 - b. Trip and lockout breaker 101-13 and 102-4.
- 42.3 Corrective Action
 - a. Verify automatic response.
 - b. Verify auto start and diesel generator supplying emergency bus 101. (If breaker 16-2 is supplying bus 102, check bus 102 energized by it's diesel generator.
 - c. Investigate and determine reason for trip.
 - d. Return system to normal.

43.0	<u>RE FOR CORRECTING AL</u> <u>852540</u> 13.8KV 1-1/1-3	Bus NPSOOI /1-16/Auto Trip/Failu	Air Circuit Breaker re to Close
21410 1410	Reflas	sh = yes	۸.
[Ψ [*] .	13.8KV BUS NPS 001 ACB 1-1/1-3/1-16 AUTO TRIP/FTC	852540	
			852540
• •	<u>Computer Point</u> a. NPSUCO1	Computer Printout SWGOO1 ACB 1-3 AUTO TRIP	<u>Source</u> NPS-SWG001 Air Circuit Breaker, 1-3 Auto Trip or Failure to Close as sensed by 1 & 52 2NPSX04
÷.	b. NPSUCO2	SWGOO1 ACB 1-16 AUTO TRIP	NPS-SWGOO1 Air Circuit Breaker, 1-16 Auto Trip or Failure to Close as sensed by 1 & 52 2NPSXO6
· ·	c. NPSUCO7	SWGOO1 ACB 1-1 AUTO TRIP	NPS-SWG001 Air Circuit Breaker, 1-1 Auto Trip or Failure to Close as sensed by 1 & 52 2NPSX05
43.2	Automatic Respons	e	
	breaker to	r fail to close of 13.8KV bus 001. undervoltage check fo	reserve or normal supply This could result in r annunciator 852509.
43.3	Corrective Action	· ·	
	a. Verify autom	atic response.	
	b. Investigate	and determine reason	for trip.
	· c. Return system	m to normal operation	

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44.3 <u>Corrective Action</u>

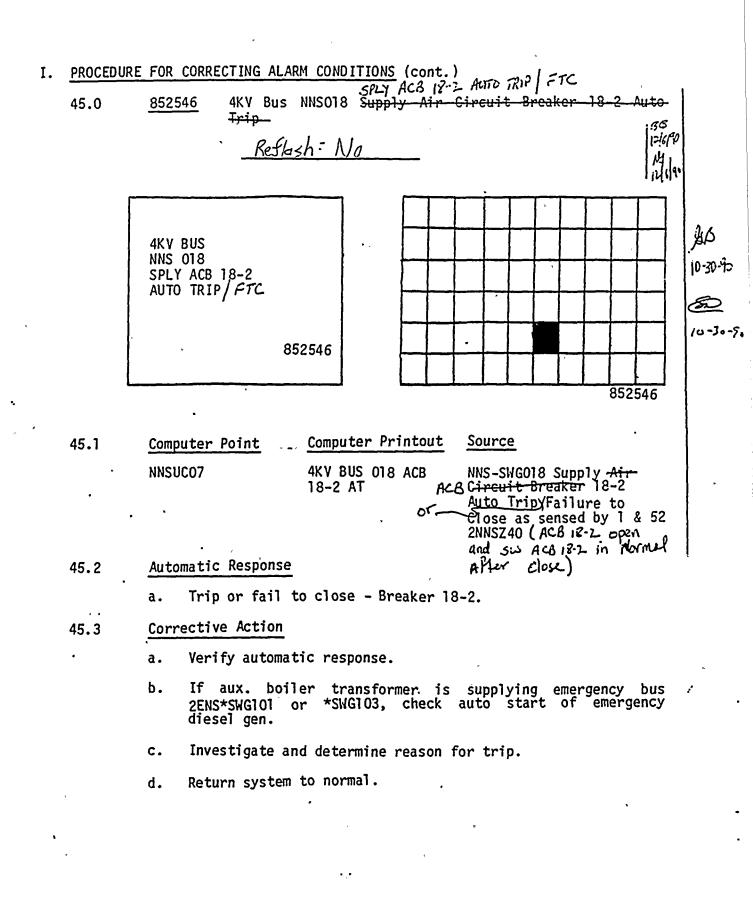
a. Verify automatic response.

b. Check auto start of standby pumps.

c. Investigate and determine reason for trip.

d. If necessary, supply bus 015 from emergency bus ENS*SWG103.

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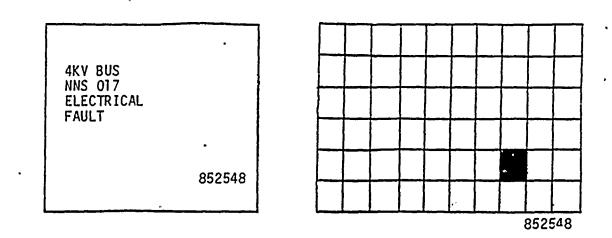
PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) Ι. 4KV Bus NNS015 Undervoltage 46.0 852547 B,CB 26/90 Reflash : No 4KV BUS NNS 015 **UNDER VOLTAGE** 852547 852547 Computer Printout Source 46.1 Computer Point NNSEC09 4KV BUS NNS015 2NNS-SWG015 undervoltage **UNDERVOLT** as sensed by 27A & B 2NNS Y1 7 Automatic Response 46.2 Loss of voltage to 4160V stub bus 015. a. Loss of voltage to 600V load center 2NJS-US6. b... Trip Rx bldg. closed loop cooling pump "B", 2CCP-P1B, ACB c. 15-4. Trip control rod drive pump "B", 2RDS-P1B, ACB 15-2. d. Trip Rx bldg. closed loop cooling booster pump 2CCP-P3B, ACB 15-6. "B", e. **Corrective** Action 46.3 Verify automatic response. a. Check auto start of standby pumps. b. c. Investigate and determine reason for undervoltage. If necessary, supply bus 2NNS-SWG015 from emergency bus d. ENS*SWG103. Return system to normal. e. N2-OP-71 -124 May 1987

47.0 852548

4KV Bus NNSO17 Electrical Fault

BCB

12/6/90



47.1	Computer Point		Computer Printout	Source	
	a.	NNSUC24	4KV BUS E17 LO RLY 1 TRIP	NNS-SWGO17 Lockout Relay Tripped as sensed • by 86-1 2NNSY28	
, , , , , , , , , , , , , , , , , , ,	b.	NNSUC25	4KV BUS E17 LO RLY 2 TRIP	NNS-SWGO17 Lockout Relay Tripped as sensed by 86-2 2NNSY28	
e .	с. ,	NNSUC26	4KV BUS E17 LO RLY 3 TRIP	NNS-SWGO17 Lockout Relay Tripped as sensed by 86-3 2NNSY28	

47.2 Automatic Response

a. Trip and lockout breaker 17-2.

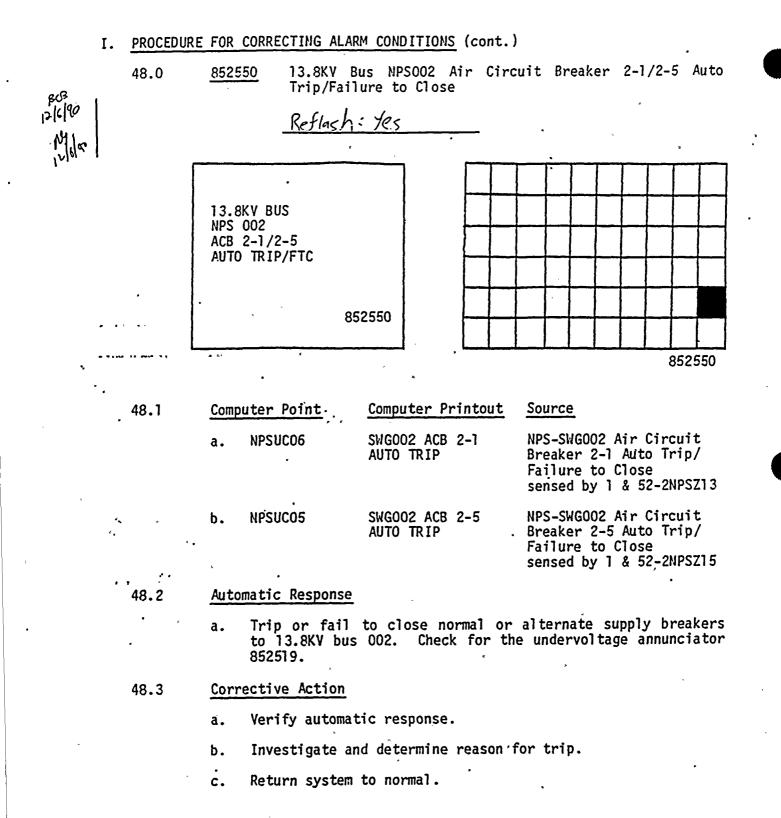
b. Trip and lockout breaker 103-4 and 102-5.

47.3 Corrective Action

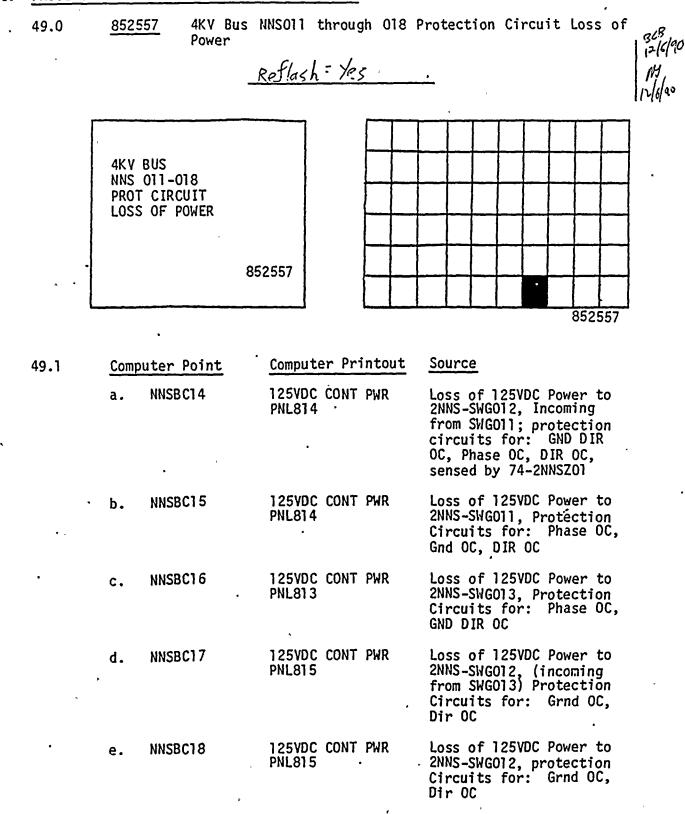
a. Verify automatic response.

- b. Verify auto start and diesel generator supplying emergency bus 2ENS*SWG103. (If breaker 17-2 is supplying bus 2ENS*SWG*102, ensure that bus 102 is energized by it's diesel generator.
- c. Investigate and determine reason for trip.
- d. Return system to normal.

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N2-0P-71 -127 May 1987

49.1	Comp	uter Point	Computer Printout	Source (cont.)
	f.	NNSBC19	125VDC CONT PWR PNL 803	Loss of 125VDC Power to 2NNS-SWG014 Phase OC, Gnd OC protection circuits. Sensed by 74-2NNSX15
	g.	NNSBC20	125VDC CONT PWR PNL 804	Loss of 125VDC Power to 2NNS-SWG015 Phase OC, Gnd OC protection circuits. Sensed by 74-2NNSY15
	h.	NNSBC21	125VDC CONT PWR PNL 805	Loss of 125VDC Power to 2NNS-SWGO16, Inst. Gnd, Overcurrent, Transformer 2RTX-XSR1A Gnd, Phase OC, Transfer Trip, Teritiary winding differential as sensed by 74-2NNSX28.
e 1	i.	NNSBC22	125VDC CONT PWR PNL808	Loss of 125VDC Power to 2NNS-SWG017, Inst Gnd OC, Xfmr 2RTX-XSR1B Gnd, Phase OC, Transfer Trip, 2RTX-XSR1A Tertiary Wind- ing differential as sensed by 74-2NNSY28
•	j.	NNSBC23	125VDC CONT PWR PNL 811.	Loss of 125VDC Power to 2NNS-SWGO18 Prot. Ckt. Inst. Gnd OC, Xfmr 2ABSX1 Tertiary Winding Gnd, Phase OC, Transfer Trip, 2ABSX1 Tertiary Winding Differential as sensed by 74-2NNSZ28
	k.	NNSBC24	4KV BUS PROT CKT LOS PWR	Loss of 125VDC Power to the paralleling light indicators for 2NNS-SWGOll as sensed by 74-2NNSN12
49.2	Auto	matic Response		

Loss of prot. ckt control pwr for the respective 4160V normal switchgear 2NNS-SWG011 through 2NNS-SWG018 as indicated by the source, above. a.

49.3 <u>Corrective Action</u>

a. Check computer to determine which bus has a loss of power.

b.	Move fuses 018, move move fuses	Tuses	to	the alta	erna	OP-73A) te pos	. 2NNS-SWG ition. 2NN)16, 017, S-SWG011,
c.	NNSBC14 - 2BYSA16.	check	for	125VDC	at	panel	2CEC-P814,	circuit
d.	NNSBC15 - 2BYSA16.	Check	for	125VDC	at	panel	2CEC-P812,	circuit
e.	NNSBC16 - 2BYSA01.	Check	for	125VDC	at	panel	2CEC-P813,	circuit
f.	NNSBC17 - 28 ysb01.	Check	for	125VDC	at	panel	2CEC-P815,	circuit
g.	NNSBC18 - 28YSB01.	Check	for	125VDC	at	panel	2CEC-P815,	circuit
h.	NNSBC19 - 2BYSA16.	Check	for	125VDC	at	panel	2CEC-P803,	circuit
i.	NNSBC20 - 2BYSA01.	Check	for	125VDC	at	panel	2CEC-P804,	circuit
j.	NNSBC21 - 2BYSA16.	Check	for	125VDC	at	pane]	2CEC-P805,	circuit
k.	NNSBC22 - 2BYSA01.	Check	for	125VDC	at	panel	2CEC-P808,	circuit
1.	NNSBC23 - 2BYSA01.	Check	for ·	125VDC	at	pane]	2CEC-P811,	Circuit
m.	NNSBC24 - Ch	eck for	r 125	WDC (Sta	ı Ba	t "A")	at the swite	:hgear.

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	PROCEDU	RE FOR CORRECTING ALARM CONDITIONS (cont.) 852558 4KV Bus NNSO18 Electrical Fault				
	50.0					
10		Reflash = tes				
;]v ² .						
÷	ŝ	4KV BUS NNS 018 ELECTRICAL FAULT				
	×					
		852558 852558				
۰.						
۰.	50.1	Computer Point Computer Printout Source				
		a. NNSUC27 4KV BUS E18 LO 2NNS-SWGO18 Lockout RLY 1 TRIP Relay 1 Tripped as sensed by 86-1 2NNSZ28				
		b. NNSUC28 4KV BUS E18 LO 2NNS-SWGO18 Lockout RLY 2 TRIP Relay 2 Tripped as sensed by 86-1 2NNSZ28				
,		c. NNSUC29 4KV BUS E18 LO 2NNS-SWGO18 Lockout RLY 3 TRIP Relay 3 Tripped as sensed by 86-1 2NNSZ28				
	50.2	Automatic Response				
	•	a. Trip and lockout breaker 18-2.				
		b. Trip and lockout breaker 101-10 and 103-2.				
91	50.3	Corrective Action				
L		a. Verify automatic response.				
		b. If aux. boiler transformer: is supplying emergency bus 2ENS*SWG101 or *SWG103, check auto start of emergency diesel gen.				
		c. Investigate and determine reason for trip.				
a Iu		d. Return system to normal.				
	*1					
•		N2-0P-71 _130 May 1987				

13.8KV Bus 001/003 Protection Circuit Loss of Power 852559 51.0 RIB 12/190 Reflesh : Yes 13.8KV BUS 001/003 PROT CIRCUIT LOSS OF POWER 852559 852559 Computer Printout Source 51.1 Computer Point 125VDC CONT PWR Loss of 125VDC Protection NPSBC09 a. Power for Phase OC, GND. **PNL812** OC, DIR OC for 2NPS-SWG001 as sensed by 74-2NPSX01 Loss of 125VDC Protection NPSBC10 125VDC CONT PWR ь. Power for Phase OC, GND **PNL813** 2 OC. DIR OC for 2NPS-SWG003 as sensed by 74-2NPSY01 Loss of 125VDC Protection NPSBC11 125VDC CONT PWR c. **PNL815** Power for Phase OC, GND OC, DIR OC for 2NPS-SWG002 as sensed by 74-2NPSZ01 125VDC CONT PWR Loss of 125VDC for 2NPS-NPSBC12 d. SWG001 bus load Trip and Fast Transfer Circuits as PNL812 sensed by 74-2NPSX17 NPSBC13 125VDC CONT PWR Loss of 125VDC for 2NPSe. **PNL813** SWG001 bus load Trip and Fast Transfer Circuits as

sensed by 74-2NPSY21

51.2 Automatic Response

a. Loss of prot. CKT control power for 13.8 switchgear.

51.3 Corrective Action

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a. Check computer to determine which bus has a loss of control power.

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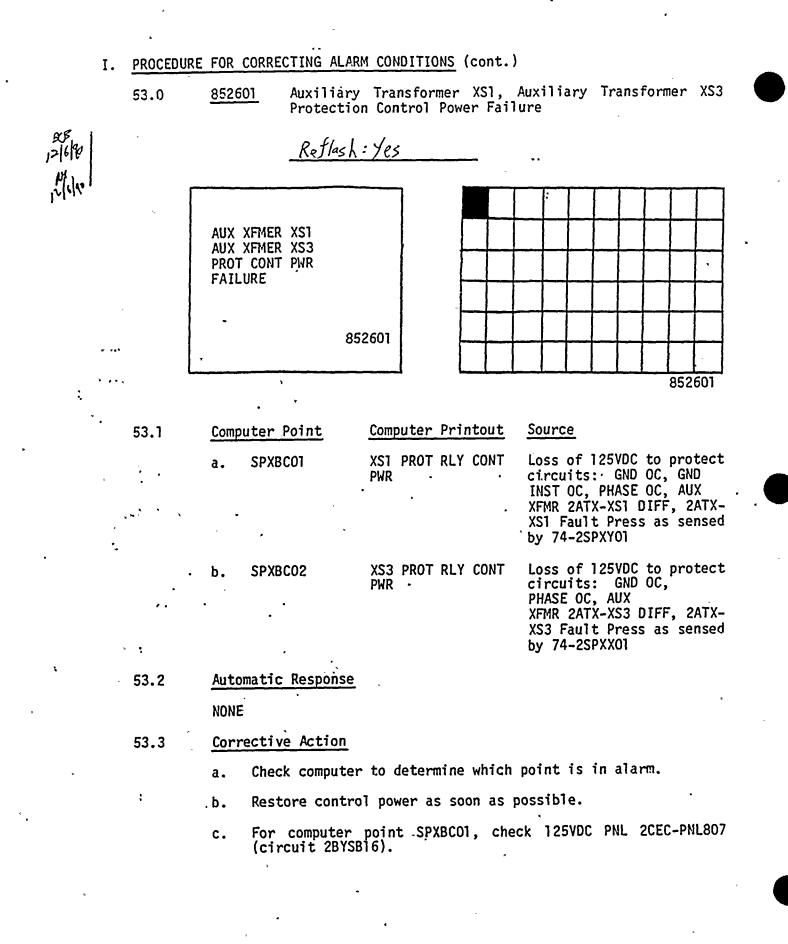
b. Restore control power as soon as possible.

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13.8KV Bus NPS003 3-1, 3-14, 3-16, Auto Trip Failure 852560 52.0 to Close BCB 12/5/90 lash: Yes АЦ 7/1 13.8KV BUS NPS 003 ACB 3-1/14/16 AUTO TRIP FTC 852560 852560 Source 52.1 Computer Point Computer Printout 2NPS-SWG003 Air Circuit SWG003 ACB 3-14 NPSUC03 а. Breaker · 3-14 .Auto Trip AUTO TRIP or Failure to Close (ACB 3-14 open & SW-ACB 3-14 Normal after close) as sensed by 1 & 52 2NPSY04 2NPS-SWG003 Air Circuit SWG003 ACB 3-1 NPSUC04 b. Breaker 3-1 Auto Trip AUTO TRIP or Failure to Close (ACB 3-1 open & SW-ACB 3-1 Normal after close) as sensed by 1 & 52 2NPSY06. 2NPS-SWG003 Air Circuit NPSUC08 SWG003 ACB 3-16 c. Breaker 3-16 Auto Trip AUTO TRIP or Failure to Close (ACB 3-16 open & SW-ACB 3-16 Normal after close) as sensed by 1 & 52 2NPSY05 52.2 Automatic Response

- a. Auto trip or fail to close, reserve or normal supply breakers to 13.8KV bus 003.
- 52.3 Corrective Action
 - a. Verify automatic response.
 - b. Investigate and determine reason for trip.

c. Return system to normal operation. N2-OP-71 -133 May 1987

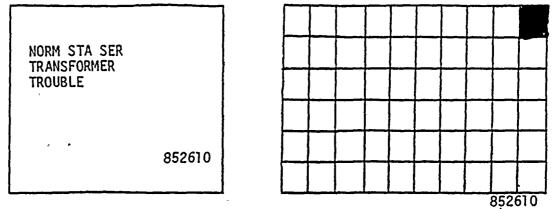


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54.0

Normal Station Service Transformer Trouble 852610

Refinsh: Yes



RB 12/6/%

14/1/10

			. 6 , # 34000 af	1
54.1	Comp	uter Point	Computer Printout	Source
	a.	SPSTC02	XNSI WDG HOT SPOT T	2STX-XNSI Winding Hot Spot Temp High as sensed by 49T, 1,2,&3-2SPSNO2
•.	b.	SPSAC01	XNSI GAS DET ACTUATED	2STX-XNSI Gas Detector Actuated as sensed by 63TCG-2SPSNO2
,	c.	SPSFC01	XNSI CLR GP1 OIL FLOW	2STX-XNSI Cooler Oil Flow Low as sensed by 74-1-2SPSNO2
· .	d.	SPSLCO1 ·	2STX-XNSI RSVR OIL LEVEL	2STX-XNSI Reservoir Oil Level Low as sensed by 71 QL (TR)-2SPSNO2
\$	e.	SPSLC02	XNSI LTC RSVR OIL LEVEL	2STX-XNSI LTC Reservoir Oil Level Low as sensed by 71 QL (LTC)-2SPSNO2
	f.	SPSPC01	XNSI PR RLF	2STX-XNSI Pressure Relief actuated as sensed by 63 PR (TR)-2SPSNO2
	g.	SPSPC02	XNSI FLT PR HE SIDE	2STX-XNSI Fault Pressure HE side as sensed by 30X-2SPSYOl
	h.	SPSPC03	XNSI FLT PR GR SIDE	2STX-XNSI Fault Pressure GR side as sensed by 30Y-2SPSY01

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54.1	Com	puter Point	Computer Printout	Source (cont.)
	i.	SPSPC04	XNSI LTC PR RLF ACT	2STX-XNSI LTC Pressure Relief Valve actuated as sensed by 63PR (LTC)-2SPSN02
	j.	SPSPC05	2STX-XNSI LTC FP GR SIDE	2STX-XNSI LTC Fault Pressure GR side as sensed by 30LX-2SPSY03
	k.	SPSTC01	XFMR 2STX-XNS1 OIL TEMP	2STX-XNSI,0il Temp High as sensed by 26Q-2SPSNO2
· · · ·	1.	SPSPC07	XNSI FAULT PRESS MID	2STX-XNSI Fault Pressure as sensed by 30C-2SPSY01
	m.	SPCPC08	2STX-XNSI LTC FAULT PRESS	2STX-XNSI Fault Pressure as sensed by 30C-2SPSY03.
54.2	Auto	omatic_Response		•
	NON	E · ·	•	
54.3	Corr	rective Action		

54.3 Corrective Action

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1.5.

a. Check the computer to determine which point is alarming.

b. Dispatch an operator to the Normal Station Service Transformer to investigate and determine the cause.

c. Monitor the alarming parameters and take corrective action as required.

55.0 <u>852611</u> Auxiliary Transformer XS1 Auxiliary Transformer XS3 Primary Lockout Trip <u>Reflash - Kes</u> AUX XFMER XS1 AUX XFMER XS3 PR IM LOCKOUT TR IP 852611 852611 852611

55.1	Computer Pot	nt	Computer Printout	Source
	a. SPXUCO	•	XS1 PRIM LOCKOUT RLY	2ATX-XS1 Primary Lockout Relay Trip as sensed by 86-2SPXY01
	b. SPXUCO2	?	XS3 PRIM LOCKOUT Rly	2ATX-XS3 Primary Lockout Relay Trip as sensed by 86-2SPXX01

55.2 Automatic Response

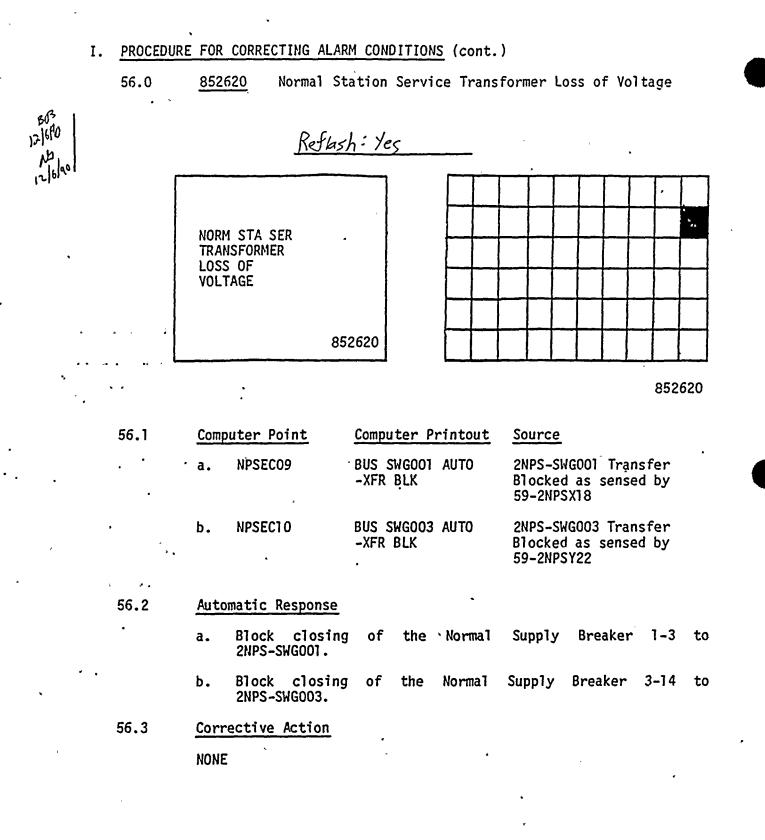
- a. If 86-2SPXY01, trip 13.8KV supply breaker 1-4, 4160V breakers 11-3 and 14-2.
- b. If 86-2SPXX01, trip 13.8KV supply breaker 3-6, 4160V breakers 13-6 and 15-3.

55.3 Corrective Action

- a. Verify automatic response.
- b. Check auto start of standby equipment.
- c. Reduce power to less than 85%, per N2-op-101D Section H.1.0.

ріс – 11-18-89

- d. Investigate and determine reason for trip.
- e. Return plant to normal operation.



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- 57.0 852621 Auxiliary Transformer XS1 Trouble σØ 12/6/90 Roflash = Yes AUXILIARY XFMER XS1 TROUBLE 852621 852621 57.1 Computer Point Computer Printout Source SPXAC01 XS1 GAS DETECTOR 2ATX-XS1 Gas Detector a. ACTUATED Actuated as sensed by 63 GD-2SPXA01 b. SPXLC01 2ATX-XS1 RSVR 2ATX-XS1 Reservoir Oil Level Low as sensed by
 - OIL LEVEL 710-2SPXA01 2ATX-XS1 Pressure Relief SPXPC01 XS1 PR RELIEF c. ACTUATED Actuated as sensed by 63 PR-2SPXA01 XFMR 2ATX-XS1 OIL TEMP 2ATX-XS1 Oil Temperature d. SPXTC01 High as sensed by 260-2SPXA01 2ATX-XS1 Winding Hot Spot XS1 WDG HOT SPXTC03 e. Temperature High as SPOT

sensed by 49-2SPXA01

57.2 <u>Automatic Response</u>

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NONE

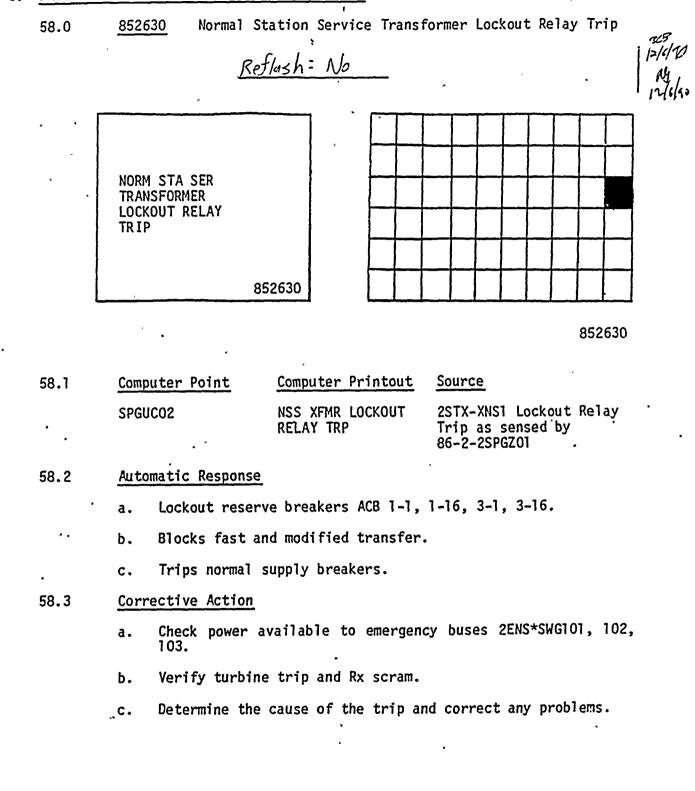
57.3 Corrective Action

a. Check computer to determine which point is in alarm.

b. Dispatch operator to transformer. ...

c. Investigate and determine reason for alarm.

d. Return system to normal operation or consider removing transformer from service.



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I	. <u>PROCEDU</u>	RE FOR CORRECTING ALA	RM CONDITIONS (cont.) .
	59.0	852631 Auxiliar	y Transformer XS3 Tr	ouble
503 p16(90 M3 16100		<u>Reflas</u>	h : tes	-
1.01.	•	AUXILIARY XFMER XS3 TROUBLE		
		8	52631	
· ·.	•			852631
	59.1	Computer Point	Computer Printout	Source
•		a. SPXACO2	XS3 GAS DET ACTUATED	2ATX-XS3 Gas Detector Actuated as sensed by 63GD-2SPXB01
	•	b. 2SPXLCO2	2ATX-XS3 RSVR OIL LEVEL	2ATX-XS3 Reservoir Oil Level Low as sensed by 71Q-2SPXB01
		c. SPXPCO2	XS3 PR RELIEF ACTUATED	2ATX-XS3 Pressure Relief Actuated as sensed by 63PR-2SPXB01
		d. SPXTCO2 _.	XFMR 2ATX-XS3 OIL TEMP	2ATX-XS3 Oil Temperature High as sensed by 26Q-2SPXBO1
		e. SPXTCO4	XS3 WDG HOT SPOT	2ATX-XS3 Winding Hot Spot Temperature High as sensed by 49-2SPXB01
	59.2	Automatic Response		· .

NONE

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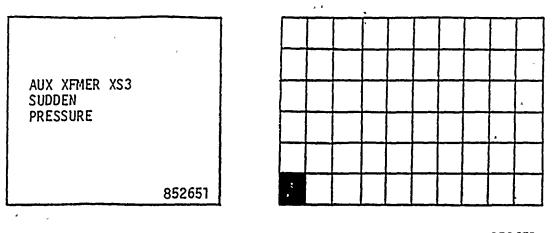
59.3 Corrective Action

- a. Check computer to determine which point is in alarm.
- b. Dispatch operator to transformer.
- c. Investigate and determine reason for alarm.
- d. Return system to normal operation or consider removing transformer from service.

PROCEDURE FOR CORRECTING ALARM CONDITIONS (cont.) I. 60.0, 852641 Auxiliary Transformer XS1 Sudden Pressure Reflash: Yes AUX XFMER XS1 SUDDEN PRESSURE 852641 852641 Computer Printout 60.1 Computer Point Source 2ATX-XS1 SUDD 2ATX-XS1 Sudden Pressure SPXBC03 a. Circuit Power as sensed PR CKT PWR by 74-2SPXX05 SPXPC03 XS1 SUDDEN PRE 2ATX-XS1 Sudden Pressure b. Left as sensed by LEFT 30X-2SPXX05 2ATX-XS1 Sudden Pressure SPXPC06 XS1 SUDDEN PRE C. RIGHT Right as sensed by 30Y-2SPXX05 60.2 Automatic Response Trip 13.8KV supply breaker ACB 1-4, to 2NPS-SWG001 and 4160V breaker ACB 11-3 to 2NNS-SWG011 and ACB 14-2 to a. 2NNS-SWG014, OR loss of sudden pressure control circuit. 60.3 **Corrective** Action Verify automatic response. a.` If control power loss, restore as soon as possible. b. If breakers tripped, check auto start of standby equipment. c. 410 Reduce power to less than 85%, per N2-op-101D Section H.1.0 d. 11-18-8 Investigate and determine reason for trip. e. f. Return plant to normal operation. N2-0P-71 -144 May 1987

61.0 <u>852651</u> Auxiliary Transformer XS3 Sudden Pressure

Reflash = Jes



852651

61.1	Com	puter Point	Computer Printout	Source	
•	a.	SPXBC04	2ATX-XS3 SUDD PR CKT PWR	2ATX-XS3 Loss of Sudden Pressure DC Circuit Power as sensed by 74-2SPXY05	
	b.	SPXPC05	XS3 SUDDEN PRE LEFT	2ATX-XS3 Sudden Pressure Left as sensed by 30X-2SPXY05	
• -	c.	SPXPC07	XS3 SUDDEN PRE RIGHT	2ATX-XS3 Sudden Pressure Right as sensed by 30Y-2SPXY05	
				•	

61.2 Automatic Response

a. Trip 13.8KV supply breaker ACB 3-6 to 2NPS-SWG003 and 4160V breakers ACB 13-6 to 2NNS-SWG0013 and ACB 15-3 to 2NNS-SWG015 <u>OR</u> loss of sudden pressure control circuit.

61.3 Corrective Action

- a. Verify automatic response.
- b. If control power loss, restore as soon as possible.
- c. If breakers tripped, check auto start of standby equipment.

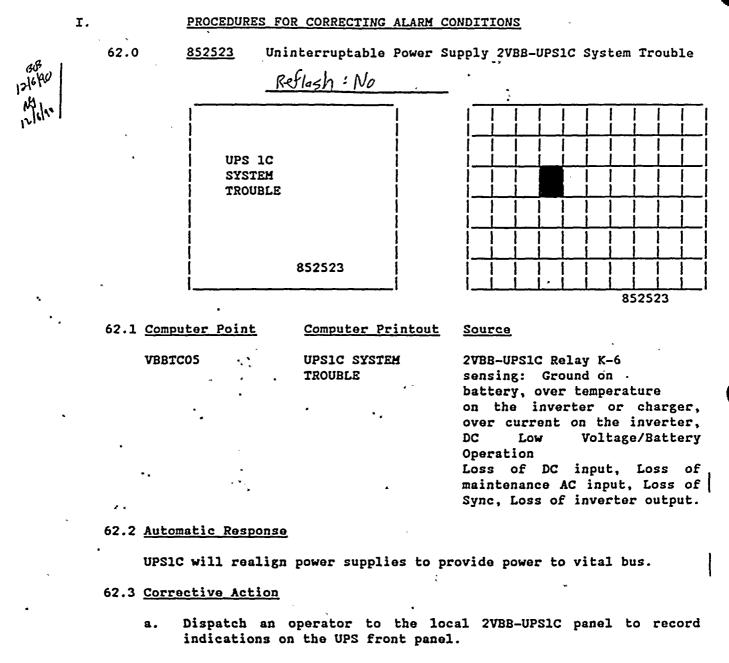
d. Reduce power to less than 85%, per N2-op-1010 Section H.1.0.

- e. Investigate and determine reason for trip.
- f. Return plant to normal operation.

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b. Refer to Section H to align power supplies to the desired off normal configuration.

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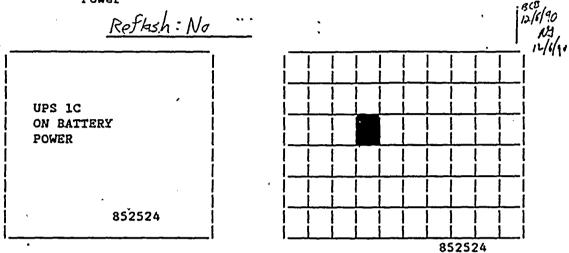
c. Initiate maint. activities if the unit needs repair.

PROCEDURES FOR CORRECTING ALARM CONDITIONS



I.

Uninterruptable Power Supply 2VBB-UPS1C on Battery 852524 Power



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63.1 Computer Point Computer Printout Source VBBTC06 UPSIC ON BATT PWR 2VBB-UPS1C Relay K-2; (On Battery Power)

63.2 Automatic Response

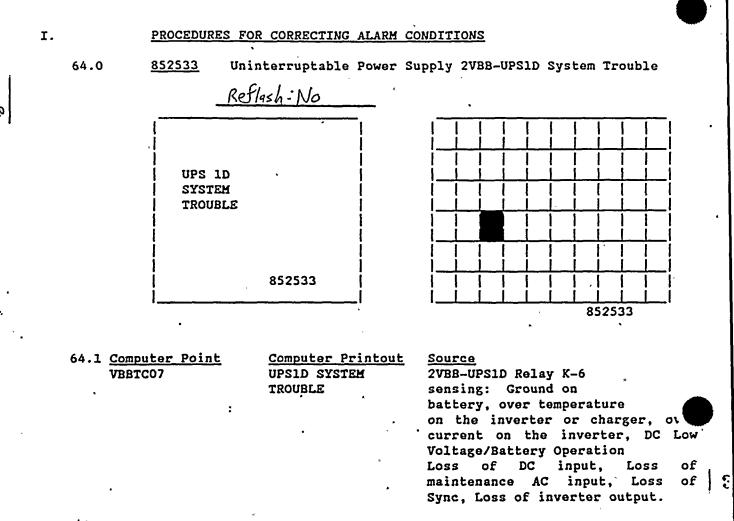
2VBBUPS1C Auto Transfer to DC battery power.

63.3 Corrective Action

- а. Dispatch an operator to 2VBB-UPS1C to record indications on the UPS front panel.
- Refer to Section H to align power supplies to the desired off ь. normal configuration.

Initiate maint. activities if the unit needs repair. c.

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64.2 Automatic Response

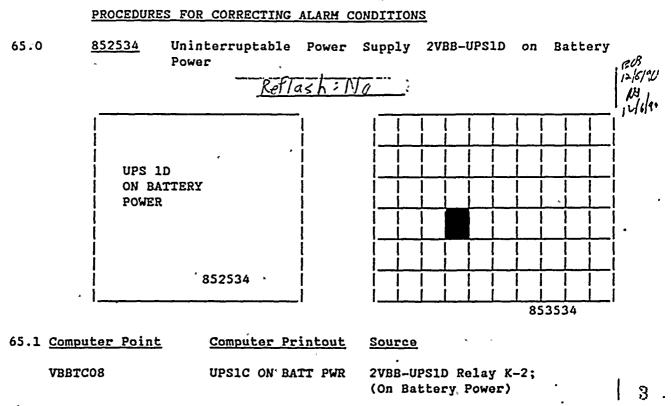
UPS1D will realign power supplies to provide power to vital bus.

64.3 Corrective Action

a. Dispatch an operator to the local 2VBB-UPS1D panel to record indications on the UPS front panel.

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- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.



65.2 Automatic Response

2VBBUPS1C Auto Transfer to DC battery power.

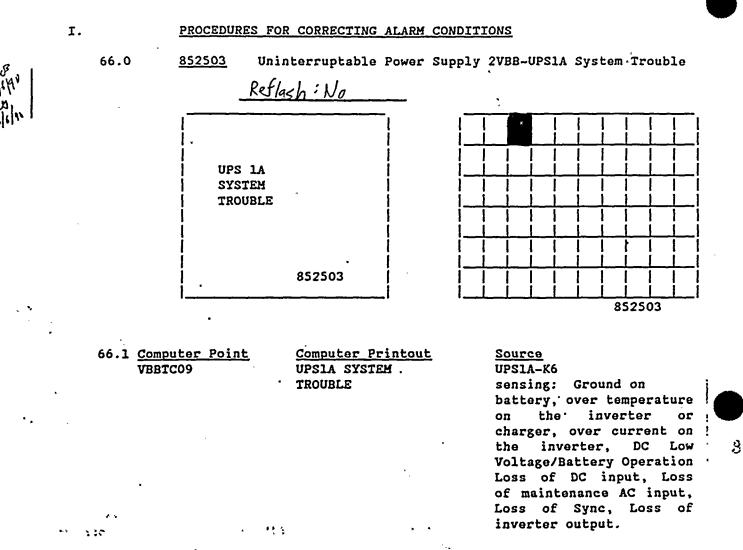
65.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS1D to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.

c. Initiate maint. activities if the unit needs repair.

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. 66.2 Automatic Response

UPS1A will realign power supplies to provide power to vital bus.

66.3 Corrective Action

a. Dispatch an operator to the local 2VBB-UPSIA panel to record indications on the UPS front panel.

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- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

PROCEDURES FOR CORRECTING ALARM CONDITIONS

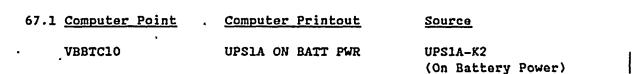


852504 Uninterruptable Power Supply. UPS1A on Battery Power

852504

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1. 3



67.2 Automatic Response

UPS 1A ON BATTERY POWER

2VBB-UPSIA Auto Transfer to DC battery power.

852504

67.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPSIA to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.

c. Initiate maint. activities if the unit needs repair.

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N2-OP-71' -151- December 1987

PROCEDURES FOR CORRECTING ALARM CONDITIONS

BB 13/6/90

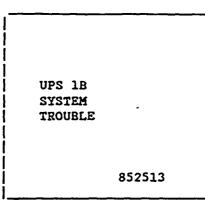
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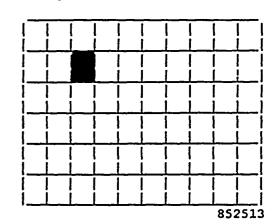
68.0

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852513 Uninterruptable Power Supply 2VBB-UPS1B System Trouble

Reflash: No.





68.1 Computer Point VBBTC11

Computer Printout UPS1B SYSTEM TROUBLE

Source UPS1B-K6 the ол

sensing: Ground on battery, over temperature inverter or charger, over current on inverter, DC Low the Voltage/Battery Operation Loss of DC input, Loss of maintenance AC input, Loss of Sync, Loss of inverter output.

68.2 Automatic Response

UPS1B will realign power supplies to provide power to vital bus.

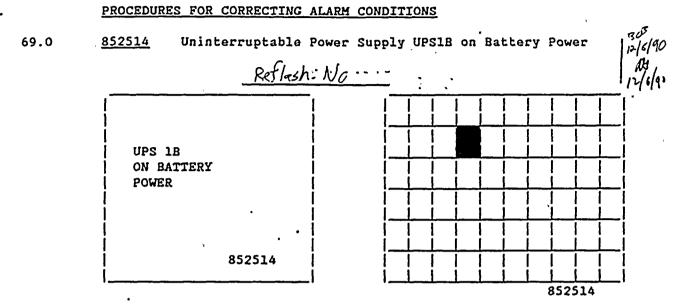
68.3 Corrective Action

Dispatch an operator to the local 2VBB-UPS1B panel to record а. indications on the UPS front panel.

- ъ. Refer to Section H to align power supplies to the desired off normal configuration.
- Initiate maint. activities if the unit needs repair. c.

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69.1 Computer Point	Computer Printout	Source	
VBBTC12	UPSIB ON BATT PWR	UPS1B-K2 (On Battery Power)	. 3

69.2 Automatic Response

2VBB-UPS18 Auto Transfer to DC battery power.

69.3 Corrective Action

a. Dispatch an operator to 2VBB-UPS1B to record indications on the UPS front panel.

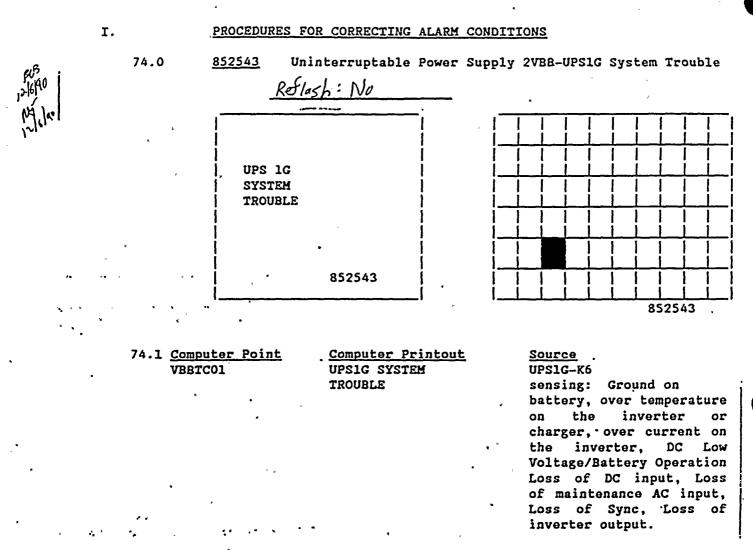
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b. Refer to Section H to align power supplies to the desired off normal configuration.

c. Initiate maint. activities if the unit needs repair.

N2-OP-71 -153- December 1987

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. 74.2 Automatic Response

UPSIG will realign power supplies to provide power to vital bus.

74.3 Corrective Action

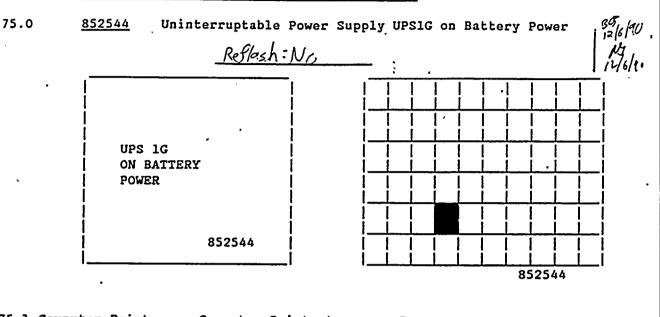
- a. Dispatch an operator to the local 2VBB-UPSIG panel to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

N2-OP-71 -154- December 1987

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PROCEDURES FOR CORRECTING ALARM CONDITIONS



/5.1	Computer Point	Computer Printout	Source
	VBBTCO2	UPSIG ON BATT PWR	UPS1G-K2
			(On Battery Power)

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43

75.2 Automatic Response

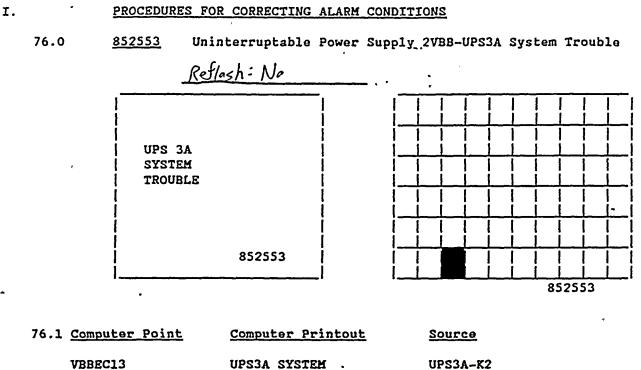
2VBB-UPSIG Auto Transfer to DC battery power.

75.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS1G to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration.
- c. Initiate maint. activities if the unit needs repair.

N2-OP-71 -155- December 1987

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UPS3A SYSTEM . Trouble

<u>NOTE</u>: UPS3A-K2 is energized by initiation of any local alarm (See Section 76.3).

76.2 Automatic Response

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, UPS3A wil realign power supplies to provide power to vital bus.

76.3 Corrective Action

b.

a. Dispatch an operator to the local 2VBB-UPS3A panel to record indications on the UPS front panel.

Refer to Section H to align power supplies to the desired off normal configuration, if required.

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c. Initiate maint. activities if the unit needs repair.

Corrective Action (Cont'd)

d. Evaluate local alarm indication per description below:

Alarm .	Description	Corrective Action
Sync Loss	a) Maintenance AC is out of	Notify maintenance
•	b) Maintenance AC is not present	Restore Alt. AC (if fuse is blown in maintenance supply regulator, notify maintenance)
	c. UPS inverter out of freq. tolerance	Verify Freq. meter - notify maintenance
Low Inverter Voltage	UPS inverter output voltage is 15% low	Verify on voltmeter - Notify maintenance - if EPA was tripped with this alarm in, manually transfer to maintenance A.C. power
Inverter Overtemp	Unit overheating	Maintenance required
Fuse Blown	Fuse within UPS blown	Maintenance to replace fuses
Rectifier DC. Grounded	UPS internal D.C. Bus grounded .	Maintenance required
Low D.C. Bus	UPS internal D.C. Bus voltage is low	Notify Elec./I&C for Repair/adjustment
Overload	UPS inverter supplying over 100% rating of unit	Check output ammeter - if unit loaded, clear non-essential load If alarm false, contact Elec./I&C
Low Battery	UPS internal D.C. Bus voltage is below 110 volts	If batteries connected, (CB-2 Closed) Check battery volts, if battery volts OK, contact Elect/I&C
Battery Drain/Charge	Current being drawn from batteries caused by: a) Loss of normal A.C. to UPS b) Voltage on associated D.C. switchgear higher than UPS internal D.C. voltage	 a) Restore normal AC b) If associated charger on equalize, verify UPS D.C. setpoint @ 140.5, charger @ 139.9 VDC - notify Elect./I&C

N2-OP-71 -157- December 1987

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76.3

Alarm	Description	Corrective Action
Rectifier AC Loss	Loss of normal AC to Unit	 a) Verify CB-1 not tripped - if tripped notify Elect/I&C b) If CB-1 is closed, restore upstream normal_AC supply
Reverse Transfer	Static switch is in maintenance position	 a) If other alarms present, correct other alarms first b) If all other alarms clear, verify UPS A(output voltage prese (meter), then push forward transfer (to inverter) push butto
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Local Alarm Description - Corrective Action (Cont'd)

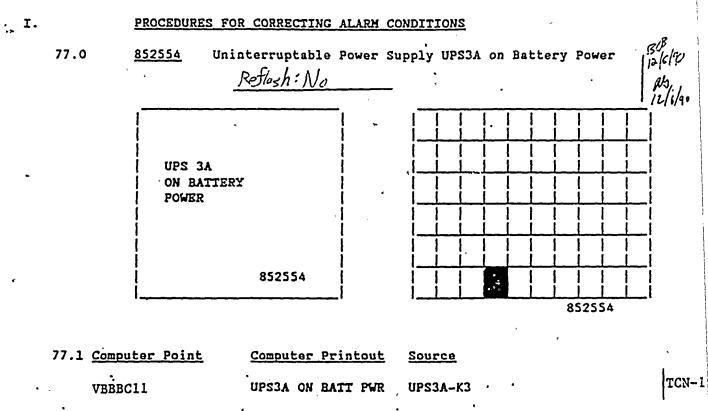
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NOTE: UPS3A-K3 initiated by local slarm "Battery drain/charge" (See Section 76.3)

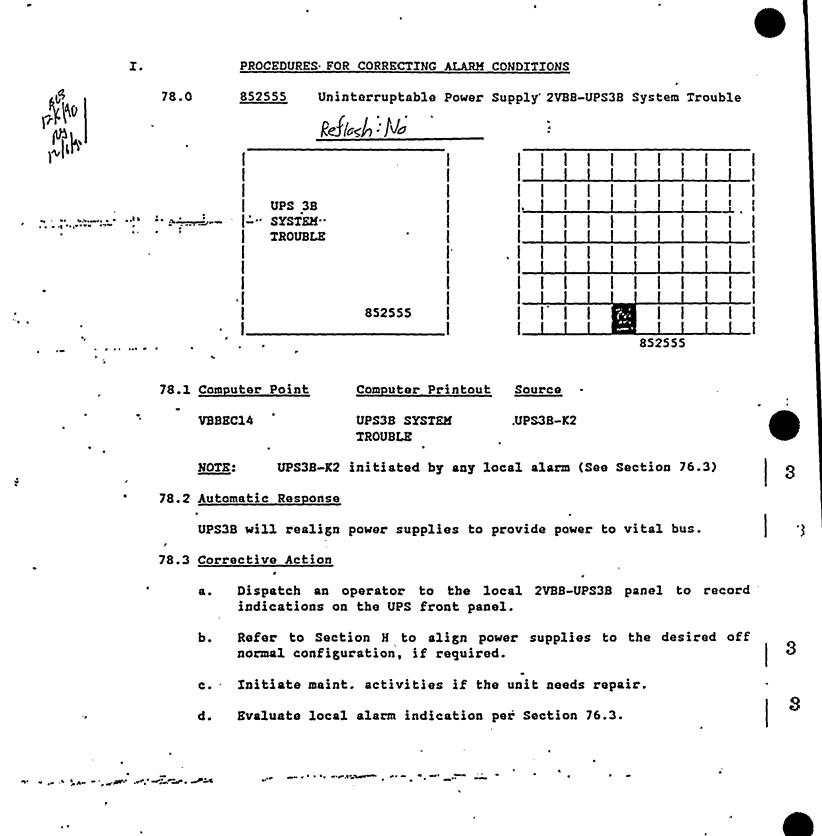
77.2 Automatic Response

2VBB-UPS3A will operate on DC battery power.

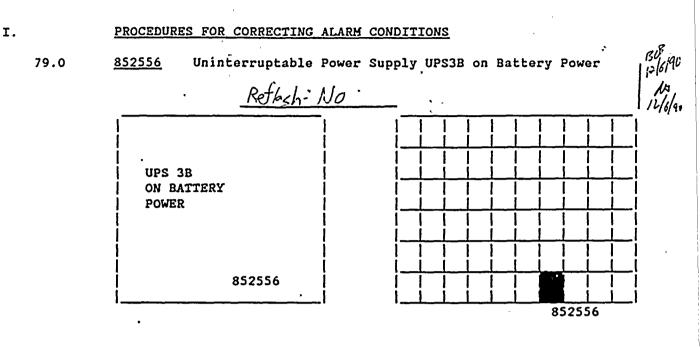
77.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS3A to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off normal configuration, if required.
- c. Initiate maint. activities if the unit needs repair.
- d. Evaluate cause of local alarm "Battery drain/charge" per Section 76.3.

N2-0P-71 -159- October 1988



N2-OP-71 -160- December 1987



9.1 <u>Computer</u>	<u>Point</u> .	<u>Comput</u>	er Printout	Sour	<u>.ce</u>		
· VBBBC12	,	UPS3B	ON BATT PWR	UPS3	8B-K3		
NOTE:			initiated ee Section	•	local	alarm:	"Battery

79.2 Automatic Response

79

2VBB-UPS3B will operate on DC battery power.

79.3 Corrective Action

- a. Dispatch an operator to 2VBB-UPS3B to record indications on the UPS front panel.
- b. Refer to Section H to align power supplies to the desired off g normal configuration, if required.

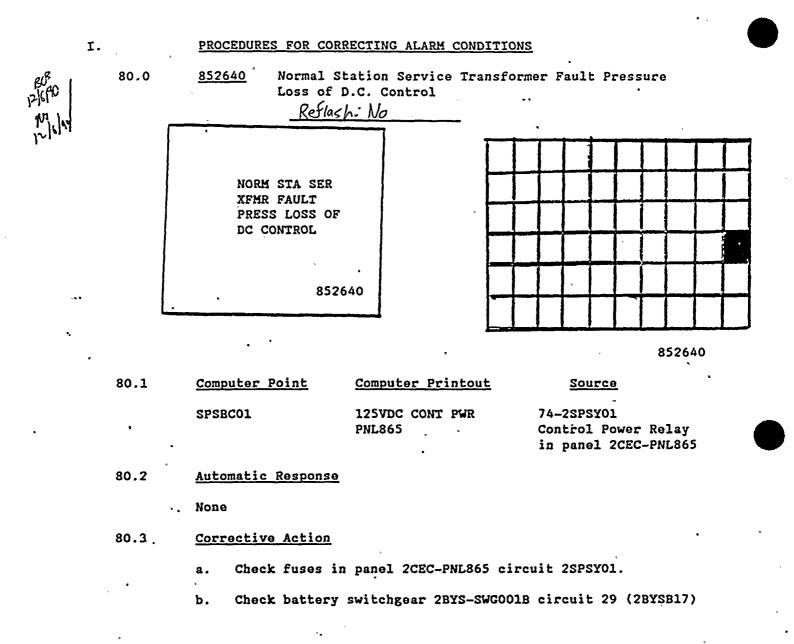
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- c. Initiate maint. activities if the unit needs repair.
- d. Evaluate local alarm "Battery drain/charge" per Section 76.3.

N2-OP-71 -161- December 1987



I.		PROCEDURES FOR COR	RECTING ALARM C	ONDITION	<u>s</u>		÷		roskilo
	81:0		om Instrument P	anels Por	wer Failu	. e			12/1/00
Ņ		<u> Reflash = Yes</u>						T	1707010
		A				┠╌┼╍	┼╌┼╸	+	
		RELAY ROOM INSTR PANELS					↓		
		POWER FAILURE				 	╞╌┞╸		
						╞╌┝╴	<u></u> ↓		
		8511	158						ł
									1
	لينه						85115	8	
*.	81.1	Computer Point	Computer Prin	tout	<u>Sou</u>	Irce			
	• 5	CECBC01	P825 PWR SUPP Fail	LY	Panel Po relays M				
		CECBC02	P826 PWR SUPP Fail	LY	Panel po relays M				
		CECBCOÁ	P827 PWR SUPP Fail	LY	Panel po relays M				
۲	•	CECBC05	P828 PWR SUPP Fail div I		Panel po relays K				
	•	CECBC06	P829 PWR SUPP Fail div I		Panel po relays K				
		CECBC08	P830 PWR SUPP Fail div II	LY	Panel po relays K				
		CECBC10	P831 PWR SUPP Fail div II	LY	Panel po relays K				
		CECBC11	P883 PWR SUPPI Fail div III		Panel po relays K				
		CECBC13	P884 PWR SUPP Fail .	LY .	Panel po relays K				
	•	CECBC15	P885 PWR SUPPI Fail	LY	Panel po relays K				
		•				•			

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N2-OP-71 -163 December 1987

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81.1	Computer Point	Computer Printout	Source
,	CECBC16	P886 PWR SUPPLY FAIL	Panel power supply relays K2 & K3
	CECBC17	P887 PWR SUPPLY FAIL	Panel power supply relays K2 & K3
	CECBC19	P888 PWR SUPPLY FAIL	Panel power supply relays K2 & K3
5	CECBC21	P890 PWR SUPPLY Fail div I	Panel power supply relays K2 & K3
a.	CECBC22	P891 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3
	CECBC23	P894 PWR SUPPLY FAIL DIV I	Panel power supply relays K2 & K3
•	CECBC24	P895 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3
. * *	CECBC26	P896 PWR SUPPLY FAIL DIV I	Panel power supply relays K2 & K3
	CECBC27	P897 PWR SUPPLY FAIL DIV II	Panel power supply relays K2 & K3

851158 Relay Room Instrument Panels Power Failure (Cont'd)

81.2 Automatic Response

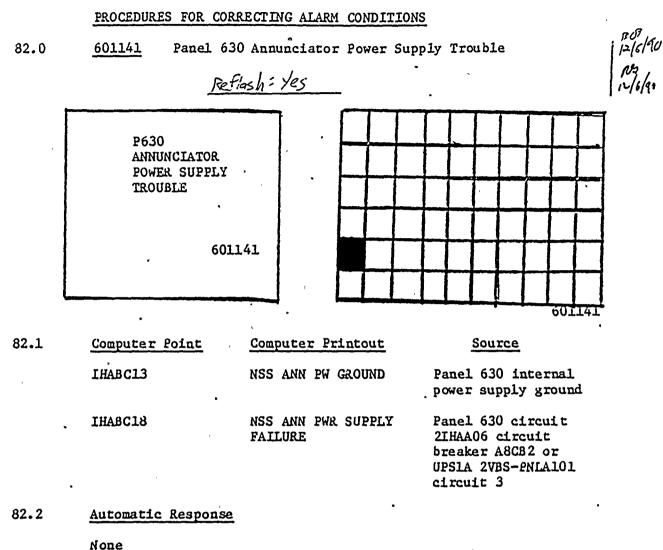
81.0

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81.3 Corrective Action

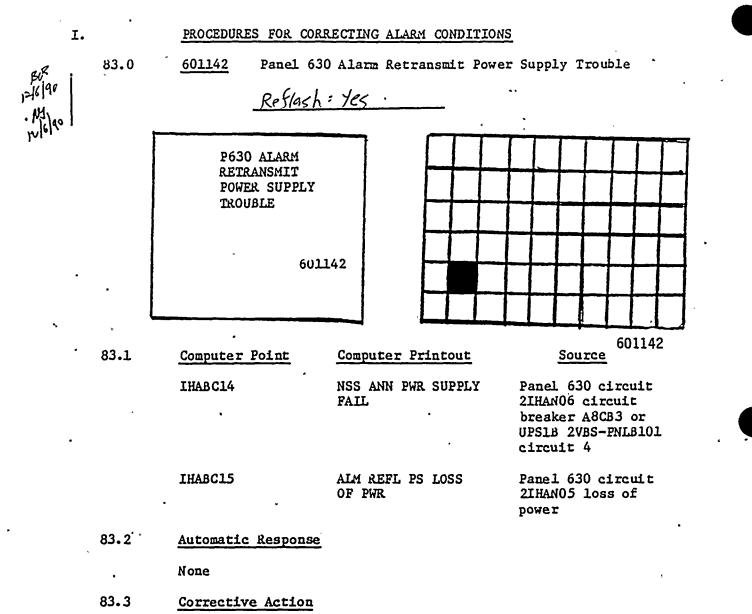
a. Notify I&C of the alarm.

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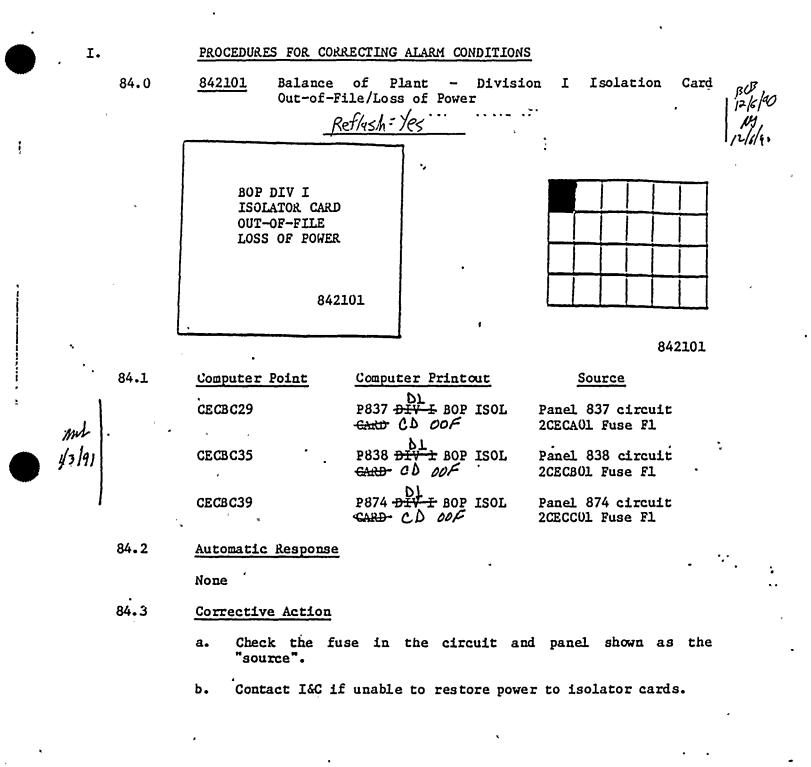


- 82.3 Corrective Action
 - Check panel circuits and breaker shown as "source". a.
 - ь. Notify I&C of the alarm.
 - Refer to N2-0P-91A, Section H.3.0 "Loss of all Annunciators," if applicable Ć.

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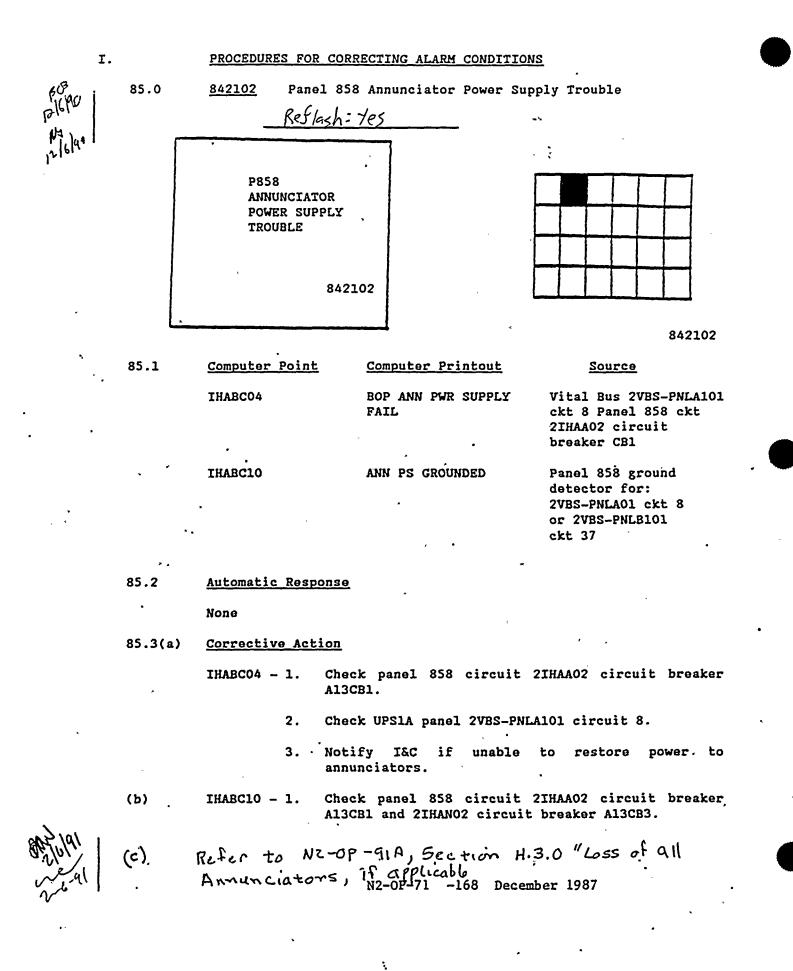


- _
 - a. Check circuits and breaker shown as "source".
 - b. Notify I&C of the alarm if unable to restore power to annunciator isolators, or retransmitter relays.



N2-0P-71 __167 December 1987

1. Sec. 1. Sec.



- 85.0 842102 Panel 858 Annunciator Power Supply Trouble (Cont'd)
- 85.3(b) (Cont'd) 2. Check UPSIA panel 2VBS-PNLB101 circuit 37 and 2VBS-PNLA101 circuit 8.
 - 3. Notify I&C if unable to restore power to annunciator.

N2-0P-71 -169 December 1987

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PROCEDURES FOR CORRECTING ALARM CONDITIONS I. Emergency Response Facility Panel Isolation Card 86.0 842103 Out-of-File/Loss of Power . . Reflach: Yes ERF PANEL ISOLATION CARD OUT-OF-FILE/ LOSS OF POWER 842103 842103 86.1 Computer Point Source Computer Printout Panel 899 circuit CECBC45 P899D1 ERF ISOL CD OOF 2CECA03 Fuse F1 or UPS2A 2VBS*PNL101A circuit 3 CECBC46 P899D2 ERF ISOL Panel 899 circuit CD UOF 2CECB02 Fuse F1 or UPS2B 2VBS*PNL301B circuit 20 P899 BLK ERF ISOL Panel 899 circuit CECBC47 CD OOF 2CECB04 Fuse F1 or 2SCI-PNLA102 circuit 17 86.2 Automatic Response None 86.3 Corrective Action Check fuses and breakers in panels listed as "source". a. Notify I&C if unable to restore power to b. isolator circuits.

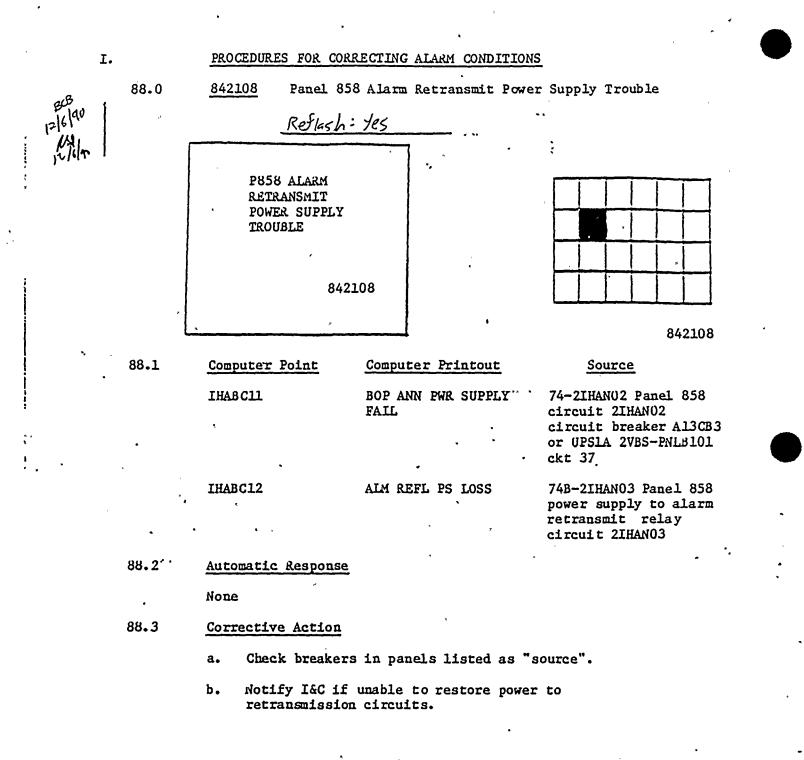
I.	• .	PROCEDURES FOR CORE	RECTING ALARM CONDITIO	NS	
	87.0	Out-of-Fi	of Plant Division II I ile/Loss of Power	12/6/90	
	-	<u></u>	hsh= 1es	- 16/91	
		BOP DIV II ISOLATOR CARD OUT-OF-FILE/ LOSS OF POWER			
		8421	107		
•.				842107	
•	86.1	Computer Point	Computer Printout	Source	
- 1.1		CECBC30	D2 P874 DIV-2 BOP ISOL CARD CL OOF	Panel 874 Isol cards ZG-A, B, C, D	
- ml 1/3/91	ĸ	CECBC36	P837 DIV-2 BOP ISOL CARD CD <i>ODF</i> .	Panel 837 Isol cards ZAJ-A, B, C, D	
	• ,	CECBC40	P838 DIV-2 BOP ISOL CARD 20 00-	Panel 838 Isol cards ZAH-A, B, C, D or panel 838 circuit 2CECBOl Fuse Fl	
		IHABC02	DIV 2 ISOL INP CARD OUT	Panel 838 Div 2 Isol input card(s) from 99-1A through 99-11B any card(s) out of file	
	87.2	<u>Automatic Response</u>	-		
		None			
	87.3	Corrective Action	,	,	

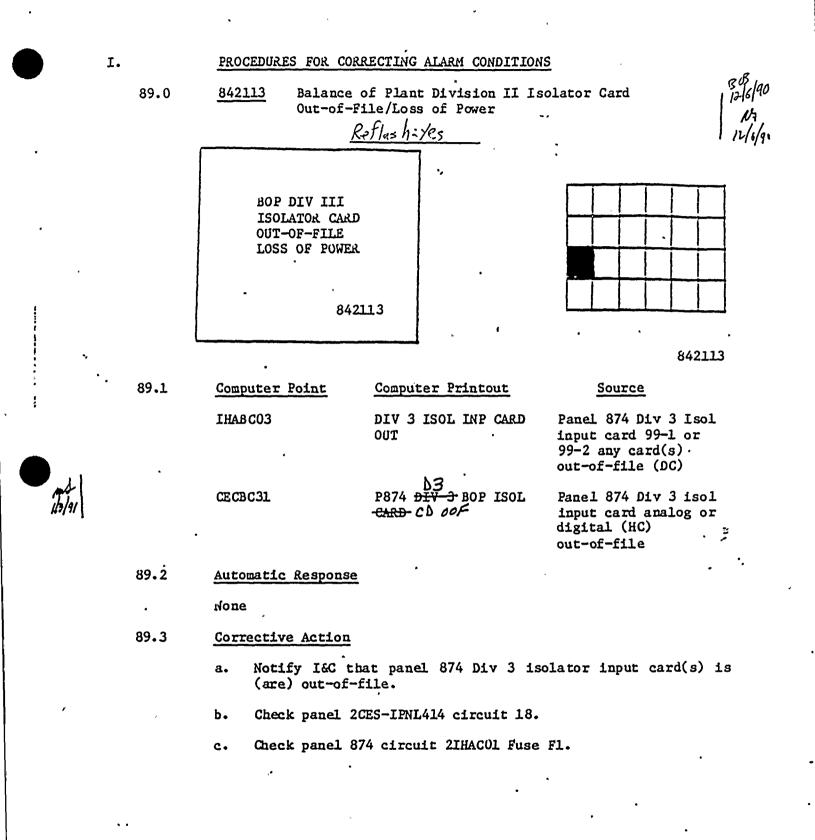
a. Check panel cards and fuse as shown as "source".

b. Notify I&C if unable to restore power to isolator circuits.

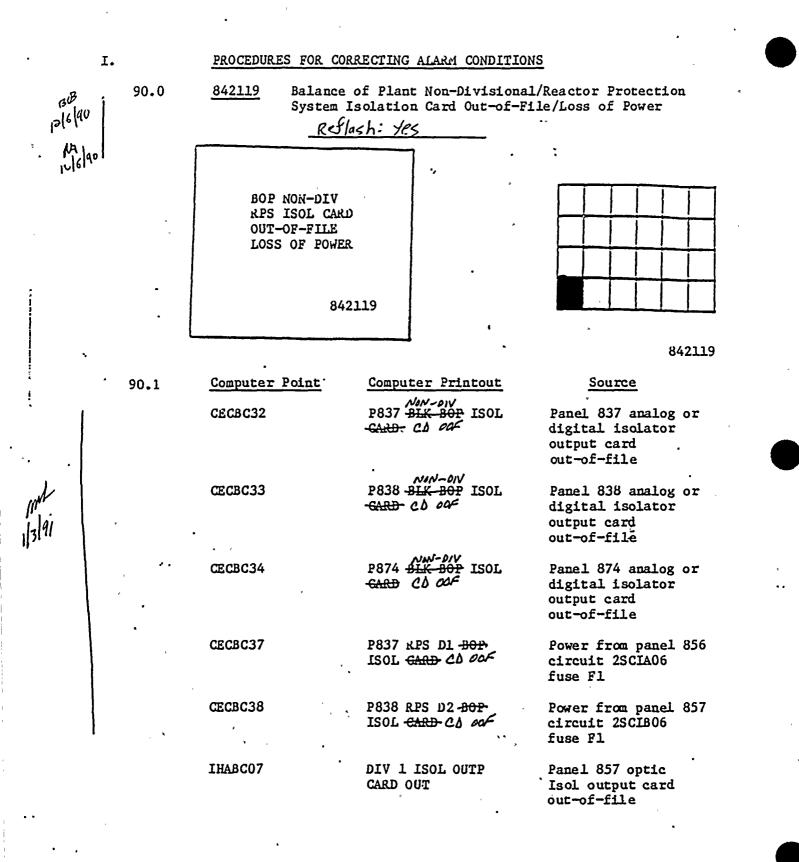
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90.1	Computer Point	Computer Printout	Source (Cont'd)
	IHABC08	DIV 2 ISOL OUTP CARD OUT	Panel 838 optic Isol output card out-of-file
`	IHABC09	DIV 3 ISOL OUTP CARD OUT	Panel 874 optic Isol output card out-of-file

90.2 <u>Automatic Response</u>

None

90.3 Corrective Action

a. , Check panel cards and fuses listed as "source".

b. Notify I&C of the alarm.

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COMPONENT NO	COMPONENT DESCRIPTION	POWER •Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL INITI POSITION POSITION DAT	
2RTX-XSR1A	13.8KV Reserve Station Service XFMR	2NPS-SWG001	1-1	Open	D C-Power Fuses in-MAIN FEED- Note
2STX-XNS1	13.8KV Normal Station Service XFHR Breaker (Norm Sta Svce XFMR 2STX-XNS1)	2NPS-SWG001	1-3	Closed	Note I
2RTX-XSR1B	13.8KV Reserve Station Service XFMR Breaker (RSV Sta Svce XFMR 2RTX-XSR1B)	2NPS-SWG001	1-16	Cubicle Only	-
2RTX-XSR1A	13.8KV Reserve Station Service XFHR Breaker (RSV Sta Svce XFMR 2RTX-XSR1A)	2NPS-SWG002	2–1 .	Cubicle Only	·····
2ABS-X1	13.8KV Aux Boiler Service XFMR Breaker (Aux Blr Svce XFMR 2ABS-X1)	2NPS-SWG002	2–5	Closed	D C-Powor F usos-in Main-Feed
2RTX-XSR1B	13.8KV Reserve Station Service XFMR Breaker (RSV Sta Svce XFMR 2RTX-XSR1B	2NPS-SWG003	3-1	Open . ,	Note I
2STX-XNS1	13.8KV Normal Station Service XFMR Breaker (Norm Sta Svce XFMR 2STX-XNS1)	2NPS-SWG003	3–14	Closed	Note I
2NPS-SWG003	Metering Cubicle DC Control Power Fuses	2NPS-SWG003	· 3–15	Fuses Installed	DC Powe fuses in MAIN FE
2NPS-SWG001	Metering Cubicle DC Control Power Fuses	2NPS-SWG001	1-2	Fuses Installed	DC Powe fuses in MAEN FEL
2NPS-SWG002	Metering Cubicle DC Control Power Fuses	2NPS-SWG002	2-4	Fuses Installed	OC Power fuses in UA And U



TABLE 11

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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2RTX-XSR1A	13.8KV Reserve Station Service XFMR (Breaker (RSV Sta Svce XFMR 2RTX-XSR1A)	2NPS-SWG003	. 3-16	Cubicle Only		
2ATX-XS3	13.8KV Feed to Aux Stepdown transformer 2ATX-XS3	2NPS-SWG003	3-6	Closed	-713 	
2RCS-MGIA	Slow speed breaker for Reactor Recirc Pump 2RCS-PlA	2NPS-SWG004	4-1	Open		
2RCS-MG1B	Slow speed breaker for Reactor Recirc Pump 2RCS PlB	2NPS-SWG005	5-1	Open		
2NJS-X1H,J,K	13.8KV/600V Aux transformer 2NJS-X1H, 2NJS-X1J, 2NJS-X1K	2NPS-SWGOOÌ	1-1A	Closed		-
2NJS-X1C,D	13.8KV/600V Aux transformer 2NJS-X1C, 2NJS-X1D	2NPS-SWG001	1-5	Closed	. :	
2NJS-X1A,B,G	13.8KV/600V Aux transformer 2NJS-X1A, 2NJS-X1B, 2NJS-X1G	2NPS-SWG001	1-14	Closed		
	· · · · · · · · · · · · · · · · · · ·				-	.

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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE REMARKS
	13.8KV/4.16KV Aux Stepdown XFMR (Aux stepdown XFMR 2ATX-X51)	2NPS-SWG001	1-4	Closed	<u></u>
	13.8KV/600 Aux XFMR 2NJS-X3H, 2NJS-X3J, 2NJS-X3K	2NPS-SWG003	3-14	Closed	
2NJS-X3C,D	13.8KV/600V Aux XFMR 2NJS-X3C,2NJS-X3D	2NPS-SWG003	3-3	Closed	
	13.8KV/600V Aux XFMR 2NJS-X3A,2NJS-X3B, 2NJS-X3G	2NPS-SWG003	3-13	Closed	
	4.16KV to 2NNS-SWG011 (Aux stepdown XFMR 2ATX-XS1)	2NNS-SWGO11	11-3	Closed	OC Fuses in BAT Bus A and BATL Bus B
	4.16KV to 2NNS-SWG012 (Bus the to 2NNS-SWG011)	2NNS-SWGO11		Closed	DC-Fuses 1n-BAT-A Bus-Ar, BAT-B, Bus-B-
	4.16KV feed to 2NNS-SWG-014 (TAG) (Aux Stepdown XFMR 2ATX-XS1)	2NNS-SWG014	14-2	Closed	<u>.</u>
2ENS-SWG101	4.16KV Tie to emergency Bus 2ENS-SWG101 (TAG) (4.16KV emergency switchgear 2ENS-SWG101	2NNS-SWG014	14-1	Open	

TABLE (I

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COMPONENT NO	COMPONENT DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ •Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-X1F	4.16KV/600V Aux transformer (TAG) (Aux stepdown XFMR 2NJS-X1F)	2NNS-SWG014	14-4	Closed	· · · · · · · · · · · · · · · · · · ·	•
2NJS-X1E	4.16KV/600V Aux transformer (TAG) (Aux stepdown XFMR 2NJS-X1E)	2NNS-SWGO14	- 14-8	Closed	20 25 26 26 20 20 20 20 20 20 20 20 20 20 20 20 20	DC Fuses in BAT A BUS A, BAT B, BUS B
2ATX-XS3	4.16KV to 2NNS-SWGO13 (TAG) (Aux transformer 2ATX-XS3)	2NNS-SWG013	13-6	Closed		DC Fuses in BAT A BUS A, BAT B, BUS B
2NNS-SWG012	4.16KV Tie Breaker to 2NNS-SWG012 (TAG) (Bus Tie Breaker Cubicle)	2NNS-SWG013	13-10	Open ,		
2ATX-XS3	4.16KV to 2NNS-SWG015 (TAG) (Aux transformer 2ATX-XS3)	2NNS-SWG015	15-3	Closed		
2ENS-SWG103	4.16KV Tie Breaker emerg. Bus 2ENS- SWG103 (TAG)(4.16KV Emerg. Switchgear 2ENS-SWG103)	2NNS-SWG015	15-8	Open		
2NJS-X3F.	4.16KV/600V Aux transformer (TAG) (4.16KV/600V Aux stepdown XFMR 2NJS-X3	2NNS-SWGO15 F)	15-1	Closed		DC Fuses In.BAT A BUS A, BAT B, BUS B

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SYSTEM POWER SUPPLY LINEUP

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COMPONENT NO).	COMPONENT DESCRIPTION	– POWEP. Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REHARKS
2NJS-X3E		00V Aux transformer (TAG) 600V Aux stepdown XFMR 2NJS-X3	2NNS-SWG015 JE)	15-7	Closed	-	· · · · · · · · · · · · · · · · · · ·
2RTX-XSR1A		o 2NNS-SWGO16 (TAG) (RSV Sta R 2RTX-XSR1A)	2NNS-SWG016	16-2	Closed	******	
2RTX-XSR1B		O 2NNS-SWGO17 (TAG) (RSV Sta R 2RTX-XSR1B)	2NNS-SWG017	17-2	Closed		
2ABS-X1		0 2NNS-SWG018 (TAG) (Aux BLR R 2ABS-X1)	2NNS-SWG-18	18-2	Closed		
Aux XFHR 2NJS-X1C	600V to	2NJS-US1 BUS X	2NJS-US1	3B	Closed	•	
Aux XFMR 2NJS-X3C	600V to	2NJS-US1 Bug B	2NJS-US1	148	Closed		
2NJŠ-US1A&C	600V Ti	o Breaker between Bus A & Bus C	: 2HJS-US1	88 .	Closed		· · · · · · · · · · · · · · · · · · ·
2NJS-US1B&C	600V Ti	a Breaker between Bus B & Bus C	2NJSUS1	108	Open	,	



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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO	COMPONENT . DESCRIPTION	PO Bus Numbe		SU -	PPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NHS-MCC003	600V to 2NHS-MCC003 Bus A (TAG) (2NHS-MCC003 Bus A)	2NJS-US1	Bus	A	3C	Closed		
2NHS-MCCOO3	600V to 2NHS-MCCOO3 Bus B (TAG) (2NHS-MCCOO3 Bus B)	2NJS-US1	Bus	B	130	Closed	x	
2LAT-PNL100	600V to distribution panel 2LAT-PNL100 (TAG)(600V Normal Dist. PNL 2LAT-PNL100)	2NJS-US1	Bus	C	9C	Closed		•
2NJS-PNL100	600V to distribution Panel 2NJS-PNL100 (TAG)(600V Normal Dist. PNL 2NJS-PNL100)	2NJS-USI	Buş	C	98	Closed		
2WPS-PNL100	600V to distribution Panel 2WPS-PNL100 (TAG)(600V welding Distr PNL 2WPS-PNL100)	2NJS-US1	Bùs	C	80	Closed		
Aux XFMR 2NJS-X1D	600V to 2NJS-US2 Bus A	2NJS-US2A	l.		38	Closed	;	
Aux XFMR 2NJS-X3D	600V to 2NJS-US2 Bus B	2NJS-US2E			128	Closed		
2NJS-US2	600V Tie Breaker between Bus A and Bus C	2NJS-US2	•		68	Closed		

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SYSTEM	POWER	SUPPLY	LINEUP

COMPONENT NO.	COMPONENT . DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS	
2NJS-US2	600V Tie Breaker between Bus B a	and Bus C 2NJS-US2	98	Open			•
2NHS-MCC005	600V to 2NHS-MCC005 Bus A	2NJS-US2 Bus	A 5C.	Closed			
2NHS-MCC005	600V to 2NHS-MCC005 Bus B	2NJS-US2 Bus	B 12C	Closed			
2NHS-MCCO14	600V to 2NHS-MCCO14 Bus A	2NJS-US2 Bus	A 3C	Closed			
2NHS-MCC014	600V to 2NHS-MCCO14 Bus B	2NJS-US2 Bus	B 10 ^B	Closed			An
2LAR-PNL200 NJS-PNL201	600V Feed to Norm Dist Panel 2 LA えルコ	AR-PNL200 2NJS-US2 Bus <i>TS-PNL201</i>	с н. 6D	Closed		•	
2NJS-PNL200	600V Feed to Norm Dist Panel 2NJ	JS-PNL200 2NJS-US2 Bus	C 8B	Closed			ľ
2WPS-PNL200	600V Feed to welding distributio 2WPS-PNL200	on Panel 2NJS-US2 Bus	C 8D	Closed	;		_
2NJS-X1B	600V Feed to Load Center 2NJS-US	S3 Bus A 2NJS-US3A	3B	Closed			

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	· ·	TABLE []				
	SYSTE	M_POWER_SUPPLY	LINEUP	,		
COMPONENT DESCRIPTION		Bus Number	- Cubicle/	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
600V Feed to Load Center	- 2NJS-US3 Bus B	2NJS-US3 B	14B	Closed		•
600V Tie Breaker between	Bus A & Bus C	2NJS-US3 Bus	A 7B ⁻	Closed		
600V Tie Breaker between	n Bus B & Bus C	2NJS-US3 Bus	B 118	Open		
600V Feed to motor contr 2NHS-MCC006 Bus A	rol center	2NJS-US3 Bus	A 3C	Closed		
600V Feed to motor contr 2NHS-MCC006 Bus B	ol center	2NJS-US3 Bus	B 120 [°]	Closed		•
600V Feed to normal dist 2NJS-PNL300	ribution Panel	2NJS-US3 Bus	C 9B .	Closed		
600V Feed to normal dist 2NJS-PNL301	tribution Panel	2NJS-US3	9D .	Closed		
2WPS-PNL300	stribution Panel	2NJS-US3 Bus	C 7D -	Closed		
					,	A.
	DESCRIPTION DESCRIPTION 1 600V Feed to Load Center 600V Tie Breaker betweer 600V Feed to motor contr 2NHS-HCC006 Bus A 1 600V Feed to normal dist 2NJS-PNL300 1 600V Feed to normal dist 2NJS-PNL301	COMPONENT DESCRIPTION 1 600V Feed to Load Center 2NJS-US3 Bus B 600V Tie Breaker between Bus A & Bus C 600V Tie Breaker between Bus B & Bus C 600V Feed to motor control center 2NHS-HCC006 Bus A 1 600V Feed to motor control center 2NHS-MCC006 Bus B 1 600V Feed to normal distribution Panel 2NJS-PNL300 1 600V Feed to normal distribution Panel 2NJS-PNL301 600V Feed to welding distribution Panel 2NJS-PNL300	TABLE [I] SYSTEM POWER SUPPLY COMPONENT DESCRIPTION Bus Number 1 600V Feed to Load Center 2NJS-US3 Bus B 2NJS-US3 B 600V Tie Breaker between Bus A & Bus C 2NJS-US3 Bus B 600V Tie Breaker between Bus B & Bus C 2NJS-US3 Bus B 600V Feed to motor control center 2NHS-HCC006 Bus A 1 600V Feed to normal distribution Panel 2NJS-PNL300 1 600V Feed to welding distribution Panel 2NJS-PNL300	TABLE II SYSTEM POWER SUPPLY LINEUP COMPONENT DESCRIPTION POWER SUPPLY Bus Number - Cubicle/ Breaker 600V Feed to Load Center 2NJS-US3 Bus B 2NJS-US3 B 14B 600V Tie Breaker between Bus A & Bus C 2NJS-US3 Bus A 7B 14B 600V Tie Breaker between Bus B & Bus C 2NJS-US3 Bus B 11B 11B 600V Feed to motor control center 2NJS-US3 Bus A 3C 3C 600V Feed to motor control center 2NJS-US3 Bus B 12D 12D 600V Feed to normal distribution Panel 2NJS-US3 Bus C 9B 600V Feed to normal distribution Panel 2NJS-US3 Bus C 7D 600V Feed to welding distribution Panel 2NJS-US3 Bus C 7D	TABLE_II SYSTEM POWER SUPPLY LINEUP COMPONENT DESCRIPTION POWER Bus Number SUPPLY Cubicle/ Breaker NORMAL ACTUAL POSITION 600V Feed to Load Center 2NJS-US3 Bus B 2NJS-US3 B 14B Closed 600V Tie Breaker between Bus A & Bus C 2NJS-US3 Bus A 7B Closed 600V Tie Breaker between Bus B & Bus C 2NJS-US3 Bus A 7B Closed 600V Feed to motor control center 2NJS-US3 Bus A 3C Closed 600V Feed to notor control center 2NJS-US3 Bus B 12D Closed 600V Feed to normal distribution Panel 2NJS-US3 Bus C 9B Closed 600V Feed to normal distribution Panel 2NJS-US3 Bus C 7D Closed 600V Feed to normal distribution Panel 2NJS-US3 Bus C 7D Closed 600V Feed to normal distribution Panel 2NJS-US3 Bus C 7D Closed 600V Feed to welding distribution Panel 2NJS-US3 Bus C 7D Closed	TABLE LI SYSTEM POWER SUPPLY LINEUP COMPONENT DESCRIPTION POWER SUPPLY Bus Number NORMAL Cubicle/ Breaker NORMAL POSITION POSITION INITIALS/ DATE 600V Feed to Load Center 2NJS-US3 Bus 8 2NJS-US3 B 14B Closed - 600V Feed to Load Center 2NJS-US3 Bus 8 2NJS-US3 Bus A 7B Closed - 600V Feed to Load Center 2NJS-US3 Bus C 2NJS-US3 Bus A 7B Closed 600V Feed to motor control center 2NJS-US3 Bus A 3C Closed 600V Feed to motor control center 2NJS-US3 Bus B 12D Closed 600V Feed to motor control center 2NJS-US3 Bus C 9B Closed 600V Feed to normal distribution Panel 2NJS-US3 Bus C 9B Closed 600V Feed to normal distribution Panel 2NJS-US3 9D Closed 600V Feed to normal distribution Panel 2NJS-US3 9D Closed 2NJS-PNL300 600V Feed to welding distribution Panel 2NJS-US3 Bus C 7D Closed

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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	COMPONENT DESCRIPTION	Pi)WER SU Bus Number -	PPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
, 2LAT-PNL300	600V Feed to normal distribution Panel 2LAT-PNL300	2NJS-US3 Bus B	12B ;	Closed		
2VBB-TRS1	600V Feed to automatic transfer switch 2VBB-TRS1 · · ·	2NJS-US3 Bus B	13A ,	Closed		
2VBB-TRS1	600V Feed to switchgear room automatic transfer switch 2VBB-TRS1	2NJS-US4 Bus A	6C	Closed		— <u>—</u>
2NJS-X1A Aux Transforme	600V Feed to load center 2NJS-US4 Bus A	2N.1S-US4A	38	Closed	· · · ·	
2NJS-X3A Aux transforme	600V Feed to load center 2NJS-US4 Bus B	2NJS-US4B	158	Closed		
2NJS-X3A Aux transforme	600V Tie Breaker between Bus A & Bus C r	2NJS-US4B	8B	Closed	÷	
2NJS-US4 Bus C	600V Tie Breaker between Bus B & Bus C	2NJS-US4 Bus B	118	Open		•
2NHS-MCC007 Bus A	600V Feed to motor control center 2NHS-MCC007 Bus A	2NJS-US4 Bus A	30	Closed ,		

COMPONENT NO	COMPONENT DESCRIPTION		Y ubicle/ eaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NHS-MCCOO7 Bus B	600V Feed to motor control center 2NHS-MCC007 Bus B	2NJS-US4 Bus B	150	Closed	·.	•
2NHS-MCCO13 Bus A	600V Feed to motor Control Center 2NHS-MCCO13 Bus A	2NJUS4 Bus [°] A	6D	Closed		
	600V Feed to motor control center 2NHS-MCCOl3 Bus B	2NJS-US4 Bus B	14D	Closed	· .	
2NJS-PNL401	600V Feed to normal distribution Panel 2NJS-PNL401	2NJS-US4 Bus A	48	Closed		
2NJS-PNL400	600V Feed to normal distribution Panel 2NJS-PNL400	2NJS-US4 Bus C	98	Closed ;		
	600V Feed to normal distribution Panel 2LAS-PNL400	2NJS-US4 Bus C ·	9C	Closed		
	600V Feed to welding distribution Pane 2WPS-PNL 400	I 2NJS-US4 Bus C	8D	Closed		
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	TABLE II	•	-		
<u>SYS</u>	TEM POWER SUPPLY	LINEUP		*	7
COMPONENT DESCRIPTION	Bus Number -	Cubicle/	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REHARKS
	2NJS-US4 Bus B	14A	Closed		•
W Feed to load center 2NJS-US5	2NJS-US5	3B .	Closed .		
W Feed to load center 2NJS-US5	2NJS-US5	8B	Open		In
	2NJS-US5	30	Closed		-
	2NJS-US5	5A .	Closed		•
V Feed to motor control center S-MCCOll	2NJS-US5	4A	Closed		
	2NJS-US5	5C -	Closed		
	COMPONENT DESCRIPTION W Feed to normal distribution Panel S-PNL402 W Feed to load center 2NJS-US5 W Feed to load center 2NJS-US5 W Feed to motor control center S-MCC008 W Feed to motor control center S-MCC008	SYSTEM POWER SUPPLY COMPONENT POWEP SUP DESCRIPTION Bus Number - W Feed to normal distribution Panel 2NJS-US4 Bus B INFORMATION Support INFORMATION POWEP SUP INFORMATION Bus Number - INFORMATION Support INFORMATION Support	SYSTEM_POWER_SUPPLY_LINEUP COMPONENT POWEP_SUPPLY DESCRIPTION Bus Number - Cubicle/ Breaker W Feed to normal distribution Panel 2NJS-US4 Bus B 14A IS-PNL402	SYSTEM POWER SUPPLY LINEUP COMPONENT DESCRIPTION POWEP Bus Number SUPPLY - Cubicle/ Breaker NORMAL POSITION POSITION NV Feed to normal distribution Panel 2NJS-US4 Bus B 14A Closed NV Feed to normal distribution Panel 2NJS-US5 3B Closed NV Feed to load center 2NJS-US5 2NJS-US5 3B Closed NV Feed to load center 2NJS-US5 2NJS-US5 BB Open VV Feed to motor control center 2NJS-US5 3D Closed VV Feed to motor control center 2NJS-US5 5A Closed VV Feed to motor control center 2NJS-US5 5A Closed VV Feed to motor control center 2NJS-US5 5A Closed VV Feed to motor control center 2NJS-US5 5A Closed VV Feed to motor control center 2NJS-US5 4A Closed VV Feed to motor control center 2NJS-US5 5C Closed	SYSTEM POWER SUIPLY LINEUP COMPONENT DESCRIPTION POWEP Bus Number POWEP SUPPLY Cubicle/ Breaker NORMAL POSITION ACTUAL ACTUAL DATE INITIALS/ DATE W Feed to normal distribution Panel 2NJS-US4 Bus B 14A Closed W Feed to load center 2NJS-US5 2NJS-US5 3B Closed W Feed to load center 2NJS-US5 2NJS-US5 8B Open W Feed to motor control center 2NJS-US5 3D Closed V Feed to motor control center 2NJS-US5 5A Closed V Feed to motor control center 2NJS-US5 5A Closed V Feed to motor control center 2NJS-US5 5A Closed V Feed to motor control center 2NJS-US5 5A Closed V Feed to motor control center 2NJS-US5 5A Closed V Feed to motor control center 2NJS-US5 4A Closed V Feed to motor control center 2NJS-US5 5C Closed

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		SYS	TEM POWER SUP	PLY_LINEUP	1	
COMPONENT NO	COMPONENT DESCRIPTION		POWER Bus Number	SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE REMARKS
- 2NJS-PNL500	600V Feed to normal distrib 2NJS-PNL500	oution Panel	2NJS-US5	68	Closed	•
Aux XFMR. 2NJS-X3E	600V Feed to load center 2	1JS-US6	2NJS-US6	3ß	Closed	
Aux XFMR 2NJS-X3F	600V Feed to load center 2	135-056	2NJS-US6	78	Open	· · ·
2NHS-MCCOO9	600V Feed to motor control 2NHS-MCC009	center .	2NJS-US6	30	Closed	
2NHS-MCC009"	600V Feed to motor control 2NHS-MCC009	center	2NJS-US6	50	Closed	
2NHS-MCCO12	600V Feed to motor control 2NHS-MCCO12	center :	2NJS-US6	⁻ 4D	Closed	L
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		3	TABLE I	<u>I</u>		-	
	İ	с	SYSTEM POWER SUP	PLY LINEUP			
COMPONENT NO).	COMPONENT DESCRIPTION	Bus Number	SUPPLY - Cubicle/ •Breaker	NORMAL ACTUAL Position Position	INITIALS/ DATE	REMARKS
2NHS-MCCO12	600V Fei 2NHS-MCI	ed to motor control center CO12	2NJS-US6	5A	Closed .		•
2NJS-PNL600	60DV Fee 2NJS-PNI	ed to normal distribution (600	Yanel 2NJS-US6	68	Closed		
AUX XFMR 2NJS-X1G	600V Fe	d to load center 2NJS-US7	Bus A 2NJS-US7A	38	Closed		
AUX XFMR 2NJS-X3G	600V Fee	ed to load center 2NJS-US7	Bus B 2NJS-US7B	78	Closed		
2HJS-US7	600V Tie	Breaker between Bus A & E	Bus B 2NJS-US7	58	Open	······································	
2NJS-PNL702	600V Fee 2NJS-PNI	ed to normal distribution F 702	Panel 2NJS-US7 Bus	A 3C	Closed		
2NJS-PNL700	600V Fee 2NJS-PNI	ed to normal distribution p 1 700	panel 2NJS-US7 Bus	A 4B	Closed		
2NJS-PNL704	600V Fee 2NJS-PNI	ed to normal distribution F 1704	Panel 2NJS-US7 Bus	4 4C .	Closed -		
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			eve	TABLE II STEH_POWER_SUPPLY	7 T THEND	•		
COMPONENT NO).	COMPONENT DRSCRIPTION		POWER SU Bus Number -		NORMAL ACTUAL Position Position	INITIALS/ DATE	REMARKS
2NJS-PNL706	600V Fe 2NJS-PI	eed to normal distribution NL706	Panel	2NJS-US7 Bus A	4D	Closed		£
2NJS-PNL701	600V Fe 2NJS-PI	eed to normal distribution NL701	Panel	2NJS-US7 Bus B	6B	Closed	-	
2NJS-PNL705	600V Fe 2NJS-PI	i eed to normal distribution NL705	: Panel	2NJS-US6 Bus B	6C	Closed		
2NJS-PNL707	600V Fa 2NJS-PI	eed to normal distribution NC707	Panel	2NJS-US7 Bus B	6D	Closed .		
2NJS-PNL703	600V Fe 2NJS-PI	eed to normal distribution NE703	i Panel !	2NJS-US7 Bus B	7C	Closed		3
2NJS-X1H Aux. Transfo		j sed to Load Center 2NJS-US }	Bus I	V 2NJS-US8B	³⁸ .	Closed -		•
2NJŚ-X3H	600V Fe	eed to Load Center 2NJS-US	B Bus B	3 2NJS-US8B	138	Closed		

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•	·		TABLE II		¢	• · ·
		1.	SYSTEM POWER SUPPL	LY LINEUP		
•	COMPONENT NO	COMPONENT DESCRIPTION		SUPPLY - Cubicle/ .Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE REMARKS
	2NJS-US8 Bys C	600V Tie Breaker between Bus A & Bu	s C 2NJS-US8 Bus /	A 7B	Closed .	
. •	2NJS-USB Bus C	600V Tie Breaker between Bus B & Bu	rs C 2NJS-US8 Bus E	3 9B	Open	
	2NHS-MCC002 Bus A	600V Feed to motor control center 2NHS-MCCOO2 Bus A	2NJS-USB Bus /	N 3C	Closed	
	2NHS-MCC002 Bus B	600V Feed to motor control center 2NHS-MCCOO2 Bus B	2NJS-US8 Bus E	3 13C	Closed	•
•	2NHS-MCCO15 Bus A	600V Feed to motor control center 2NHS-MCCO15 Bus A	2NJS-US8 Bus A	40 . *	Closed , ,	
	2NHS-MCCO15 Bus B	600V Feed to motor control center 2NHS-MCCO15 B	2NJS-USB Bus E	3 120	Closed	
	2NJS-X1J Aux Transfor	600V Feed to load center 2NJS-US9 B mer	US A 2NJS-US9A	3B	Closed	
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COMPONENT NO			PPLY Cubicle/ Breaker		INITIALS/ DATE REMA
2NJS-X3J Aux Transfor	600V Feed to load center 2NJS-US9 Bus B mer	2NJS-US9B	138	Closed	•
2NJS-US9 Bus B	600V Bus Tie between Bus A & Bus C	2NJS-US9 Bus A	78	Closed	
2NJS-US9 Bus C	600V Bus Tie between Bus B & Bus C	2NJS-US9 _. Bus B	98	Open	• •
2NHS-MCCOD1 Bus A	600V Feed to motor control center 2NHS-MCCOOl Bus A	2NJS-US9 Bus A	4D	Closed	
2NHS-NCCOO1 Bus B	600V Feed to motor control center 2NHS-MCC001 B	2NJS-US9 Bus B	120	Closed	-
2NHS-MCCO16 Bus A	600V Feed to motor control center 2NHS-MCCO16 Bus A	2NJS-US9 Bus A	68	Closed	
2NHS-MCCOO2	600V Tie Breaker between Bus B & Bus C	2NHS-HCC002	11A	 Upen	

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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO	COMPONENT DESCRIPTION	POWBR S Bus Number -	UPPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ . DATEREMARKS
2NJS-US8 Bus B	600V incoming feed to motor control center 2NHS MCC002 Bus B	2NHS-MCC002N	188	Closed	
2NJS-US1 Bus A	600V incoming feed to motor control center 2NHS MCC003 Bus A	2NHS-MCC003A	18	Closed	
2NHS-HCC003	600V tie breaker between Bus A & Bus C	2NHS-HCC003	88	Closed	
2NHS-MCC003	600V Tie Breaker between Bus B & Bus C	2NHS-HCC003	18A	Open /	
2NJS-US1 Bus B	600V incoming feed to motor control center 2NHS MCC003 Bus B	2NHS-HCC003B	19A	Closed	
2NJS-PNL402	600V emergency feed to motor control center 2NHS MCC004	2NHS-MCC004	18	Closed	
2NJS-PNL401	600V normal feed to motor control center 2NHS MCC004	2NHS-HCC004	10.	Closed	

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			TABLE II				
		<u></u>	STEM POWER SUPPL	Y LINEUP .			
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COMPONENT NO	COMPONENT DESCRIPTION	-	POWER S Bus Number -	UPPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE RE	MARKS
2NJS-US2 Bus A	600V incoming feed to center 2NHS-MCC004 Bus	motor control A	2NHS-MCCOO5A	۱۸	Closed	· ·	
2NHS-MCC005	600V Tie Breaker betwe	en Bus A & Bus C	2NHS-MCC005	5۸	Closed		*
2NHS-MCC005	600V Tie Breaker betwe	en Bus B & Bus C	2NHS-MCCOO5	8A	Open		
2NJS-US2 Bus B	600V incoming feed to center 2NHS-MCC005 Bus		2NHS-MCCOO5B	12A	Closed		
2NJS-US3 Bus A	600V incoming feed to center 2NHS-MCC006 Bus		2NHS-MCCOO6A	۱۸	Closed		
2NHS-MCCOO6	600V tie breaker betwe	en Bus A & Bus C	2NHS-MCC006	AG	Closed		
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TABLE 11

SYSTEM POWER SUPPLY LINEUP

	COMPONENT		POWER SU		NORMAL ACTUAL	INITIALS/		
COMPONENT NO	. DESCRIPTION		Bus Number -	Cubicle/ Breaker -	POSITION POSITION	DATE	REMARKS	
2NHS-MCCOO6	600V tie breaker between Bus B & Bu	s C	2NHS-MCC006	14A	Open		•	
2NJS-US3 Bus B	600V incoming feed to motor control center 2NHS-MCC006 Bus B	•	2NHS-MCC006B	15A	Closed			
- 2NJS-US4 Bus A	600V incoming feed to motor control center 2NHS-MCC007 Bus A		2NHS-MCCOO7A	16	Closed			
2NHS-MCCO16 Bus B	600V feed to motor control center 2NHS-MCCO16 Bus B		2NJS-US9 Bus B	108	Closed			
2NJS-PNL101	600V feed to normal distribution Par 2NJS-PNL101	nel	2NJS-US9 Bus C	70	Closed			
2LAN-PNL900	600V feed to normal distribution Pa 2LAN-PNL900	nel	2NJS-US9 Bus C	80	Closed			
2NJS-X1K Aux transformer	600V feed to load center 2NJS-US10 Bus A		2NJS-US10A	38	Closed		·	
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		2-01	0-71 -194 Dece	mber 1987				

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е		·	<u> </u>	STEM POWER SUPPLY	<u>LINEUP</u>	······.		
.COMPONENT NO	•	COMPONENT DESCRIPTION		POWER SU Bus Number -	IPPLY Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REHARKS
2NJS-X3K Aux transformer	600V fee Bus B	ed to load center`2NJS-US1	0	2NJS-US10B	128	Closed	¢	•
2NJS-US10	600V tie	breaker between Bus A &	Bus C	2NJS-US10	68	Closed .		•
2NJS-US10	600V tig	é breaker between Bus B &	Bus C	2NJS-US10	98	Open		
2NHS-MCCO10 Bus A		é ed to motor control center COlO Bus A ;		2NJS-US10 Bus A	3C	Closed		
2NHS-MCCO10 Bus B		ed to motor control center COlO Bus B		2NJS-US10 Bus B	120	Closed		
2NHS-MCCO17 Bus A		ed to motor control center CO17 Bus A		2NJS-US10 Bus A	4B	Closed		
2NHS-HCCO17 Bus B		ed to motor control center CO17 Bus B	c.	2NJS-US10 Bus B	118	Closed		
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				•	TABLE []	<u> </u>			
•.				<u>א sys</u>	TEM POWER SUPI	PLY_LINEUP			
•	COMPONENT NO). ;	COMPONENT DESCRIPTION		POWER Bus Number	SUPPLY - Cubicle/ ,Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
	2NJS-US9 Bus A		coming feed to motor contro ZNHS-MCCOO1 Bus A		2NHS-MCCOOTA)A	Closed		•
•	2NHS-MCCOO1	600V t1	e breaker between Bus A & Bu	s C	2NHS-MCCOO1	7A	Closed		
	2NHS-MCCOD1	600V ti	e breaker between Bus B & B	ųs C	2NHS-MCCOO1	13A	Open		
	2NJS-US9 Bus B		coming feed to motor contro 2NHS-MCCOO1 Bus B	€]	2NHS-MCCOO18	19A	Closed	•	-
	2NJS-US8 Bus A		coming feed to motor contro ZNHS MCCOO2 Bus LA		2NHS-MCCOO2A	ĨA	Closed		
•	2NHS-MCC002 Bus C	600V ti	e breaker between Bus A & Bu	us C	2NHS-MCC002 Bus A	8A	Closed ';		
•	2NHS-MCC007	Tie Bre	aker Bus A and C 2NHSMCC007		2NHS-MCC007	5A	Closed		
•	2NHS-MCC007	Tie Bre	aker Bus B and C 2NHSMCC007		2NHS-MCCOO7	10A	Open		
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•		()	.Breaker	Bus Number	DESCRIPTION	COMPONENT NO.
		Closed	14A	2NHS-MCC007	600V from 2NJS-US4 (incoming main)	2NJS-US4
	<u>ç</u>	Closed	۱۸	2NHS-MCC008	600V from 2NJS-US5 (incoming main)	2NJS-US5
		Open	9A	2NHS-MCC008	600V from 2NJS-US5 (incoming main)	2NJS-US5
		Closed	1A	2NHS-MCCOO9	600V from 2NJS-US6 (incoming main)	2NJS-US6
		Open	74	2NHS-MCCOO9	600V from 2NJS-US6 (incoming main)	2NJS-US6
•		Closed	1A	2NHS-MCCO10	600V from 2NJS-USIOA (incoming main)	2NJS-US10
	•	Closed	134	2NHS-MCC010	The Breaker Bus A and C 2NHS-MCCOlO	2NHS-MCC010
		Open :	24A	2NHS-MCCO10	Tie Breaker Bus B and C 2NHS-MCCO10	2NHS-MCCO10
		Closed	36A	2NHS-MCCO10	600V from 2NJS-US10B (incoming main)	2NJS-US10
		Closed	ÌA .	2NHS-MCCO11	600V from 2NJS-US5 (incoming main)	2NJS-US5
_		Closed	36A	2NHS-MCC010	600V from 2NJS-US10B (incoming main)	2NJS-US10

SYSTEM POWER SUPPLY LINEUP

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	• • •	TABLE II SYSTEM POWER SUPPLY LINEUP			
COMPONENT NO	COMPONENT D. DESCRIPTION	POWER SUPPLY Bus Number - Cubicle/ Breaker	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REMARKS
2NJS-US5	600V from 2NJS-US5 (incoming main)	2NHS-HCCO11 10A	Open		······
2NJS-US6	600V from 2NJS-US6 (incoming main)	2NHS-HCC012 1A	Closed '		**************************************
2NJS-US6	l 600V from 2NJS-US6 (incoming main) i	2NHS-HCC012 10A	Open		¥ IV
2NJS-US4	600V from 2NJS-US4 (incoming main)	2NHS-MCCO13 1A	Closed		-
2NHS-HCC013	Tie breaker Bus A and C 2NHS-HCC013	2NHS-HCCO13 5A	Closed	-	
2NHS-MCC013	Tie breaker Bus B and C 2NHS-MCC013	2NHS-HCC013 9A	Open	-	
2NJS-US4	600V from 2NJS-US4 (incoming main)	2NHS-HCC013 13A	Closed ;		-
2NJS-US2	600V from 2NJS-US2 (incoming main)	2NHS-HCC014 1A	Closed		•
2NHS-MCC014	Tie breaker Bus A and C 2NHS-MCC014	2NHS-MCC014 5A	Clòsed		-
2NHS-HCC014	Tie breaker Bus B and C 2NHS-MCC014	2NHS-MCCO14 8A	Open		•

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2 1			 <u>SYS1</u>	<u>TABLE I</u> <u>TABLE I</u>				
•	COMPONENT NO	COMPONENT DESCRIPTION		POWER Bus Number	SUPPLY - Cubicle/ Breaker	NORMAL ACTUAL Position Position	INITIALS/ DATE	REMARKS
	2NJS-US2	600V feed from 2NJS-US2 (1	Incoming main)	2NHS-MCC014	12A	Closed		
	2NJS-US8	600V feed from 2NJS-US8 (i	incoming main)	2NHS-MCC015	14	Closed		
•	2NHS-MCCO15	Tie bresker 2NHS-MCC015 Bu	is A and C	2NHS-MCC015	· 7A	Closed		
	ŻNHS-MCC015	Tie breaker Bus B and C 2N	ihs-mcc015	2NHS-MCC015	128	Open		
	2NJS-US8	600V feed from 2NJS-US8 (i	incoming main)	2NHS-MCC015	18A	Closed		
	2NJS-US8	600V feed from 2NJS-US9 (i	incoming main)	2NIIS-MCC016	14	Closed		
	2NHS-MCC016	Tie breaker Bus A-C 2NHS-H	10016	2NIIS-MCC016	6A	Closed		
•	2NHS-MCC016	Tie breaker Bus B and C 2N	ihș-mcc016	2NHS-MCC016	9A	Open		•
	2NJS-US9	600V feed from 2NJS-US9 (i	incoming line)	2NHS-MCC016	14A	Closed		

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SYSTEM POWER SUPPLY LINEUP

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COMPONENT NO	CONPONENT D. DESCRIPTION	POWER Bus Number	SUPPLY - Cubicle/ Breakor	NORMAL ACTUAL POSITION POSITION	INITIALS/ DATE	REHARK:
	600V feed from 2NJS-US10 (incoming line)	2NHS-MCC017	14	Closed		
2NHS-MCC017	Tie breaker Bus A and C 2NHS-MCC017	2NHS-HCC017	58	Closed	÷	
2NHS-MCC017	Tie breaker Bus B and C 2NHS-MCC017	2NHS-MCC017	88	Open		
2NJS-US10	600V feed from 2NJS-US10 (incoming line)	2NHS-MCC017	128	Closed		
2VBB-UPS3B	600V normal supply to 2VBB-UPS3B	2NJS-PNL402	32	Closed	1	
2VBB-XRC603	600V supply to 2VBB-XRC603 (UPS3B)	2NJS-PNL600	2	Closed		
2VBB-UPS3B	120V maintenance supply to 2VBB-UPS3B	2VBB-XRC603	CB1	Closed		
2VBB-UPS3B	125VDC supply to 2VBBUPS3B	2BYS-SWG001B	3D .	Closed	æ	
2VBS*ACB1B 2VBS*ACB2B	120V supply breaker from 2VBB-UPS-3B to 2VBS-*ACB1B & *ACB2B	2VBB-BKR3B	38	Closed	、 ·	



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TABLE II

SYSTEM POWER SUPPLY LINEUP

	COMPONENT	POWER SUPPLY		NORMAL ACTUAL	INITIALS/	
COMPONENT NO.	DESCRIPTION	Bus Number -	Cubicle/ Breaker	POSITION POSITION	DATE .	REMARKS
		LVBS	1.0	014	2.	
	120V supply breaker from 2VBB-UPS3B 2VBS=F NLB 101 <i>ΔVBS=</i> FNLB100	2 VBB *ACB1B 2 VBB *ACB2B 2 <i>VBS</i>	1B 2B	Closed	•* 	
2VBB-UPS3A	600V normal supply to 2VBB-UPS3A	2LAT-PNL100	26	Closed		
2VBB-XRC503	600V supply to 2VBB-XRC503 (UPS3A)	2NJS-PNL500	2	Closed		
2VBB-UPS3A	120V maintenance supply 2VBB-UPS3A	X RCS()3 2VBB - XD503-	CB1	Closed		
2VBB-UPS3A	125VDC supply to 2VBB-UPS3A	2BYS-SWG001C	2D	Closed		
2VBS*ACB1A 2VBS*ACB2A	120V supply breaker from 2VBB-UPS3A to 2VBS*ACB1A & 2VBS*ACB2A	2VBB-BKR3A	3A	Closed		
//0 21/85*DVI 43-03	120V supply breaker from 2VBB-UPS3A	2V&S 2VBB*ACB1A	18	Closed		
	to 2VBS*PNLA 101 /00	2VBB*ACB2A 2VBS	28			
2VBB-UPS1C	600V normal supply to 2VBB-UPS1C	2LAT-PNL300	Sul Farl	Closed		

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	COMPONENT	POWER SI	UPPLY	NORMAL ACTUAL	INITIALS/	· · · · · · · · · · · · · · · · · · ·	
COMPONENT NO.		Bus Number -		POSITION POSITION	DATE	REMARKS	
2VBB-XD501	600V supply to 2VBB-XD501 (UPS1C)	2NJS-US5	4B·	Closed			- 9
VBB-UPS1C	120V maintenance supply to 2VBB-UPS1C	2VBB-XD501	CB1	Closed			- ²
2VBB-UPS1C	125VDC supply to 2V88-UPS1C	2BYS-SWG001A	20	Closed .			-
2VBB-UPS1A	600V normal supply to 2VBB UPS1A	2VBB-PNL301	1	Closed			-
2VBB-XD500	600V supply to 2VBB-XD500 (UPS1A)	2NJS-US5	8D	Closed			- {
2VBB-UPS1A	125VDC backup power to 2VBB-UPS1A	2BYS-SWG001A	2C	Closed	, i , i		-
2VBB-UPS1B	600V normal supply to 2VBB-UPS1B	2VBB-PNL301	2	Closed		•	_
2VBB-UPS1G	600V normal supply to 2VBB-UPS1G	2VBB-PNL301	7	Closed			
2VBB-UPS1A	120V maintenance supply to 2VBB-UPS1A	2VBB-XD500	CB1	Closed	,		-

SYSTEM POWER SUPPLY LINEUP

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SYSTEM POWER SUPPLY LINEUP

COMPONENT NO.	•		SUPPLY	NORMAL ACTUAL	INITIALS/	
	DESCRIPTION		- Cubicle/ Breaker	POSITION POSITION	DATE	REMARKS
2VBB-XD601	600V maintenance supply to 2VBB-XD601 (UPS1B)	2NJS-US©	. 4B	Closed	44 -	,
2V88-UPS18	125VDC supply to 2VBB UPS1B	2BYS-SWG001C	2A	Closed	τ' 2	
2VBB-UPS1D		2NHS-HCC006	8A	Closed		
2VBB-XD600	600V supply to 2VBB-XD600 (UPS1D)	2NJS-US6	60	Closed	:	
2VBB-UPS1D	125VDC supply to 2VBB-UPS1D	2BYS-SW(1001B	2D	Closed		
2VBB-UPS1B	120V maintenance supply to 2VBB-UPS1B	2VBB-XD(:01	CB1	Closed	:	
2VBB-UPS1D	120V maintenance supply to 2VBB-UPS1D	2VBB-XD600	СВ1 •	Closed	ł	
2VBB-UPS1C	125VDC supply to 2VBB-UPS1G	28YS-SWG001C	2C	Closed	•	
2VBB-UPS1C	120VAC maintenance supply to 2VBB-UPS1G	2VBB-XD602	СВ1	Closed	÷	a
2VBB-XD602	600VAC supply to 2VBB-XD602 (UPS1G)	2NJS-US6	6D	Closed		
2VBB-UPS1H	Normal supply to 2VBB-UPS18	2NJS-PNL901	26	Closed	\ \	

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